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ASSADI, Amir

University of Wisconsin, Madison, USA

Professor Assadi's research is in the interface of the computational, biomedical and life sciences, with emphasis on modeling biological intelligence, complex dynamics in systems biology, and applications to agriculture, ecology and medicine.

He received his bachelor's degree from UC Berkeley, Master's and PhD from Princeton University. He was member of the Institute for Advanced Study at Princeton, professor at University of Virginia, and guest professor at Harvard, Max-Planck Institute, ICTP (Trieste), and other international centers. Presently, he is a professor at University of Wisconsin, Department of Mathematics, member of the Eye Research Institute, the Genome Center and the Comparative Biomedical Sciences Program and a member of the Genome Center and the Eye Research Institute.

Presentation Title

A Global Network to Investigate Plant Ammonium Syndrome (PAS): Research Tools from Genome to Sustainable Science

Abstract

PI/Senior Investigators: **Amir Assadi (PI),** Fariba Assadi-Porter (UW Madison, USA); Masaru Takagi, Nobutaka Mitsuda (AIST, Japan); Cristina Cruz, Luis Correia (U Lisbon, Portugal); Rita Ribeiro, José Fonseca (UNINOVA, Portugal); Jose Moran (Institute of Agrobiotecnology, Spain)

Nitrogen fertilizers sustain about half of the human population, and they are essential to meet the challenge of food and energy security (bio-fuels). However, increased N-compound availability has led to adverse effects on water, air and soil quality, and is putting harmful pressure on ecosystems and biodiversity. Every 1% decrease in fertilizer usage would save billions of dollars in direct costs and promote the protection of the ecosystems. Ammonium has been used as a less costly alternative to nitrate based fertilizers. But ammonium toxicity to plants (the Plant Ammonium Syndrome, or PAS) is a global phenomenon with widely distinct thresholds across crops. The research area, proposed to be called *Nitromics* aims at the discovery of omics-based biomolecular mechanisms involved in the physiological and metabolic effects of the distinct Nitrogen sources in plants. This project aims at unifying diverse tools to study and find solutions to reduce the ill effects of PAS worldwide.

Intellectual Merit - (1) Development of novel Nitromics research tools and integration of outstanding results from the plant genome research, systems/structural biology, automation engineering, cyberenabled computational and mathematical sciences. (2) To assess the utility of the tools, we will design a cyber-enabled hybrid hardware-software platform, called the NitroBionics System, that combines data acquisition, information extraction, data fusion and knowledge mining to facilitate and expedite formulation of viable hypotheses and eventually discovering potential solutions to reduce PAS and improve sustainability. (3) A concrete outcome of the NitroBionics System is an early-stage compilation of a comprehensive cyber-enabled knowledge-base, called *in Nitro Library* (*iNL*), with the novelty of allowing an automated response to queries using

intelligent analysis of keywords/phrases in Nitromics related research. (3) An advantage of the NitroBionics System is its customizability for seamless cyberenabled communication and cloud-computing for diverse applications, especially in Research Coordination Networks. (4) The Nitromics research will rely on the formation of a sustainable international collaborative network (called *in Nitro Network* iNN) for integration of research, training and education of early-stage investigators and K-16 educators sharing the resources and results.

Broader Impact: Given the profound implications to society of even small reductions in nitrogen compound uses in agricultural, environmental and food security by the global community, a thorough understanding of the molecular control mechanisms and natural variation in plant nitrogen use, is warranted to increase safe food supplies for the rapidly growing world population.

Impact on K-16 Education - This project offers innovative educational opportunities at the high school, undergraduate, pre-doctoral and postdoctoral levels in quantitative molecular analysis of interactions of nitrogen compounds and plant physiology, the role of human populations since 1800s in changing the biology of plants, and the benefits of modern biological research in saving the plant from the global scale damages to agriculture, environment and food supplies by ammonium toxicity. The project will train middle and high school teachers and develop educational modules that permit K-16 students to do hands on studies in plant growth under varying levels of nitrogen-compounds, quantify the results and use basic mathematical reasoning for selection of the best environmental factors. Annual summer institutes at University of Wisconsin - Madison will enhance the value of a resource to interact with visiting scholars from abroad, and learning about education, training and research practices in Europe and Asia. The outreach aspects of this project have also international dimensions, and the benefits of having a steady stream of international scholars should be manifest on K-16 collaborative learning at a national level.

Plan for Sharing Data - All data, biological materials, and teaching materials will be freely available through the in Nitro websites in Europe, public databases in Japan, National Magnetic Resonance Facility At Madison (NMRFAM) web sites at UW Madison, other public databases (NCBI, Gene Expression Omnibus (GEO) and repositories that are in formation stages.

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AZIZ, Ramy

Assistant Professor, Department of Microbiology and Immunology, Faculty of Pharmacy, Cairo University (Egypt)

Ramy Aziz is an Assistant Professor at the Department of Microbiology and Immunology, Faculty of Pharmacy, Cairo University. He also holds an Adjunct Faculty Position at San Diego State University since 2008. His main research interests are bacterial pathogenesis, microbial and bacteriophage genomics, and the study of mobile genetic elements in genomes and metagenomes. He is also interested in scientific communication, open access publishing, and innovative methods in teaching microbiology.

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AZZAZY, Hassan

Professor and Leader of Novel Diagnostics and Therapeutics Group, The American University in Cairo, Egypt

Dr. Azzazy is a full, tenured Professor of Chemistry at the American University in Cairo (AUC), Egypt. He is also the leader of the Novel Diagnostics and Therapeutics Research group at Yousef Jameel Science and Technology Research Center, and the Director of the International Medical Technologists training program. Dr. Azzazy is also an adjunct Professor at the Graduate School of Information Technology and Management, University of Maryland University College, USA. He served as Director of Biotechnology Discipline at the Medical and Research Technology Department (University of Maryland), the Chairman of Chemistry Department, the Founding Director of MSc. Chemistry program, and the Associate Dean for Graduate Studies and Research at AUC. He has published 42 referred journal articles, 50 conference abstracts, 22 textbook chapters, and 8 monographs. Dr. Azzazy is a member of the Editorial Board of the Clinical Biochemistry Journal (Canada), Clin Chimica Acta (USA), and Clinical Chemistry Clinical Laboratory Medicine journal (Europe).

Dr. Azzazy has received several awards including Upjohn Research Achievement Award (UNT), Graduate Faculty Award for the Outstanding Graduate (UNT-HSC), Clin Chem Chair's Award (Board of Registry, American Society for Clinical Pathology), Excellence in Research and Creative Award (AUC), and Excellence in Teaching Award (AUC). In 2010, he received the State Prize in Advanced Technological Sciences from the National Academy for Scientific Research and Technology. He is a member of the Editorial Boards of the Clinical Biochemistry, Clin Chimica Acta, and Clinical Chemistry Laboratory Medicine Journals. Dr. Azzazy has published over 120 articles, book chapters, conference abstracts, and monographs all in international journals, textbooks, and conferences. Dr. Azzazy is the recipient of numerous honors and awards, the latest of which are the AUC 2008 Excellence in Research and Creative Endeavors Award and the AUC 2010 Excellence in Teaching Award. He is certified as a diplomat of the American Board of Clinical Chemistry, Washington, DC, USA in two specializations: Clinical Chemistry and Molecular Diagnostics. He is also certified as a Specialist in Clinical Chemistry (SC), Board of Registry, the American Society for Clinical Pathology (ASCP), Chicago, IL, USA. Dr. Azzazy is a fellow of the National Academy of Clinical Biochemistry (FACB), Washington, DC, USA.

Presentation Title

Innovation Conducive Environment: A Case Study in Biomedicine

Abstract

Innovation is one of the main drivers of a competitive economy and a powerful tool to create new jobs. A nation's innovation status has become the subject of thorough evaluation. Factors considered in assessing the level of national innovation include: the quality of STEM education, academia-industry partnership, venture capital activity, gross expenditures on research and development, high-tech exports, number of utility patents, and flexibility of the business environment. This presentation focuses on the importance of creating an innovative environment in universities and research centers.

Currently, many research groups are shifting from basic research, which investigates phenomena and aims to increase knowledge, to applied research in which technology and

invention are used to offer solutions to human needs and problems. Several factors are required to achieve a nourishing innovative environment within universities and research centers. These include the ability to identify and recruit out of the box thinkers (innovators), in addition to, individuals with advanced technical skills who would help realize the ideas of the innovators. A multidisciplinary group with diverse complementary expertise is capable of integrating data, methodologies, perspectives, and concepts from multiple disciplines in order to solve real world problems. Moreover, there is a need to establish a secure and transparent system to protect ideas from piracy and identify sources of long term funding and partners who are willing to embrace innovative ideas despite possible risks and help bring such ideas to the market. Finally, there is a need to cooperate with selected research centers and industrial partners to access specialized instruments and outsource specific tasks to facilitate prototype development and optimization.

A case of a blooming scientific innovation is the Novel Diagnostics and Therapeutic research group at the American University in Cairo. This group focuses on the development of effective solutions to address global health problems. Elements of success include team work, pooling of complementary experiences to realize a common objective, and nourishing the spirit of *"we will find a way through"*. The group has developed efficient nanodiagnostic prototypes for the detection of hepatitis C virus, tuberculosis, and biomarkers of cancer and cardiovascular diseases. The group is also addressing drug delivery using smart nanocarriers and new approaches for drug design. These prototypes can allow the foundation of start-ups and promise to have a tangible impact on the economy and societal needs. For the new Egypt, innovation should be brought to the center stage using both top-bottom and bottom-up approaches.

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DAAR, Abdallah

Chief Scientist, grand Challenges Canada; Professor of Public Health Sciences, University of Toronto, Canada

Dr. Abdallah Daar is Professor of Public Health Sciences and of Surgery at the University of Toronto. He is also Senior Scientist at the McLaughlin-Rotman Centre Program on Life Sciences and Global Health, University Health Network. After medical school in London, England, he did his postgraduate clinical training in surgery and in internal medicine as well as a doctorate in transplant immunology/immunogenetics, and a fellowship in transplantation at the University of Oxford. In the Middle East he helped start two medical schools and chaired the foundation of Surgery in Oman for a decade before moving to the University of Toronto in 2001. He has co-authored five books and has over 300 publications. He works in consulting capacities with the UN, the World Health Organization and UNESCO, and is a member of the African Union High Level Panel on Modern Biotechnology. He is a Fellow of the Royal Society of Canada, the Third World Academy of Sciences for Developing World, the Canadian Academy of Health Sciences, the New York Academy of Sciences and a Senior Fellow of Massey College, University of Toronto. He is a member of the Ethics Committee of the Human Genome Organization. He holds the official world record for performing the youngest cadaveric donor kidney transplant. Please visit: www.mrcglobal.org for his full biography and CV.

Presentation Title

Grand Challenges Canada and Global Health: Innovation and Research Funding Opportunities for your Scientists in Low and Middle Income Countries

Abstract

Grand Challenges Canada (www.grandchallenges.ca) is a new research-funding agency created from a major policy innovation of the government of Canada. It seeks to fund scientists and innovators from low and (low) middle income countries addressing issues in global health. It has a focus on integrated innovation i.e. scientific/technological innovation coupled with social, and business, innovation. It seeks to fund bold ideas that are likely to have impact in improving and saving lives. We have a number of major funding programs, including a Rising Stars program that funds investigators within 10 years of their last degree. Other major programs include point-of care diagnostic; maternal, neonatal and child health; and non-communicable diseases (including global mental health).

I will describe Grand Challenges Canada, focusing on the funding opportunities available for young scientists.

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EL-ZOHEIRY, Abdelhamid

Coordinator of the International Cooperation, Executive Director of the Research, Development and Innovation (RDI) Programme, Ministry of Scientific Research

He graduated from the Medical School, Cairo University. He was appointed in the Department of Otorhinolaryngology (Ear, Nose and Throat Diseases), Cairo University Hospitals, obtaining a Master's then a Doctorate degree. He then pursued a career in professional education obtaining a Master's Degree in Health Professions Education from Maastricht University, Netherlands; and established the Learning Resource Center (LRC) at Cairo University Faculty of Medicine. Since 2004 he holds the title of Professor.

In the past ten years, Dr. El-Zoheiry acquired extensive experience in international cooperation between Egyptian and foreign higher education and research institutions. During this period, Dr. El-Zoheiry established a track record in managing and coordinating numerous collaborative educational and research projects with academic EU institutions. He is currently the coordinator of European Cooperation, and the Executive Director of the EU-funded Research, Development and Innovation (RDI) Programme at the Ministry of Scientific Research.

Dr. El-Zoheiry also moderates the Medical Sector Committee at the Supreme Council of Egyptian Universities. He is an active member in several international societies and organizations.

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FARUQUI, Naser

Director, Science and Innovation, International Development Research Center, Canada

Naser Faruqui leads the IDRC that supports the development of science, technology, and innovation policies in developing countries to alleviate poverty. Before joining Science and Innovation, Naser Faruqui led IDRC research on grey water treatment and reuse, solid-waste management, and the environmental impacts of urbanization. In 1999, he was named one of the top 14 young water specialists in the World by a group of internationally respected water organizations. Faruqui has advised the Canadian Government on political, social, and economic implications of drought in the Middle East; the Canadian International Development Agency on its programs for Jordan and Pakistan; and the World Health Organization on cultural obstacles to wastewater reuse. He has been invited to serve on boards and steering committees of major international initiatives focusing on cities, food and water security, and the consequences of ecosystem change. Faruqui holds an Executive MBA from Queen's University and a Masters' Degree in Environmental Engineering from the University of Ottawa.

Presentation Title

New Business Models in Creative Industries

Abstract

Widespread access to the mobile phone and the Internet in developing countries has resulted in an Information Network with critical mass and immense potential benefits. Open models of development, which depend on freely available digital content, are increasingly viewed as opportunities to advance scientific knowledge, address democratic deficits, and create new forms of economic value. For example, in one music movement in Brazil, artists forego traditional copyright and willingly distribute their creations on the Internet or through informal street vendors, who market and distribute their music. The artists earn revenue at enormous neighbourhood dance parties, which create significant employment. The ideal approach to intellectual property is to find a balance between encouraging innovation and economic growth and ensuring that benefits flow to all members of society, including the poorest. This presentation presents findings from IDRC projects which are beginning to inform how to balance the intellectual property rights of creators, distributors, and consumers, in order to create new business models in emerging networked societies.

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GAMAL, Hebatallah

Senior Manager, International Partnerships Europe/Middle East/Africa, TechSoup Global Network, Poland

Hebatallah Gamal is an experienced Internet and communication technology expert. She has recently joined the TechSoup Global team as Senior Manager of International Partnerships for Europe, Middle East and Africa (EMEA). She is based out of the Fundacja TechSoup (FTS) office in Warsaw, Poland. As the Senior Manager of International Partnerships, Hebatallah Gamal works very closely with TechSoup's EMEA partners, specifically facilitating the integration of new, evolving

TechSoup programs into the EMEA Partner Network. Prior to joining TechSoup Heba worked at Google, Inc, where she managed the Search for the Middle East and North Africa Region. There, she focused on pushing the quality of the search experience to serve the local needs and study how to stabilize the Internet infrastructure for developing countries by coming up with locally relevant product features, policies and improvements. Most recently, she was a Kiva.org Fellow in Beirut, Lebanon working with Kiva's micro-finance institution partner on the ground. She served on the boards of the Foundation for Sustainable Development and the Clarence Foundation, mostly focusing her efforts on building and growing their technology capacity. During her tenure on the Clarence board, she served as the Technology Committee Chair, where she helped to manage the launch of the new Giving Circles website, drive online marketing campaigns, and find potential giving circles participants. Hebatallah Gamal studied Global and International Studies with emphasis on Socioeconomics and Politics of the Middle East at the University of California at Santa Barbara.

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GOONATILAKE, Susantha

President, Royal Asiatic Society, Sri Lanka

Susantha Goonatilake was first trained in electrical engineering in Sri Lanka, Germany and Britain and later in sociology in Sri Lanka and Britain (PhD; MA; BA; BSc; AMIEE). Goonatilake's books include: A 16th Century Clash of Civilizations: the Portuguese Presence in Sri Lanka; Cultural Consequences of the Shift to Asia (forthcoming); Anthropologizing Sri Lanka: A Civilizational Misadventure; Recolonisation: Foreign funded NGOs in Sri Lanka; Toward a Global Science: Mining Civilizational Knowledge; Merged Evolution: the Long Term Implications of Information Technology and Biotechnology; Technological Independence: the Asian Experience; Evolution of Information: Lineages in Genes, Culture and Artefact; Aborted Discovery: Science and Creativity in the Third World; Crippled Minds: an Exploration into Colonial Culture; Food as a Human Right; Jiritsu Suru Ajia No Kagaku-Dai San Sekai Ishiki Karano Kaiho (Japanese translation of writings by Goonatilake); and Al-Iktishaf al-mujahad; al-'ilm wa-l-ibda' fi al-'alam al-thalith (Arabic translation of writings by Goonatilake).

Goonatilake has taught or researched at, among others, the Universities of Exeter and Sussex, UK; Columbia University; and New School for Social Research, New York; Institute of Developing Economies, Tokyo; Universities of Philippines, Manila, Trondheim, Norway; Linkoping, Sweden, Malaya; the Institute of Social Studies, The Hague. He was also Senior Consultant for all the UN organs dealing with knowledge and science and technology issues (such as UNU, UNESCO, UNDP, ILO, FAO, ESCAP, APDA). Goonatilake is a former General President of the Sri Lanka Association for the Advancement of Science and is the President of the country's oldest academic body, the 167 year old Royal Asiatic Society, Sri Lanka. He is a Fellow of the World Academy of Arts and Sciences.

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KANDIL, Sherif

Professor of Material Science, the Institute of Graduate Studies and Research, Egypt

Sherif Hussein Kandil is a Professor, Department of Materials Science, Institute of Graduate Studies and Research, Alexandria University, Egypt. Dr. Kandil obtained his BSc. (1967) from Alexandria University, Egypt, and PhD. (1977) from Lancaster University, U.K. He has a long career commitment in education. He was the Executive Director of the Egyptian Education Reform Program (2005 – 2009), that provided technical assistance to the Ministry of Education in Egypt. He initiated and managed different academic departments. He is a founding member of the Institute of Graduate Studies and Research (IGSR) that was initiated by UNESCO and UNDP to advance post-graduate studies at Alexandria University (1983), the founding head of the Department of Materials Science (1983 -1993), and the Vice Dean for IGSR at Alexandria University (1996 - 2002).

He also worked in the Arab Region as the Chairman of the Advisory Council of the College of Science at the United Arab Emirates University ("UAEU" 1993 – 1996), and Dean of the College of Graduate Studies, Arabian Gulf University (AGU), Bahrain (2002 – 2005) where he introduced new courses and programs (Chemistry in Our Life at UAEU; and Distance Teaching and Training, and Environmental Management at AGU). Moreover, he has established and headed the Arab Society of Materials Science; he is a charter member of the executive committee of the "World Conservation Learning Network" (an initiative for distance learning under the auspices of the International Union for Conservation of Nature). He is a member of the editorial board of several journals (ca the Journal of Applied Polymer Science). He authored and edited more than 15 books that deal with a wide range of scientific topics. He delivered many key speeches in various international conferences around the world. Dr. Kandil was awarded the Alexandria University Award for Scientific Research (1984), and the Alexandria University Award for Recognition (2002).

Presentation Title

For Our Research to Reach the Market, What is Needed?

Abstract

Researchers usually work hard to formulate their research problems, conduct their research projects, and finally publish their research results. They may discover, when trying to market these scientific results, that it was not needed, or has very limited applications. Scientists may work in isolation, thinking that their main task is to do research and produce publishable results, irrespective of its relation to end-use applications. It would be more useful if they work in a closed loop system that matches the societal needs to the indigenous research capabilities.

This paper presents three successful models of mission oriented research that took place in Alexandria University. They have ended with end-user products: a novel technique for spectroscopic analysis of renal stone calculi has turned into a diagnostic tool and a service that has been used by the hospitals and urologists; a research project on the mechanisms of thermal degradation of natural polymers has turned into producing a flame resistant fabric; and a training course on instrumental analysis led to a reverse engineering exercise and ended with a successful assembly of low cost pH meter.

What is needed is a political will that "understands" the role of scientific research and believes into its benefits. We need a system that adopts and implements a national strategy for scientific research that is based on mission oriented research approach. Such strategy may start by spotting the societal needs, train and orient researchers to meet such needs. It also requires a cadre of professional marketing experts who are capable of alerting researchers of the value of what they know and produce the market attention and demand for their research products.

Our communities have a lot of good players or researchers; everyone is playing his own tune, while a composer and a conductor are missing. We need a paradigm shift where the scientific research community gets reorganized. We will then be able to create new innovative products and services that advance our societies.

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KHALIL, Tarek

President and Provost, Nile University, Egypt

Presentation Title

Innovation-The Driver of Economic Growth

Abstract

The world has been witnessing drastic changes in technology and the business environment. The pace of technological change has increased to levels unprecedented in history. Technology has dominated every aspect of human endeavor. It is vital to economic development, to progress of society, and to the improvement in the quality of life. Proper management of technological innovation is what creates wealth for nations, companies, and individuals. It forms the foundation for economic growth and determines national and organizational competitiveness. Multinational corporations and all successful enterprises realize that business competitiveness is driven by innovation and is no longer a matter of luxury but a matter of survival in an increasingly global, fiercely competitive marketplace.

Developed economies rely heavily on innovation to bring high added value to customers, command high prices, and maintain market dominance. Innovations and improvement in information and communication technologies dominated by industrialized countries bring about not only fundamental changes in the core institutions of those countries, but also the emergence of new knowledge–intensive products, services, industries, and inter-organizational forms. In order for developing countries to avoid being marginalized, they must formulate strong public policy, and their institutions must improve the way they manage technology and innovation.

This paper discusses the importance of technology in creating wealth and prosperity. It demonstrates the impact of innovation on fostering national development and improving competitiveness. The paper also covers policies needed at the national as well as at the firm level to foster innovation and economic growth.

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MASOOD, Ehsan

Editor in Chief, Research Fortnight and Research Europe, UK

Ehsan Masood is the Editor in Chief of the science policy newspaper *Research Fortnight* and other research-branded science policy publications. He teaches international science policy at Imperial College London and is the author of a number of books, the most recent of which is *Science and Islam: A History*, which accompanied a BBC TV and radio series broadcast in 2009.

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MURENZI, Romain

Executive Director, The Academy of Sciences for the Developing World (TWAS), Italy

Romain Murenzi is the Executive Director of the Academy of Sciences for the Developing World (TWAS), in Trieste, Italy. Murenzi was born in Rwanda and raised in Burundi. After graduating from the National University of Burundi in 1982, he taught mathematics in high school for three years before being awarded a fellowship for doctoral studies from the Catholic University of Louvain, where he earned his Doctorate Degree in physics in 1990.

Murenzi subsequently became a Post doctorate Researcher at the Center for Research and Advanced Training in Scientific Computation in Toulouse, France, and a Professor of Physics at Clark Atlanta University in the United States. Between 2001 and 2009, he served as the Minister of Science and Technology in Rwanda. He returned to the United States in 2009 to assume a joint appointment as Director of the Center for Science, Technology, and Sustainable Development at the American Association for the Advancement of Science (AAAS) in Washington, DC, and Visiting Professor at the University of Maryland's Institute of Advanced Computer Studies in College Park, Maryland. He was appointed Executive Director of TWAS in April 2011. Murenzi's major areas of research are multidimensional continuous wavelet transforms to quantum mechanics, and image and video processing.

Presentation Title

TWAS and Opportunities for Young Scientists

Abstract

Science and the Life Sciences in particular, are absolutely linked to society. Innovations can reduce economic costs or increase agricultural productivity; newly discovered or created substances can prevent or cure disease; surveys and databases can identify patterns and changes, both global and local. Such innovations make a massive difference to society. Science has the power to alleviate poverty and all the many ramifications of poverty-including crime, civil unrest, disease and depression. That indeed is a very great power, and we can help to ensure that that power is distributed as evenly-and responsibly-as possible.

TWAS, the Academy of Sciences for the Developing World, has been engaged for nearly thirty years in organizing, sponsoring and promoting programmes and activities precisely

aimed at the main theme of this conference: encouraging and rewarding *"Scientific Innovation in the Developing World"*.

TWAS has long understood that in order to really make a difference to poverty in many regions of the world, it is essential to build scientific capacity in those regions. In practice this means ensuring that there are enough young researchers working on scientific problems and developments in the field of Life Sciences, actually living and working in developing countries, to bring about real change to the daily lives of people in those countries.

TWAS does this by supporting young scientists in their work, by providing research grants, various prize schemes and a number of fellowships programmes for postgraduate and postdoctoral research. Sometimes we sponsor travel to conferences such as this one, so that promising young scientists can present their own work and hear about the work of their peers, as well as providing the opportunity to meet well-established, internationally renowned scientists working in their fields from all over the world.

We also have a 'Young Affiliates' programme, whereby scientists from developing countries under the age of 40 and with a good track record of international publications are selected to join the ranks of TWAS members for a period of 5 years.
Such programmes, such positive signs and expressions of encouragement and appraisal can make all the difference to young scientists in the South who are struggling to do their very best research with limited resources.

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PAGLIANO, Daniel

Director, Institute of Applied Biosciences, Uruguay

Daniel Pagliano is Uruguayan. He has a degree in Agronomy from the University of the Republic, Uruguay (1985) and a Master of Sciences in Molecular Biology from the Free University of Brussels, Belgium (1989). He is Director of the Institute of Applied Biosciences, School of Agrarian Sciences, Universidad de la Empresa (UDE); Director of Bioceltis S.A., a company in the area of plant and animal genetics services; Director of the Latin American Federation of National Associations of Biotechnology Companies (FELAEB); and Director of "Agro, Educación y Salud", an NGO that promotes the uses of fruits and vegetables. He is Former Director and Founder of Quiniman S.A., an animal biotechnology company producing bovine embryos; Calister S.A., a company which produces rhizobia inoculants (www.calister.com.uy); Biotec Plaza S.A., a company of Zonamerica Holding which administrates Zonamerica Business and Technology Park (www.zonamerica.com); the REDBIO Foundation, an NGO which nucleates 650 biotechnology laboratories in Latin America (www.redbio.org); and Nidetec Holding, dedicated to plant genetics, micropropagation and the production of commercial plantations of exportable fruits.

He is Former Professor of Microbiology in the Faculty of Agronomy, University of the Republic, Uruguay. He is also Former Scientist and Project Leader of the National Institute of Agricultural Investigation (www.inia.org.uy). He is Fellow from the Eisenhower Fellowship (www.efworld.org), the European Union and UNESCO.

Presentation Title

Biotechnology: Trends and Challenges in Mercosur Countries

Abstract

The Common Market of the South, Mercosur, consists in the regional economic integration of four countries in Latin America: Argentina, Brazil, Paraguay and Uruguay. It represents a population of 380 million persons; two third of Latin America.

The region is growing in terms of social and economic parameters, but needs to maintain the growth rates simultaneously to the application of policies to mitigate commodity price volatility, to boost productivity and to improve social inclusion. This is an excellent moment to look for knowledge-based opportunities and for this reason Mercosur countries have now active policies to promote and to enhance the development of biotechnology in all its components.

The region is very dynamics in using agrobiotechnology, considering not only the production with the global main bioengineering crops but with other biotechnologies such as that applied to natural resources sustainable managements and animal health and reproduction aspects.

In the medical area, this region has now available all the spectrum of biotechnology, from stem cells applications, recombinant human proteins production and there is an important list of developments with new drugs. The biopharmaceutical industry is a mature sector in the region.

In industrial applications, food and new materials are leading the biotech innovations. This is an important aspect since the region has a long tradition in food production. The countries have active politics to support the development of the biotechnology sector and its connections with production, services and commerce. These include active actions trough legislative aspects, economical incentives, human resources development, the academia-government-private sector interactions and dialogues and the support for regional biotech platforms.
Actual challenges in biotechnology developments include among several the “evolution” from more academic to business oriented approaches and the improvement of human resources biosciences skills, in order to facilitate the development of competiveness at any level and to increase the numbers of biotechnology-oriented startups.

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QUAN, Zoe

President of Qingchu Thinking, LLC, USA

Zoe Quan is President of Qingchu Thinking, LLC, which combines strategy, international business, and assessing technologies for their growth potential in order to help companies determine where they are, where they need to be, and what they need to do to get there. She helps them see patterns among seemingly unrelated pieces of information to home in on key issues and translate vision into executable strategies. Her particular interest is in releasing the potential of innovative research. Quan served as Vice President Operations for Fio Corporation; a nanobiotechnology start-up developing a point-of-care rapid diagnostics system. Previously, she led new products and business development as Senior Vice

President for Fujitsu Business Communication Systems, a $150 million provider of enterprise network solutions.

Quan was also an executive with various communications infrastructure businesses at Lucent Technologies, in global product, market, and corporate development. She started her career in research and development with Bell Laboratories, co-authoring two telecommunications patents. Quan's work with biosciences include creating a biotechnology course at the University of Chicago. She has served as a reviewer of SBIR grants for National Cancer Institute study panels. More recently she co-authored proposals to the US Department of Commerce for an innovative framework to accelerate commercialization of university-developed technologies. Quan is a Founding Board Member of Catalyzing Collaboration, which brings industry and academia together to cultivate the life sciences startup community, and is a mentor with Chicago Innovation Mentors, which coaches life sciences researchers to get their ideas out of the laboratory and into the marketplace. Quan holds an AB in Applied Mathematics from Harvard University and a PhD in Biophysics and Theoretical Biology from the University of Chicago.

Presentation Title

Where Biology and Business Meet

Abstract

Getting research out of the laboratory and into the marketplace is one of the major challenges of technology commercialization. Innovation is useful only to the extent it can be realized to address outstanding needs.

A critical component is learning to translate between the language of science and the language of business because the perspectives of industry are significantly different from those of academia. Thinking in terms of what one might do with a discovery, what problems it might solve, is not inherent to the attitudes of basic research; but doing so can facilitate enabling others to realize the commercial potential of the research, whether through licensing, in collaboration with industry, or in starting up a venture.

My talk will be from the perspective of industry. Questions to consider include determining the market opportunity, developing the product, protecting the intellectual property, understanding the legal and regulatory issues that must be addressed, building the right team, and positioning to raise funds to execute.

Also imperative is to cultivate a community to promote an environment more conducive to start-ups. Particularly when starting out, before the ecosystem has developed a critical mass, finding ways to more easily connect ideas, people, and resources can help nurture nascent ventures. I will discuss aspects of this issue, as well.

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LIST OF PARTICIPANTS

A

ABDELHAFEZ, Ahmed

PhD Student, Tongji University, Shanghai, China

ABEBE, Tibebu

Technology Transfer Team Leader, Ministry of Science and Technology

ABOU EL-ENEEN, Marwa

Lecturer, Medical Research Institute

ADEWUYI, Adewale

Lecturer II, Redeemer's University, Nigeria

ADEYEMI, Oluyomi

Lecturer, Redeemer's University, MOWE, Nigeria

ADEYEMO, Adebayo

PhD Student, Federal University of Vicosa (UFV), Vicosa, Minas Gerais, Brazil

ADOLIGBE, Camus

Research Fellow, Northwest A&F University

AGUIB, Yasmine

Project Manager and Scientific Consultant to the President, TU München

AHMAD, Fiaz

PhD Scholar, National Key Lab of Crop Genetics and Germplasm enhancement, Nanjing Agricultural University, Nanjing, China

AHMED, Abeer

Postgraduate Researcher, Chengdu Institute of Biology, Chinese Academy of Sciences, Chengdu, China

AHMED, Mufedah

PhD Student, Department of Microbiology, Goa University, India

AMPONSAH (NEE VORSAH), Irene

Lecturer/Data Analyst, Department of Mathematics and Statistics, University of Cape Coast

AMROUNI, Oula

PhD Researcher, National Institute of Marine Sciences and Technologies, Salammbô

ANIS, Galal

Assistant Researcher, Field Crops Research Institute Rice, Research and Training Center (RRTC), Sakha, Kafr El-Sheikh, Egypt

ANWAR, Tanzeel Huma

PhD Scholar, Quaid-i-Azam Univversity, Islamabad, Pakistan

ASAMOAH, Akwasi

Research Assistant, Faculty of Renewable Natural Resources, KNUST, Ghana

B

BABAK, Michael

Tutorial Fellow, University of Nairobi

BAHEY-EL-DIN, Mohammed

Lecturer, Faculty of pharmacy, Alexandria University, Egypt

BELLERA, Carolina

PhD Student, Medicinal Chemistry, Department of Biological Sciences, Faculty of Exact Sciences, National University of La Plata, Argentina

BILAL, Zill-e-Huma

Lecturer, Institute of Agricultural Sciences, University of the Punjab, Lahore, Pakistan

C

COMPAORE, Florentin

Advanced Laboratory Technician, National Public Health Laboratory

D

DAHUNSI, Olatunde Samuel

Researcher, Covenant University, OTA, Nigeria

DI IANNI, Mauricio

PhD Student, National University of La Plata

DIAGNE, Nathalie

Postdoctoral Student, Laboratoire Commun de Microbiologie IRD/ISRA/UCAD Centre de Recherche de Bel-Air, Dakar, Senegal

DOGRA, Atul

Research Associate (Socio-Economics), International centre for Agricultural Research in the Dry Areas (ICARDA)

E

EGEDIGWE, Chima

Doctoral Student, Michael Okpara University of Agriculture, Nigeria

ELAGAMEY, May

Pharmacist, Tanta Fever's Hospital

ELIAS, Sabrina

Research Associate, Plant Biotechnology Laboratory, Department of Biochemistry and Molecular Biology, Dhaka University

ELKADY, Marwa

Assistant Professor of Chemical Engineering, City for Scientific Research and Technology Applications

EL-SHIRBENY, Mohammed

Assistant Researcher, National Authority for Remote Sensing and Space Sciences

ENRIQUE, Andrea

PhD Student, Medicinal Chemistry, Department of Biological Sciences, Faculty of Exact Sciences, National University of La Plata, Argentina

F

FADUL ALLA, Eltayeb

Researcher, Medicinal and Aromatic Plants Research Institute, National Center for Research

FANDOHAN, Belarmain

PhD Fellow, Assistant Professor, Laboratoire d'Ecologie Appliquée–Université d'Abomey Calavi, Republic of Benin

FARRUKH, Muhammad Akhyar

Assistant Professor, GC University Lahore, Pakistan

FAWZY, Karim

Associate Lecturer, Cairo University, Faculty of Oral and Dental Medicine

FEROZ, Zeeshan

Associate Professor, Ziauddin College of Pharmacy, Ziauddin University

G

GANTNER, Melisa

PhD Student, Medicinal Chemistry Laboratory, Department of Biological Sciences, Faculty of Exact Sciences, National University of La Plata, Argentina

GOWAYED, Mennatallah

Teacher Assistant, Faculty of Pharmacy and Drug Manufacturing, Pharos University

GUL, Saima

PhD, Instituto de Química de São Carlos, Universidade de São Paulo, SP, Brazil

H

HAMDAN, Ahmed

Postdoctoral Fellow, Max-Planck Institute for Biophysical Chemistry

HASSAN, Sedky

Postdoctoral Research Fellow, Kangwon National University

HAYAT, Sumreen

PhD Scholar, Department of Microbiology and Molecular Genetics, University of the Punjab, Lahore, Pakistan

HEGAZY, Rashad

Assistant Professor, Kafrelsheikh University

HELAL, Ahmed

PhD Student, Department of Agriculture and Food Sciences, Technology and Biotechnology, University of Modena and Reggio Emilia, Italy

HERMASSI, Taoufik

Associated Researcher, National Research Institute of Rural Engineering, Water and Forestry

HUSSEIN, Khalid

Assistant Lecturer, Assiut University, Science Faculty, Botany Department

I

IDEMUDIA, Omoruyi

Doctoral Research Student/Scientist, University of Fort Hare

IGBINOSA, Etinosa

Lecturer, Ambrose Alli University, Ekpoma Nigeria

ISAAC, Clement

Lecturer II, Ambrose Alli University, Ekpoma, Nigeria

J

JHA, Ajay

PhD Fellow, Harbin Institute of Technology, Harbin, China

K

KABIR, MD. Firoz

PhD Scholar, National Centre of Excellence in Molecular Biology (CEMB), University of the Punjab, Lahore, Pakistan

KIMANI, John

Tutorial Fellow, University of Nairobi

M

MAHOMOODALLY, Mohamad

Lecturer, University of Mauritius

MUNIEN, Suveshnee

Student, University of KwaZulu-Natal

N

NABIL, Asmaa

Assistant Researcher, National Institute of Oceanography and Fishers (NIOF)

NGENO, Kiplangat

PhD Student, Wageningen University

NWAICHI, Eucharia

Lecturer, University of Port Harcourt

O

OGUNMWONYI, Isoken

PhD Student, University of Fort Hare, South Africa

OKELOLA, Olumayokun

M. Tech Research Student, Federal University of Technology, MINNA, Nigeria

OLIVEIRA, Jaqueline

PhD Student, University of Sao Paulo

OYINKAH, George

MPhil Student, University of Ghana, Legon-Accra, Ghana

R

RAYA, Rudra

Research Coordinator, Centre for Socio-Environment Conservation Nepal (SEC-Nepal)

RIZKALLAH, Mariam

Research/Teaching Fellow, The American University in Cairo

S

SAAD, Dalia

PhD Student, University of the Witwatersrand, Johannesburg, South Africa

SALAH, Jalila

Assistant Professor, Higher Institute of Biotechnology of Monastir, University of Monastir, Tunisia

SALEH, Mohamed

Lecturer, Faculty of Sciences, University of Benha

SAYED, Khaled

Lecturer, Modern University for Technology and Information (MTI)

SHAH, Nihir

PhD Student, SMC College of Dairy Science, AAU

SHAHIN, Hasnaa

PhD Student, City of Scientific Research and Technology Applications (CSRTA)

SHIBL, Hala

MSc Student, Environmental Studies and Research Institute (ESRI)

SOMORIN, Yinka

PhD Student, Federal University of Agriculture, Abeokuta, Nigeria

T

TAHA, Ahmed

Assistant Researcher, Soil, Water and Environment Research Institute, Agriculture Research Center

TALEVI, Alan

Assistant Researcher/Assistant Professor, Faculty of Exact Sciences, National University of La Plata

TAMGUE, Ousman

PhD Fellow, Department of Biochemistry and Molecular Biology, Northwest A&F University, Shaanxi, China

TEKPETEY, Stephen

Research Scientist, Forestry Research Institute of Ghana (CSIR-FORIG)

THAKUR, Tarun

Scientist, Mission Biofuels India Pvt. Ltd., Bhopal

TUVSHINTUR, Buyankhuu

Lecturer, Department of Chemistry and Biochemistry, School of Biomedicine, Health Sciences University of Mongolia

U

UJAN, Javed

PhD Student, Northwest A&F University, Yanggling, China; and Assistant Professor, IBGE-University of Sindh, Jamshoro, Pakistan

ULLAH, Anwar

PhD Student, UNESP/IBILCE São Jose Do Rio Preto São Paulo, Brazil

W

WOUATSA NANGUE, Arlette Vyry

CSIR-TWAS PhD Fellow, Central Institute of Medicinal and Aromatic Plants (CIMAP) Lucknow/ Babasaheb Bhimrao Ambedkar University Lucknow

BIOGRAPHIES AND ABSTRACTS

ABDELHAFEZ, Ahmed

PhD Student, Tongji University, Shanghai, China

Ahmed Azizeldein works at the Department of Environmental Research, Soil, Water, and Environment Research Institute (SWERI), Agriculture Research Center (ARC) in Egypt. He obtained his MSc degree from Benha University, Egypt, with thesis title: *"Environmental impacts of successive mineral fertilization on some properties of soil and plant grown thereon"*.

Currently, he is a PhD student at Tongji University, College of Environmental Science and Engineering, China. He focuse on heavy metal contamination of the environment associated with risk assessment and remediation technologies. His recent publications are related to heavy metal contaminated soil (Egypt, Korean and China); in addition to the risk assessment. Furthermore, the focus of his ongoing researches is the remediation of heavy metals using different technologies such as stabilization/solidification technology (S/S) and the removal of heavy metals using biochar amendment.

He is interested on the monitoring, risk assessment and remediation of heavy metal contaminated soils and water. He has published several articles and participated in international conferences related to the study subject. His ongoing researches will focus on the use of biochar produced from the pyrolysis of agricultural wastes as soil amendment to mitigate carbon, improve soil quality and to remediate the contaminated soils with heavy metals.

Abstract

Integrated Effect of Biochar Derived from Sugar Cane Waste for Soil Improvement and Pb Remediation in a Military Shooting Range Soil

Restoration of shooting range soils is an emerging environmental issue for nature conservation. A large number of shooting ranges are present in Egypt without paying attention to controlling environmental pollution. Sugar cane waste was collected from the juice shop, and was used for producing the Biochar (BC). A small-scale BC production plant was designed by using double metal barrels; thereafter, sugar cane waste was placed and burned inside the BC producing plant. The produced BC was used to restore the biological function of a contaminated shooting range soil by immobilizing lead and improving soil quality. The surface sandy loam soil was collected from a shooting range soil in Egypt and were incubated for 365 days with different application rates (0.0, 1.0, 3.0, 5.0, 10.0, 20.0 and 30.0%w/w) of BC.

The results showed that the addition of BC significantly increased the soil water holding capacity, available nutrients (N, P and K), cation exchange capacity, and stimulated the microbial growth (bacteria and fungi) in soil. Moreover, the addition of BC led to a significant decrease in the exchangeable Pb fraction by 99.67%, as compared with the untreated soil. The phytotoxicity test revealed that the addition of BC significantly increased maize biomass (shoots and roots) especially, for the 3% and 5% treatments.

However, no plant growth occurred on the untreated soil. Furthermore, Pb uptake by maize plant was increased significantly by increasing the rate of applied BC. Our findings provide convincing evidence that, BC application decreased Pb toxicity by immobilizing

lead and improved soil quality. Therefore, BC can effectively be used in restoring the desolate shooting range soil in Egypt.

Keywords: Shooting range, Restoration, Lead, Biochar, Soil quality, Maize, Egypt

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ABEBE, Tibebu

Technology Transfer Team Leader, Ministry of Science and Technology

Tibebu Solomon is currently working as Technology Transfer Team Leader at the Ministry of Science and Technology of Ethiopia. Tibebu received his BSc in Agricultural Engineering from Alemaya University of Agriculture. At Addis Ababa University, he received his MSc in Industrial Engineering. His work has received recognition in 2010 from Honorable Minister of Science and Technology as part of his efforts to formulate a new Science, Technology and Innovation Policy of Ethiopia with understanding of the development needs of the country and lessons from the experiences of other countries that succeeded in achieving rapid Science, Technology and Innovation based socioeconomic development. Tibebu produced two working papers in National Innovation System and Compotators Analysis. Moreover, he received two research grants from African Policy Study Network (ATPS) for the year 2010 and 2011.

Abstract

Assess the Rationale and Competence of Pastoral Community Innovative Adaptation to the Incidence of Climate Change in Ethiopia

The preparation of this report was as per the Grant obtained from the African Technology Policy Studies Network (ATPS CSP /0401/10-02) whose primary objective is to support the implementation of the ATPS climate sense program under the African Youth's Forum for Science and Technology (AYFST) Climate Change Innovation Program.

This study was undertaken in Afar and Somali Regional States to assess the rationale and competence of pastoral community innovative adaptation to the incidence of climate change in Ethiopia. Pastoralism is a way of life, which is well suited to the arid and semi-arid parts of Ethiopia. Their adaptation to a marginal and unpredictable environment has made living in the dry lands possible.

Afar and Issa Somali Pastoralists are adapting to changes in a local innovative way. The typical pastoralist innovative adaption in the Study areas: change in house construction materials, traditional early warning system through Dagu in Afar, maximizes female animals in their herds, seasonal forecasting by follow up Goat and Cattle behavior i.e. modes of grazing, breathing and sleeping and also traditional air conditions (cooling system) of potable water.

This research output provides a framework for addressing climate change problem in the Ethiopia pastoralist and assists them in discovering their potentials to rise up to the challenge. It also enables policy makers and NGOs to chant an appropriate course for policy and programme directions.

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ABOU EL-ENEEN, Marwa

Lecturer, Medical Research Institute

Marwa Sameh Ibraheim Abou El-Eneen is a Lecturer, Radiation Sciences Department, Medical Research Institute (MRI), Alexandria University. She obtained her BSc. degree in biochemistry from the Faculty Science, Alexandria University; her MSc. in Radiobiology (Thesis title: *Tartrate-Resistant Acid Phospatase 5b (TRAP 5b), Carboxy Terminal Telopeptide of Type I Collagen (ICTP) and Carbohydrate Antigen 15.3 (CA15.3) as Prognostic Factors for Subsequent Metastases from Primary Breast Cancer*); and PhD in Applied Medical Chemistry (Molecular Biology; Thesis title: *Semi Quantitative Analysis of Circulating Plasma DNA as a Test for Cancer Screening*) from Alexandria University, Egypt. She was demonstrator from 2001-2006, assistant lecturer from 2006-2010 and lecturer from 2010 till now at Radiation Sciences Department, MRI, Alexandria University, Egypt.

She has been teaching Basic Radiobiology, Radiopharmaceuticals and Crisis Management courses for MSc. degree students at MRI, Alexandria University, Egypt. She has practical experience in Basic biochemical techniques, Radioimmunoassay (RIA, IRMA) and ELISA techniques, Molecular biology basic laboratory techniques, DNA and RNA extraction and purification techniques, Electrophoresis methods for protein, DNA and RNA, Conventional PCR, RT-PCR, Real Time PCR. Her research interests fall mainly in the field of oncology, with current research focusing on how to using natural products as radioprotectors and radiosensetizers.

Abstract

Radioprotective Effect of Date Fruit Extract

Currently ionizing radiation is being used in various aspects of human life. Exposure to ionizing radiation can cause deleterious effects on the biological systems. Cancer, which is one of the leading causes of morbidity and mortality in several populations of the world, could be induced due to exposure of humans to radiation.

Radiotherapy is a dominant and effective mode of cancer treatment, the radiosensitivity of normal tissues adjacent to the tumor limits the therapeutic gain. To counter such situations, the development of a safe and effective radioprotector is considered important. After achieving a very limited success in the development of chemical radioprotector, efforts were made to evaluate the protective potential of plant based preparations, against ionizing radiations.

One of the plants that have high content of phytochemicals is grape. Grape seed extract (GSE) shows a radioprotective effect against chromosomal damage in mouse bone marrow exposed to X-rays. GSE enhances the antioxidant status and decreases the incidence of free radical induced lipid peroxidation in blood of rats acutely whole-body exposed to 8 Gy X-rays.
Egypt is considered to be one of the palm date-producing countries. Palm dates are rich in certain nutrients and provide a good source of rapid energy due to their high carbohydrate content (~70–80%).

Palm dates contain different types of amino acids and also they contain several minerals which influence cellular radiosensitivity causing either a pro-oxidant or antioxidant effect. These fruits contain at least six vitamins. Recent studies indicate that the aqueous

extracts of dates have potent antioxidant activity and were found to inhibit significantly the lipid peroxidation and protein oxidation and also exhibited a potent superoxide and hydroxyl radical scavenging activity.

Accordingly, date fruit extracts could be used as a radioprotective agent as GSE due to its high content of antioxidants. Because it is the first study to evaluate the radioprotective effect of date fruit extract, we will use GSE to compare the radioprotective effect with it.

Due to higher nutritional value and antioxidant contents of dates than GSE, so it could be used as an effective, safe and inexpensive (may an ideal) radioprotective agent in people (cancer patients, normal persons) exposed to radiation.

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ADEWUYI, Adewale

Lecturer II, Redeemer's University, Nigeria

Adewale Adewuyi was born on 18 May 1980 into the family of Mr Gabriel Adewuyi and Mrs Olusola Adewuyi in Surulere, Lagos, Nigeria. He grew up in Lagos, Nigeria where he had his primary (1991) and secondary (1996) school education. He proceeded to the University of Ibadan, Nigeria where he obtained his BSc (honours), Chemistry (2002); Msc. Industrial Chemistry (2005) and PhD (2011).

He had some awards, local and international scholarships, and fellowships. Some of these include: University of Ibadan Postgraduate School Scholarship (2007), Third World Academy of Sciences (TWAS) Fellowship (Hyderabad, India, 2008), University of Ibadan Postgraduate School Publication Award (2010), PAN Africa Chemistry network travel grant (Ethiopia, 2010), Research Training Fellowship for Developing Country Scientists (RTFDCS, India, 2010), Coimbra Group Scholarship (University of Padova, Italy, 2011), TWAS/DFG Fellowship (Technical University of Dresden, Germany, 2011) and AAS-icipe-TWAS-ROSSA travel grant (Nairobi, Kenya, 2011).

His research activities cut across the industrial applications of lesser known underutilized tropical seed oils and microalgae oil as means of addressing food insecurity in Africa. This also includes the production of biofuel, surfactants and waste water treatment.

Presently, he is a Lecturer grade II at the Department of Chemical Sciences, Redeemer's University, Nigeria.

His dream and vision have always been to contribute to the development of Science and Technology in Africa and the world at large.

Abstract

Industrial Application of the Seed and Seed Oil of *Hura Crepitans*: A Tool for Solving Food Insecurity in Africa

Access to adequate and nutritious food is limited by low income / poverty, because nutritious foods are sometimes expensive as a result of industrial demand of food as feed stock for the production of other products. Palm oil, rapeseed oil and transgenetic soybeans are used to produce biodiesel. These oils are edible and are food; there use as feed stock for the production of biodiesel poses a threat on food security as this has also

led to increase in the price of these oils in the market. The use of underutilized and non-edible seeds in waste water treatment and seed oils as raw feed stocks for biodiesel production would be an effective way of securing food and reducing environmental pollution.

Oil was extracted from the seed of *Hura crepitans* using hexane in a soxhlet extractor. The surface characterization of the seed was achieved using SEM, IR and by chemical titrimery while the physicochemical properties of the oil was determined using standard method of analysis. The mineral composition of the oil and the seed was analyzed using AAS. Lipid classes and triglyceride of the oil were isolated by column chromatography; they were further identified and quantified using HPLC. Oil and its lipid classes were evaluated for their fatty acid composition and distribution using GC while unsaponifiable matters were identified by GC-MS. Biodiesel was produced from the oil via a two-step reaction system. Progress of the reaction was monitored and confirmed using ^{13}CNMR and ^{1}HNMR. Seed cake after extraction was used as biomass adsorbent in the removal of phenol from water system. The most abundant mineral in the seed as well as the oil was potassium. C18:2 was the dominant fatty acids found in the oil while neutral lipids were the dominant lipid class in the oil.

Molecular species with equivalent carbon chain number C44 and C46 were prominent in the oil. Phosphatidylethanolamine was the major phospholipids while digalactosyldiacylglycerol was the dominant glycolipids in the oil. Unsaponifiable matters include hydrocarbons, sterols, vitamins and phytol. The properties exhibited by the biodiesel from the studied oil agreed with the European standard 14214. FT-IR spectra analysis of seed suggests the presence of unsaturated ketone, ester and lactone, quinone and carboxylic acid. Adsorption of phenol was found to increase with increase in concentration, temperature and adsorbent weight. The result is a low-cost biomass adsorbent that quickly recognizes and removes phenol from wastewater.

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ADEYEMI, Oluyomi

Lecturer, Redeemer's University, MOWE, Nigeria

Oluyomi Stephen Adeyemi is a well grounded-biochemist having trained in the best tradition of life sciences. He began his academic career as an Assistant Lecturer at the Bells University of Technology, Ota, Nigeria from where he moved to his present employment at the Redeemer's University, Mowe, Nigeria. Over the years, Dr. Adeyemi has engaged in active research activities under the following themes; (i) identification of novel drug targets in the biochemistry of trypanosomes (ii) rational screening of medicinal plants for bioactivity (iii) toxicological evaluation of trypanolytic agents in vivo, ex vivo and in vitro (iv) Identification of cellular/molecular processes involved in the pathogenesis of trypanosomiasis. Most notably, his research activities have for sometimes now focused on the toxicological evaluation of medicinal plants and/or herbal preparations. Presently, Dr. Adeyemi is on a Research Visitation at the Rhodes University, Grahamstown, South Africa, where he is involved with nanoparticle synthesis and biomedical characterizations in disease teatment and diagnosis.

Furthermore, in contributing to body of knowledge, he has more than sixteen (16) published research articles in peer-reviewed journals with several other manuscripts in preparation. In more than 70% of these research outputs, Dr Adeyemi was the lead

author. He is also a reviewer for several national and international peer-reviewed journals while also serving as an Editorial Associate for International Journal of Biochemistry and Bioinformatics (IJBB) and Webmed journals amongst others. Dr. Adeyemi is a Christian and likes to play chess at leisure time. He also likes music and reading.

Abstract

Correlation Between Induced Iron Increase and Morphological Changes in Infected Rat Tissues: Implication for Chelation Therapy

This study reports the concentrations of iron and nitric oxide as well as lipid peroxidation levels in tissues and serum of rats experimentally infected with T. b. brucei. Examination of rat tissues for histopathology were also carried out. Animals were randomly assigned into two groups representing the infected and uninfected rats. Infection with T. b. brucei caused significant ($p<0.05$) increases in tissue and serum iron and nitric oxide concentration when compared to the uninfected animals. There also was increased lipid peroxidation as reflected in raised ($p<0.05$) malondialdehyde (MDA) concentrations observed in the tissues and serum of infected animals. The histological examinations of liver and brain from infected animals showed structural alterations indicative of tissue damage.

Further analysis of results revealed that increased iron and nitric oxide concentrations in the serum and tissues correlated with high MDA concentration which suggest that iron and/or nitric oxide may be promoting lipid peroxidation with corresponding marked morphological changes in tissues. We provide evidence that increased iron concentration may have aggravated T. b. brucei infection by way of contributing not only to the proliferation of the parasites but also to the promotion of lipid peroxidation and hence tissue damage. This supports further the relevance of iron chelation therapy as a treatment strategy in the management of trypanosomiasis. Iron chelation therapy could prevent iron mediated injury to cells thereby reducing the etiology of tissue damage associated with the infection.

It is speculated that modulation of the availability of host iron by iron chelators and/or selective inhibition of inducible nitric oxide synthase (iNOS) may represent a potential strategy for controlling parasite proliferation as well as restricting disease progression.

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ADEYEMO, Adebayo

PhD Student, Federal University of Vicosa (UFV), Vicosa, Minas Gerais, Brazil

Adebayo Jonathan ADEYEMO is a PhD student in the Department of Soil Science (Soil Environmental Chemistry), under the Academy of Sciences for the Developing World and The National Council for Scientific and Technological Development (TWAS_CNPq) fellowship Program in the Federal University of Vicosa (UFV), Vicosa, Minas Gerais, Brazil. He obtained a Masters of Agricultural Technology Degree in Soil Management from the Federal University of Technology Akure, Ondo State, Nigeria in June 2008, where he was a Teaching Assistant, and his main responsibility was to conduct tutorials in General Agriculture, Soil Physics and Soil Chemistry. He obtained a Bachelor of Agricultural Technology Degree in Crop, Soil and Pest Management from the Federal University of Technology, Akure, Ondo State, Nigeria in December 2003.

Adebayo worked for a year after his first Degree as Corp Liaison Officer (CLO) in Okobo Local Government Area of Akwa Ibom, one of the Oil Producing States of Nigeria during his National Youth Service (NYSC), a scheme organized by the Federal government of Nigeria with a view to the proper encouragement and development of common ties among the youths of Nigeria and the promotion of national unity. His main responsibility was to liaise with the State Governments Coordinator of the scheme in the implementation of developmental projects in the Local Government Area. He is currently working on Remediation of Soils Contaminated with Petroleum Hydrocarbons and the re-use of the decontaminated soils for agricultural purposes.

Abstract

Remediation of Persistent Organic Pollutants of Petroleum Contaminated Soils

Environmental pollution with petroleum and petrochemical products has attracted much attention in recent decades. The presence of various kinds of automobiles and machinery vehicles has caused an increase in the use of motor oil. Oil spillages into the environment have become one of the major problems. Spillages of used motor oils such as diesels or gasoline fuels contaminate our natural environment with hydrocarbons. The hydrocarbons spread horizontally on the ground-water surface and partition into groundwater, soil pore space air and to the surfaces of soil particles. The contamination of groundwater resources by organic chemicals is significant environmental problem that can constitute a risk to health of humans and animals. It is believed that remediation methods are favoured and have been used particularly as a secondary treatment option for clean-up of oil spillage. This work has the intent for evaluation and remediation of organic pollutants in used motor oil contaminated soils via bioremediation.

The rates of biodegradation of the used motor oil were studied for a period of 90 days. The model soil of 300g was contaminated with 1.5 % (w/w) of used motor oil at room temperature under laboratory conditions using microcosm of 1 L. The microcosm was used to simulate the comparative effect of spent oil addition and bioremediation using a commercially available hydrocarbon degrading microbial consortium (Amnite P1300) as the bioaugmentation treatment, nutrients amendments ($(NH_4)_2SO4$ and K_2HPO_4) as biostimulation, unammended soil (natural attenuation) and the control soil treated with sodium azide (NaN_3) on the microbial community in three different soil types. Periodic sampling was taken to analyze the TPH, PAH, PCB's and some inorganic pollutants to measure the level of degradation of the pollutants before and after the remediation experiments.

The development of the microbial community and its recovery is a useful and sensitive way of monitoring the impact and recovery of used motor oil-contaminated soils. Commercially available microbial-based bioremediation products may be used with some success in tropical soil environments, however soil-specific trials may be required to ensure that the best commercial product is selected. As an alternative, the selective enrichment of indigenous microorganisms may result in similar performance at a reduced cost. The results suggest that different soils have different inherent microbial potential to degrade hydrocarbons under spent oil pollution. This finding should be taken into account in impact and risk assessments of petroleum polluted soils.

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ADOLIGBE, Camus

Research Fellow, Northwest A&F University

Camus Adoligbe was born in September in Allada, a small city in Benin in 1983. He enjoyed his entire childhood in the cities of Abomey and Cotonou where he devoted most of his time acquiring education and interest in the world of animals. He completed his primary school (1988-1994), his secondary school (1994-2001) and his bachelor degree (2001-2005) smoothly as an outstanding student.

Later, he started working as a Graduate Assistant in the Department of Animal Science from October 2005 to July 2006. Parallel to this, he was working on part-time in a veterinary clinic and pharmacy, "Good sheep farmer" in Benin. Moreover, from February 2007 to July 2007, he worked in a private company specialized in the production of feedstuffs for animals, as a manager of production of one day-old chicks and provender; and in August 2007 as fishing controller for the government of Benin.

His love for intellectual challenges and graduate studies landed him to China for a master's degree in Animal Science since 2007. At present, Camus is pursuing his PhD research.

His future plan is to be devoted in research and employed in international poverty alleviating projects using sustainable animal breeding as a tool. Although his interests focus on sciences; sports, music and translation are also an integral parts of his life.

Camus is culturally exposed, socially mature person, genuinely interested in networking with people and deep passion for making positive differences.

Abstract

Identification of Candidate Genes for Phenotypic Robustness in Cattle Breeding

The ability of farm animals to maintain a high and uniform production across environmental gradients is of strong economic importance. Many developping countries have been importing high producing animal breeds from Western countries for decades without getting good result. This is because of the potential harmful effects due to genotype and environment(GXE) interactions.The existence of genotype and environment interactions in biological systems is well established however GxE interactions are largely ignored when defining breeding goals and designing breeding programs for livestock breeds especially in developping countries.
Thus, it is crucial to gain information about the extent of GxE interactions and the underlying genetic architecture behind these interactions in order to improve the animal's ability to maintain high and uniform production welfare across environmental gradients. The results from the suggested PhD study will lead to identification of genes of importance for variation in the ability to cope with changing environmental conditions and suggest ways to design breeding programs aiming at selecting for animals that can maintain high production and welfare across environments.

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AGUIB, Yasmine

Project Manager and Scientific Consultant to the President, TU München

Yasmine Aguib is a life scientist. In her PhD thesis she explored cellular mechanisms that play a role in neurodegenerative disease, namely prion infections, at the Technische Universitaet Muenchen (TUM). Recently she was appointed as a project manager and scientific consultant to the university's president in the fields of life sciences and international strategic alliances.

After finishing her Abitur at the German School (DSB) in Cairo, Yasmine Aguib received a scholarship from the German Exchange Service (DAAD) to study Molecular Biotechnology in Germany. She accomplished her Bachelor Thesis at the Institute of Biological Chemistry under supervision of Prof. Skerra, where she studied aspects of designing bispecific antibodies for cancer therapy. It was in her Master studies when she joined Prof. Schaetzl's research group to enter the field of neurodegeneration and she received the Mayor's Award for distinguished Master's thesis at the Center of Life and Food Sciences Weihenstephan at TUM.

In 2008, she was awarded the Presidential Science and Engineering Research Fellowship and joined the group as a doctoral candidate. Already in her Master studies she was keen on combining specialization with interdisciplinarity. She has a double major in Molecular Medicine and Molecular Biology of infectious diseases and a minor in MOT (Management, Organisation and Technology). As a young researcher she contributes to the cultural and scientific exchange between Egypt and Germany. Recently she was appointed as a member of the Jury awarding the Theodor Berchem Preis for Outstanding Personalities in International Academic Cooperation (DAAD).

Abstract

Pharmacological and Genetic Manipulation of Autophagy and its Impact on Diverse Prion Infection Scenarios

Prion diseases are infectious and fatal neurodegenerative disorders of humans and animals which are characterized by spongiform degeneration in the central nervous system. The accumulation of an abnormal „scrapie" isoform (PrP^{Sc}) of the cellular prion protein (PrP^{c}) is the main feature of prion diseases. PrP^{Sc} is closely associated with infectivity and has been proposed as the protein-only agent responsible for prion diseases. Prion propagation involves the endocytic pathway; endosomal and lysosomal compartments are implicated in trafficking and re-cycling as well as final degradation of prions.

Until now prophylactic and therapeutic regimens against prion diseases are highly limited. A profound understanding of cellular metabolic pathways involved in prion infections might lead to key knowledge for novel strategies to activate cellular clearance mechanisms for prion aggregates or to prevent infection and cell death.

The autophagic pathway is suggested to play a key role in the CNS and in neurodegenerative diseases. Autophagy is a fundamental cellular bulk degradation process for e.g. organelles or cytoplasmic proteins, which can be protective or detrimental to neuronal cell survival and degeneration. As it is crucial to perform a thorough investigation of this cellular mechanism, which might have the potential to

interfere with accumulation of intracellular PrPSc, the role of autophagy in transmissible spongiform encephalopathies (TSEs) and its potential as a target for prion therapeutics is investigated in this work.

The distinctiveness of this study is that it was conceptually designed to address two complex and dynamic processes, namely the autophagic pathway and the neurodegenerative prion diseases. The role of autophagy in prion diseases, its ability to interfere with accumulation of intracellular PrPSc, and its potential as a targeting mechanism for prion therapies are investigated in this work. Autophagy monitoring and modulation, induction and inhibition, were used as research tools to analyze the effect of autophagic alteration on prion infection and demonstrated that drug-induced autophagy enhanced cellular clearance of PrPSc in persistent and de novo prion infections.

Overall, this work demonstrates a fascinating interplay between autophagy and prion infection that seems to manifest itself in various ways throughout different cellular conditions and scenarios. The study provides direct experimental evidence for the impact of autophagy in prion disease and identifies the drug tamoxifen as well as the gene beclin 1 as starting points for the development of novel therapies.

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AHMAD, Fiaz

PhD Scholar, National Key Lab of Crop Genetics and Germplasm enhancement, Nanjing Agricultural University, Nanjing, China

Fiaz Ahmad was born in a small city in Pakistan, Lodhran District of Punjab, Pakistan, where he started his educational career. He was position holder throughout. For higher education, he won overseas PhD scholarship for China through CSC program. Now, he is PhD student in Dr. Zhang's Lab and he is supervising his work. He is greatly interested in agriculture and its development. Accordingly he designed a project that is approved as one of the best project on the role of epigenetic in rice (*Oryza sativa* L.) crop. In his project, he applied Next Generation Sequencing Techniques (NGST) to analyze the genome of rice that is not only his aim but ambition in life. His goal after completion of his PhD is to serve his home country in a much better way.

Abstract

Genome-wide Analysis Reveals that DNA Methylation Together with Histone Modification Activates Genes in Rice (*Oryza sativa* L.) Genome to Regulate it Against Abiotic Stresses

Fiaz Ahmad, Ji Huang, Hong-Sheng Zhang

State key Laboratory of Crop Genetics and Germplasm Enhancement, Nanjing Agricultural University, Nanjing 210095, P.R China

DNA associates with proteins to form chromatin. Chromatin structure plays an essential role in genome organization, transcriptional activity, and in memory of developmental state. Through DNA methylation/demethylation, plants not only tolerate the crucial environment conditions but also transposons. Here, we quantified DNA methylation in rice (*Oryza sativa* L.) genome under conserved condition of abiotic stresses (Salinity and

Drought). MeDIP-Seq read distribution was analyzed in: CpGIsland, upstream2k, five-UTR, CDS, Intron, three-UTR, downstream2k, repeat region, and for each class of repetitive elements. Peaks of two samples were merged as candidate different methylation regions (DMRs) and for each candidate DMR, the number of reads of each sample was 35. DMRs were divided into two groups: the downtrend DMRs which indicated that the number of reads of sample 1 was larger than sample 2. We observed that different genes cooperate with each other to exercise their biological functions.

Finally, we isolated particular novel genes that are up and down regulated through DNA methylation/demethylation as well through H3K4 and H3K9 modifications. Under particular conditions inorder to modulate the plant growth and development. Comprehensive methylome map will add further in our understanding of epigenetic regulation in rice crop under crucial environment.

Key words: DNA methylation/demethylation, abiotic stresses, MeDIP-Seq, rice.

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AHMED, Abeer

Postgraduate Researcher, Chengdu Institute of Biology, Chinese Academy of Sciences, Chengdu, China

Abeer Ahmed is from Taiz, Yemen. She received her BSc. in Microbiology/ Biology and MSc. in Microbiology/ Immunology from the Faculty of Sciences, Taiz University. She has worked as Assistant Professor at the Faculty of Medicine, Taiz University from 2007 to 2008. In 2008, Ms. Ahmed was awarded OWSDW (Organization for Women in Science for the Developing World) fellowship to pursue her PhD in Chengdu Institute of Biology, Chinese Academy of Sciences, Chengdu, China. Her research focuses on developing green enzymatic processes to replace chemical ones by using directed molecular evolution techniques for novel enzyme finding and modification as well as developing chemical and biochemical processes to use the enzymes in the production of value-added substances. Her current work is also focusing on discovering new attractive enzymes for industrial, pharmaceutical and environmental applications.

In addition, Ms. Ahmed is a member of Yemen Women Association for Science and Technology, Yemeni Biological Society and Organization for Women in Science for the Developing World (OWSDW). She volunteers in her free time to present some sciences lectures in high and middle schools to encourage the youth to be interested in pursuing sciences as career paths. Ms. Ahmed is devoted in sharing knowledge and committed to improve herself in all aspects of her life.

Abstract

New Thermo-nitrilase from *Saccharomonospora viridis:* Potential Biocatalysis in Nicotinic Acid Synthesis

A Nitrilase (EC 3.5.5.1) gene from *Saccharomonospora viridis* was cloned and expressed in *Escherichia coli BL21*. The recombinant nitrilase (named as pET-Nit) showed nitrilase activity to hydrolyze the 3-cyanopyridine to nicotinic acid without detectable formation of nicotinamide. Nicotinic acid is a B-complex vitamin used in pharmaceutical formulations, and as additives in food and animal feed. The lack of Nicotinic acid in human diet causes a disease called pellagra. Nicotinic acid and its ester and amide

derivatives have medical applications as antihyperlipidemic agents and peripheral vasodilators. The chemical routes for the synthesis of nicotinic acid require high temperature and pressure and yield by-products, which increase the cost and time of purification.

Moreover, chemical processes are not 100% efficient, and require expensive catalysts. It has been revealed that developments in nicotinate production process technology, only nicotinamide production through biological process (nitrile hydratase based) has been commercialized, and that nicotinic acid is still manufactured by chemical routes (Sharma et al, 2010). The world demand for nicotinic acid and its derivatives is estimated to be 22,000 tonnes per year. Thus, there is a need to search for hyperactive nitrilases capable of tolerating high conditions (ex: temperature, pH, substrate high concentration…etc) to replace the existing chemical technology of nicotinic acid production.

The reaction conditions for nicotinic acid production were carried out by varying pH (5.0 - 9.0) temperature (10 - 80◦C), substrate concentration (0.05-0.25 M) by using 0.50 mg (dcw) resting cells. One unit of nitrilse activity was defined as the amount of dry cell weight able to convert 1μmol of 3-cyanopyridine to nicotinic acid per min under the assay conditions. The conversion rate in the reaction was determined by HPLC. After the optimization of reaction conditions for nitrilase production, 3-cyanopyridine substrate converted to nicotinic acid at a conversion rate of 75.0 μmol g−1 min−1. This new thermostable nitrilase might consider as a good candidate to open up the possibility for the application of this enzyme in practical production of the nicotinic acid.

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AHMED, Mufedah

PhD Student, Department of Microbiology, Goa University, India

Mufedah Ahmed Gazem was born in Taiz, Yemen. She earned her BSc. in Microbiology (2000) from the Faculty of Science, Taiz University. Later, she was appointed as demonstrator at Botany Department, the Faculty of Science, Taiz University. She got her MSc. in microbiology (2008) from the same university and her master thesis title was: Mycological State and Fungal Aflatoxin in Some Spices Used by Taiz Government, Yemen. She is interested in microbiology, fungal taxonomy, fungal toxins and bioremediation. Currently, she is a PhD student at the Department of Microbiology, Goa University, India. Her PhD dissertation focused on biosoorption of heavy metals resistant strains of terrestrial and marine fungi.

Abstract

Resistance of *Aspergillus* Species to Lead and Copper and their Metal Sorption Potential for Bioremediation

Mufedah A. H. Gazem and S. Nazareth
Department of Microbiology, Goa University, Taleigao Plateau, Goa - 403206, India

Filamentous fungi are able to accumulate significant amount of metals from their environment. The potential of fungal biomass as agents for biosorption of heavy metals from contaminated sediments has received much attention, with the aspergilli being prominent amongst the various fungal species.

In the present study, isolates of *Aspergillus* species from marine derived habitats of Goa, India, were identified and screened for their tolerance to lead (Pb^{2+}) and copper (Cu^{2+}), and their capacity for sequestration of these metals. Isolates belonging to *A. flavus, A. versicolor and A. niger* groups showed greater resistance to the metals screened as compared to the other aspergilli tested. Selected isolates were examined for their potential to sorb lead and copper from aqueous solution.

The results indicated that the isolates of *A. flavus, A. nidulans, A. niger* and *A. versicolor* had a good metal sorption capacity. These four isolates were further tested for the mechanism of metal sequestration involving passive sorption or active uptake of metal ions. It was observed that although both mechanisms did occur in these fungi, the removal of metal from solution was mainly by passive sorption by the fungal biomass.

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AMPONSAH (NEE VORSAH), Irene

Lecturer/ Data Analyst, Department of Mathematics and Statistics, University of Cape Coast

Irene Kafui Amponsah (Nee Vorsah) hails from an Island on the Keta Lagoon of Ghana. Amponsah is an alumnus of the University of Cape Coast (University of Choice) in Ghana and holds a Bachelor and Master of Philosophy in Statistics. She is currently a lecturer, Academic Advisor and Data Analyst in the Mathematics and Statistics Department of the University of Cape Coast. She published a paper entitled; Simulating a Single-Server Queue Using the Q-Simulator.

Her passion for Statistics as a career option stems from the fact that it offers the opportunity to develop statistical and probabilistic expertise, involving practical, mathematical and computing skills, while working on challenging and important problems with substantial real-world applications. It offers excellent career prospects in academia as well as in other environments, such as industry, government and support of actuarial and medical work. This necessitated her decision to pursue Mathematics (Statistics) right from the Secondary School to the University level.

Abstract

Factors Influencing the Patronage of Coconut Fruit. Case Study: Cape Coast Metropolis–Ghana

Majority (80%) of us, wherever we find ourselves in the world, may not be aware of the numerous invaluable benefits of "The Tree of Life"; the coconut tree especially the fruit. Some benefits include: its juice for weight loss, cure of hung-over, diarrhea, balance of body's pH level, among others. None-the-less, its availability and continuity to support life is hindered by the Cape St. Paul disease.

This paper therefore investigates awareness on the nutritional benefits of coconut fruit (meat, juice, and husk) and the underlying benefits consumers in the Cape Coast Metropolis of Ghana seek from the purchase of the fruit (juice and meat).

Factor analysis (PCA) was used to determine the factors that influenced the patronage of the fruit in areas known to engage in the cultivation and sale of the fruit. Specifically, an empirical summary of the data set was developed where scale-items and questions were

refined and reduced to form a smaller number of coherent subscales which identified a three-factor solution.

The survey revealed that although awareness level of respondents' on some facts about the coconut fruit was moderate (40% -69%), majority (97%) of respondents consumed both the meat and the juice whereas one out of every 5persons either consumed the juice or the meat of the coconut fruit. Respondent (70%) patronized coconut fruit weekly or occasionally and the average price at which the fruit was sold ranged between 50 -70p (Ghana Pesewas) though few areas within the metropolis sold it below 50p and above ¢1(Ghana Cedis).

Consumers' patronage of coconut fruit was influenced by three factors: Health Benefits, Availability and Packaging. The development of the Coconut Patronage Scale (CPS) was a major contribution.

Keywords: Coconut Patronage Scale (CPS), Health Benefits, Cape St. Paul Disease, Factor Analysis, Nutritional benefits, Tree of life.

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AMROUNI, Oula

PhD Researcher, National Institute of Marine Sciences and Technologies, Salammbô

Oula Amrouni obtained her Master's degree in geology applied to environment at Tunis El Manar University, Tunisia. Then in 2008, she completed her PhD in the Geological Department, Laboratory of Mineral Resources and Environment, University of Tunis, working on the coastal morpho-hydrodynamic and sedimentological process by quantification of dune/ beach system and the interaction with the natural factors (wind and waves). She also participated in the development of a Spanish numerical model of refraction of wave and current circulation (SMC), with the collaboration of the University of Cantabria, Spain in the coastal sensitive parts in several beaches in Tunisia.

In addition, she acquired a research ability in the different aspects of the aeolian dynamics flow of the coastal foredunes, methods of measuring, and interpretation of the conditional factors of this dynamics. Her research focused mainly on the understanding of the marine bar system undertaken by the morphological and sedimentological investigations using simultaneously topo-bathymetric survey.

Since 2008, Oula Amrouni has been recruited as a PhD researcher in the National Institute of Marine Sciences and Technologies (INSTM). Her research involved the marine sedimentary dynamics and the modelling of the coastal processes. She has also been a researcher member of several international projects related to the forecast sea level rise and the management purposes since 2002. She has also been teaching professional master's degree in the University of El Manar, the University of Sousse, the University of Sfax, Tunisia, and mentoring of undergraduate research projects (from 2002 to 2012).

Abstract

Contribution of Grain Size Trend to Sediments of Microtidale Beach: Case of the Tunis Gulf (Cape Gammarth-Cape Ferina, Tunisia)

The oriental Sahel of Tunisia is an interested study field that offers many beach types. The objective of this study is to gain knowledge of present structures, processes and relationships of the marine environment around coastal Tunisia in order to provide a fundamental scientific understanding and facilitate: The efficient exploration, exploitation and conservation of coastal areas; the estimation of the sand reservoirs of the sea bottom suitable to the judicious management of the shoreline; and the understanding of hydrodynamic process and sedimentological characteristic to improved utilization of environmental information in maritime activities.

Sediments collected from the swash zone and the coastline slope at the beach of Tunis gulf, between Cape Gammarth and Cape Ferina, in November 2009 are used to (1) establish the grain size pattern (2) assess the effect of urban and natural structures and (3) understanding the complex interactions between sedimentology, morphology and hydrodynamics process in the nearshore.

Generally the swash zone sediment of the Tunis gulf beach have an average mean diameter of 0.35 to 0.085 mm, while from the coastline at 0.25 mm. The most of the samples showed an unimodal distribution, finest with a good sorting, negatively skewed with leptokurtic distribution. The grain size showed coarsening trend with the slope of the nearshore as a result of action of cross shore current.

In the other hand, the trend nearshore increase in the mean grain size was locally distorted at the river mouths, lagoon and harbour structures. The overall characteristic of sediments (90%) in this part showed finer size to silt, negatively skewed and with a leptokurtic distribution.

Although the shoreline has been modified by human activity, the gulf of Tunisia bay has retained its natural configuration. To understand the variability at the nearshore-coastline interface, we characterised the morpho-hydrodynamic of sediments. The prevailing north east and eastern wave, lead to a NNW/SSE longshore drift intercepted by local sedimentary cell; which seems to be the factor of the bimodality and mixing of different grain population observed at the nearshore of Tunis gulf.

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ANIS, Galal

Assistant Researcher, Field Crops Research Institute, Rice Research and Training Center (RRTC), Sakha, Kafr El-Sheikh, Egypt

Gala Bakr Anis was born in January 1983, in Egypt. He is an Assistant Researcher, Agriculture Research Center, Rice Research and Training Center (RRTC), Egypt. He works in the field and the lab to improve rice quality and higher yield. The new rice cultivars have been released to the famers every year by the department. He obtained his MSc. in Plant Breeding entitled; “Breeding for Earliness and Some Agronomic Characters in Rice Oryza Sativa L.” from the Agronomy Department, the Faculty of Agriculture, Kafr El-Sheikh University, Egypt. Currently, he is pursuing his PhD in plant breeding and Genetics, entitled: "Development and Evaluation of New Restorer and Maintainer Lines and their

Relationship to Heterosis in Rice", in the Genetics Department, the Faculty of Agriculture, Mansoura University, Egypt.

Abstract

Genetic Components and Heterosis among Line x Tester Crosses for Some Physio-Morphological Characters in Rice (*Oryza sativa* L.)

An experiment Line × tester was conducted at the Experimental Farm of Rice Research and Training Center, Sakha, Kafr El-Sheikh, Egypt during 2009 and 2010 rice growing seasons to evaluate the performance of 27 F1 hybrids along with 12 parents in rice genotypes. Analysis of variance revealed highly significant differences among treatments, parents, parents vs. crosses and crosses for panicle length, number of grains per panicle, days to heading, number of panicles/plant and grain yield per plant. Lines were significant for number of grains per panicle and number of panicles/plant while testers and lines × testers were significant for all the traits. The results revealed that the estimates of the additive variance (σ^2 A) and the relative importance of GCA% for all traits under studied was lower than those dominance variance (σ^2 D) and relative importance of SCA%. These findings indicated that the all traits was largely governed by dominance gene action.

The results showed that heritability estimates in broad sense (Hbs) were high for all characters. This further suggested that a major part of the total phenotypic variance for these characters was due to dominance genetic variance and environmental effects. Thus, results led to conclusions the selection for this traits must be done in the late generation. Hybrids like GZ 9057-66-1-3-3/SKC23808-125-2-3-1-1, GZ 8455-9-1-1-2/ SKC23808-125-2-3-1-1, Sakha 103/ SKC23808-125-2-3-1-1, GZ 9319-4-1-3-2× IR71676-90-2-2, GZ 9319-4-1-3-2 × SKC-23819-189-1-1-1-3, Sakha 105/ SKC23808-125-2-3-1-1 and GZ 9057-6-1-3-2 × SKC-23819-189-1-1-1-3 showed high mean performance and heterobeltiosis for grain yield and are proposed for heterosis breeding.

Keywords: rice, genetic parameters, heritability, heterosis

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ANWAR, Tanzeel Huma

PhD Scholar, Quaid-i-Azam Univversity, Islamabad, Pakistan

Tanzeel Huma is interested in the role of reproductive neuroendocrinology developed during her master's program. She wanted to continue her education with a study that will help her gain a deeper understanding of communication within the brain and also between the brain and reproductive system. She is a PhD student under the supervision of Prof. Dr. Muhammad Shahab, Quaid I Azam University, Islamabad, Pakistan.

In 2009, she visited the Laboratory of Dr. Meenakshi Alreja (Yale University, USA) for a period of six months under the IRSIP program. She was the first student to visit Yale University under this program. In this laboratory, she got an opportunity to learn the most recent Electrophysiological technique as well as patch clamping. This laboratory is actively working on Effects of Nicotine on the Prefrontal Cortex: Relevance to Schizophrenia and GnRH GFP, Vglut2-GFP neurons and Nicotine. She was involved in all the ongoing projects of the laboratory and actively participated in all laboratory and departmental meetings organized during her stay. She learned how to practically patch-

clamp from many different types of neurons, those were identified in various lines of transgenic mice, such as GnRH-GFP, vGluT2-GFP and NPY-GFP mice. Her external supervisor, Dr. Meenakshi Alreja, was highly satisfied with her progress and appreciated her project too.

After coming back she joined her laboratory in January 2010. In May 2011, she joined the Kunming Institute of Zoology, under the supervision of Prof .Yuanye Ma via TWAS-CAS fellowship award.

She presented a poster in the 1st Biotechnology World Congress held in Dubai, where she won the third prize for poster presentation. Currently, she is working in the key laboratory of brain and cognitive sciences, and soon will obtain her PhD. Her goal after that is to serve her home country in a much better way.

Abstract

A Novel Role of Kisspeptin in the Proliferation and Differentiation of Neural Stem Cells (NSC) Derived from Rhesus Monkey (*Macaca Mulatta)*

Tanzeel Huma[1,2*], Wang Zhengbo[2], Yuanye Ma[2], Muhammad Shahab[1*].

1. Laboratory of Reproductive Neuroendocrinology, Department of Animal Sciences, Faculty of Biological Sciences, Quaid-i-Azam University, Islamabad, Pakistan, 2. State Key Laboratory of Brain and Cognitive Sciences, Kunming Institute of Zoology, Chinese Academy of Sciences, Kunming, Yunnan, 650223, P. R. China.

Kisspeptin-GPR54 signaling has recently emerged as a potent regulator of the reproductive axis, elicitor of GnRH and gonadotropin secretion. Recently, it has also been observed that kisspeptin (Kp) treatment can cause dendridic extension of GnRH neurons in brain slices *in vitro*. Stem cell based therapy carries great potential in the treatment of neurodegenerative diseases. This study was designed to determine the effect of the Kp on neural stem cells. We selected two cell lines of the Rhesus macaques (LYON-ES cells and R366.4 rESCs). Four doses of Kisspeptin were used i.e., 10^{-7}nM, 10^{-8} nM ,10^{-9} nM, 10^{-10}nM. The stem cells were treated with Kp for 3 days. Flow cytometry and cell count techniques were used to analyze the cell proliferation rate, the number of rosettes was also counted. Immunocytochemistry (ICC) was done for Nestin (NSC), Tuj 1(neurons), GFAP(astrocytes), GnRH (GnRH neurons).

Kisspeptin affects the proliferation of the cells in the dose dependent manner; higher the dose lower proliferation. For ICC, No significance expression of Nestin was observed means that all the cells were differentiated, negative for GFAP, Positive for Tuj 1 and GnRH. At Kisspeptin 10^{-7}nM and 10^{-10}nM higher expression of Tuj and GnRH was observed. Morphologically and biochemically most of the neuronal cells look like GnRH neurons.

This study for the first time evaluated the role of Kisspeptin in the proliferation and differentiation of neural stem cells.

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ASAMOAH, Akwasi

Research Assistant, Faculty of Renewable Natural Resources, KNUST, Ghana

Coming from Kumasi, the once called Garden City of Ghana, and having to frequently help his parents on their farm, Asamoah found himself wondering for years what constitutes a tree that gives us all this shade and how does it grow to such huge size from only a small seed. From that infant stage, he knew he will end up in Natural Resources. Lo and behold he did, as though it were appointed from heaven, even against the best wish of his parents for him to become a medical doctor, as it appeared he was the only hope of a medical doctor for his family whose fervent wish for him was a gainful job and a fancy car to show off right after school. Against all odds, after secondary school, he found himself reading Natural Resources and majoring in Wood Science and Technology at Kwame Nkrumah University of Science and Technology, Kumasi, Ghana. He took his Bsc and MPhil from Faculty of Renewable Natural Resources of the Kwame Nkrumah University of Science and Technology where he works as a Researcher in Natural Resources Science, Technology and Management. Asamoah's research interests range from Wood, to Forest, Water, Environmental Science, Technology and Management. His current research focus is the preservation of non-durable timber with extractives from durable ones.

Abstract

Efficacy of *ErythropleumSuaveolens* Water Extractives on the Durability of Ghanaian *Antiaristoxicaria* and *Aanariumschweinfurthii*

In an effort to find new preservatives which are less hazardous, the efficacy of branch bark, leaf, and heartwood water extracts of *Erythropleumsuaveolens* (Potrodom), a highly durable timber species, as apotential preservative was tested on *Antiaristoxicaria* (Chenchen) and *Canariumschweinfurthii* (Bediwonua) of low natural durability by impregnation. Impregnated Chenchen and Bediwonua were exposed in the field for 6 months in accordance with a modified EN 252. Durability ratings, hardness and mass losses were measured in assessing their field performance. Though Bediwonua and Chenchen retained branch bark water extract minimally, it conferred the highest resistance to deterioration**.** Branch bark water extract represents a potential source of wood preservative.

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BABAK, Michael

Tutorial Fellow, University of Nairobi

Babak was born in Trans-Nzoia district, Kenya in 1985. He went to Nalulingo primary school and sat for the Kenya Certificate of Primary Education (KCPE) in 1998. He proceeded to Eshikulu secondary school where he sat for the Kenya Certificate of Secondary Education (KCSE) in 2002. In 2004, he proceeded to the University of Nairobi to pursue a Bachelors degree in Veterinary medicine. Upon the successful completion of the course, he was awarded the BVM degree in 2009. In addition, he was awarded the University scholarship to pursue a Science Master's degree in Veterinary Anatomy. He also double up as a tutorial fellow in the same university. At the moment, he is studying the male reproductive organs in Lake Magadi tilapia (*Alcolapia grahami*); a unique and endangered fish surviving in a very hostile environment of Lake Magadi Kenya. He is looking forward to

understanding how they manage to reproduce in such a harsh environment and the potential of such findings contributing to the conservation and preservation of their reproductive capacities.

Babak is also collaborating with a number of researchers around the world in studying the various adaptive strategies of Magadi tilapia and how such findings may be used to improve productivity of fish farming in semi arid areas in Kenya and the region.

Abstract

The Structure of the Male Reproductive Organs in Lake Magadi Tilapia (*Alcolapia grahami*); A Fish Living on the Egde

Michael B. Papah[1], Seth M. Kisia[1], Rodi O. Ojoo[1] Andrew N. Makanya[1], Chris M. Wood[2], Geraldine D. Kavembe[3], John Maina[4], Ora E. Johannsson[5], Harold L. Bergman[6], Adalto Bianchini[7], Pierre Laurent[2], Lucas F. Bianchini[7], Claudine Chevalier[2], and Daniel W. Onyango[1]

[1]Dept. of Veterinary Anatomy and Physiology, University of Nairobi, 30197-00100, Nairobi, Kenya
[2]Dept. of Biology, McMaster University, Hamilton, ON, Canada L8S 4K1
[3]Dept. of Range and Wildlife Sciences, South Eastern University College, 170-90200, Kitui, Kenya
[4]Dept. of Zoology, University of Johannesburg, South Africa
[5]Great Lakes Laboratory for Fisheries and Aquatic Sciences, Dept. of Fisheries and Oceans, Canada, Burlington, ON, Canada L7R 4A6
[6]Dept. of Zoology and Physiology, University of Wyoming, Laramie, WY 82071, U.S.A
[7]Instituto de Ciências Biológicas, Universidade Federal do Rio Grande (FURG), 96201-900, Rio Grande, RS, Brazil

Alcolapia grahami is a small cichlid fish which subsists in the highly alkaline (pH 10), hot (25-42^{o}C) lagoons of Lake Magadi, Kenya. The morphology of the testes of the fish was studied grossly and with light and transmission electron microscopes to find out whether any adaptive features exists for survival in an extreme habitat. Located in the coelomic cavity, the testes were bilobed and connecting with the spermatic duct caudally while exited via the genital papilla. The coelomic cavity which was lined with a parietal peritoneum was laden with a densely pigmented black substance on the medial aspect. This was thought to protect the testes against the intense UV radiation. The testicular parenchyma was bound by a capsule, and comprised the germinal and interstitial compartments. These were separated by a lamina propria, formed primarily by myoid cells.

The organization of the germinal areas presented an unrestricted lobular testis type exhibiting complete cystic spermatogenesis. Spermatids underwent type-I spermiogenesis, giving rise to typical primitive spermatozoa. Sertoli cells were generally flat (with a few of them being cuboidal in shape) and contained several phagocytosed cellular debris and lysosomes. Leydig cells, spheroidal with lots of lipid droplets, were thought to be precursors of testicular androgens. Excurrent ducts, which store and transport spermatozoa, comprised efferent and main spermatic ducts intratesticularly, and the common spermatic duct and genital papilla extratesticularly. This fish exhibits regular spermatogenesis irrespective of the harsh environmental conditions in which they live.

Keywords: Lake Magadi, *Alcolapia grahami*, testes

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BAHEY-EL-DIN, Mohammed

Lecturer, Faculty of pharmacy, Alexandria University, Egypt

Mohammed Bahey-El-Din got his Bachelor degree in Pharmaceutical Sciences from the Faculty of Pharmacy, Alexandria University, Egypt in 2000. He got his Master's degree in Pharmaceutical Microbiology from the same institution in 2004. In 2009, he got a Ph.D. in Microbiology from the School of Pharmacy, University College Cork (UCC), Ireland. Then, he worked as a Post-doctoral Researcher in the Department of Microbiology, UCC, Ireland till July 2010. Currently, Dr. Bahey-El-Din is a Lecturer in the Department of Pharmaceutical Microbiology, the Faculty of Pharmacy, Alexandria University, Egypt. His research interests include biotechnology and vaccinology. He is interested in mucosal vaccinology and particularly in the area of *Lactococcus lactis*-based vaccines. He has several international publications in this area and co-authored a chapter on bacterial immunomodulators in the *PathoBiotechnology* book published by the American publisher; Landes Bioscience.

Abstract

Development of Potential Vaccine Candidates Against *Schistosoma mansoni* Using Novel Delivery Systems

The current project aims at developing an effective vaccine candidate against Schistosomiasis which is a major national problem. Schistosomiasis represents a potential health and economic threat both nationally and worldwide. In Egypt, Schistosoma constitutes a significant and continuous cause of morbidity and economic losses. Despite the widespread treatment of schistosomiasis using Praziquantel, re-infection rates in endemic areas remain constant thus limiting the ability of this approach to eradicate the disease. Moreover, Praziquantel resistance is an annoying threat that is not unexpected.

Due to the latter facts, effective vaccine development against schistosomiasis suggests itself strongly as a definitive solution for this problem. However, this vaccine has not been a reality yet due to the incomplete approaches investigated which mostly tested antigens individually rather than in properly-formulated multivalent antigen combinations. The objective of the present project is to develop a multivalent vaccine against Schistosoma mansoni using novel delivery systems.

Genes of three target antigens have been amplified using polymerase chain reaction (PCR) after reverse transcription of their respective mRNA isolated from adult S. mansoni worm. The genes have been cloned in plasmids and transformed to intermediate E. coli hosts. Genes have been sequenced and identity was confirmed by use of the BLAST online bioinformatic tool.

Plasmids will be transformed to expression hosts (Escherichia coli and Lactococcus lactis) where antigen production will be induced and the respective antigens purified and quantitated.

Suitable lipid-based Nano-delivery systems will be tailored to accommodate the potential schistosomal antigens. In addition, live L. lactis vaccine vectors will be created as a novel live Micro-delivery system. These systems will be assessed in-vitro and in-vivo for proper presentation of the antigens and for vaccine protective efficacy. Elicitation of

specific immune responses will be assessed. Protection against schistosomiasis will be also evaluated using the mouse challenge model.

This work is being funded by the Alexandria University Research Enhancement Program (Alex-REP), project code HLTH10.

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BELLERA, Carolina

PhD Student, Medicinal Chemistry, Department of Biological Sciences, Faculty of Exact Sciences, National University of La Plata, Argentina

Carolina was born in the town of Tres Lomas, Buenos Aires, Argentina. While still a Pharmacy student, she got involved in research and extension projects and non-governmental medical organizations which contributed to both her academic and extra-academic education.

In 2005, she attended a Medicinal Chemistry course, and after passing the course examination, Prof. Dr. Luis Bruno-Blanch invited her to participate in his research project. During that period, she received a scholarship from Buenos Aires State Scientific Research Commission. After obtaining her degree, she worked part-time *ad-honorem* for four years in the field of Molecular Topology-based Drug Design.

She has always felt inclined to applied research lines with an important social dimension, an inclination that has led to the choice of her PhD thesis research line: the computer-assisted development of novel treatments for a Latin American forgotten disease: Chagas' Disease, under the supervision of Prof. Bruno-Blanch and Dr. Alan Talevi. In 2009, she obtained (through public contest) a Teaching Assistant position in Medicinal Chemistry which she is still occupying. She has recently received a 3-year fellowship from the National Council of Scientific and Technical Research (CONICET).

To the moment, she has published 9 scientific articles in national and international journals, including a (south to south) collaboration in the design and synthesis of antichagasic drugs with a Research Group from Uruguay (2011).

Abstract

Computer-aided Discovery of New Cruzipain Reversible Inhibitors for the Treatment of Chagas' Disease

Chagas disease is an endemic Latin American parasitosis associated to poverty and rural populations. It is estimated that about 15 million people in Latin America are infected with Chagas' disease; current chemotherapy for Chagas is effective only in the initial, acute phase of the disease [1]. The progressive increase in the knowledge of the molecular biology of the causal agent (*Trypanosoma cruzi*) has facilitated the rational development of specific chemotherapies to treat Chagas. The cysteine protease cathepsin L-type named cruzipain stands out among the most promising novel molecular targets to develop innovative antichagasic medications. Cruzipain is the major protease of *T. cruzi* and it is active in all stages of the parasite life-cycle; thus, cruzipain inhibitors may prove effective in all stages of Chagas [2]. Virtual screening consists in applying computational models to seek drug candidates throughout large virtual chemical repositories in an efficient manner.

We present the development of a new model based on molecular topology and capable of predicting whether a given drug candidate is or is not a cruzipain reversible inhibitor. For modeling purposes, 163 cruzipain reversible inhibitors and non-inhibitors were compiled from literature; this dataset was partitioned into representative training and test sets by application of a 2-step clustering analysis based on a hierarchical approach (maximal common substructure) and subsequent k-means clustering. Afterwards, Linear Discriminant Analysis was conducted to derive a binary classificator based on topological descriptors from Dragon Software (Milano Chemometrics). The topological model showed good predictive capability, with an area under the ROC curve of 0.878 for the test set. The obtained topological model may be used to efficiently detect novel antichagasic drugs through large chemical databases.

[1] World Health Organization on behalf of the Special Programme for Research and Training in Tropical Diseases (2007). **[2]** Cazzulo et al; *Curr. Pharm. Design*. 2001.

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BILAL, Zill-e-Huma

Lecturer, Institute of Agricultural Sciences, University of the Punjab, Lahore, Pakistan

Zill-e-Huma was born in June 1980, Lahore, Pakistan. She is specialized in Fungal Biotechnology and Enzymology. In 2000, she obtained her BSc in a Botany, Zoology and Chemistry combination, with distinction from the University of the Punjab, Lahore, Pakistan; MSc in Botany as a Gold Medalist form the University of the Punjab in 2003; and M.Phil. in Biotechnology as a Bronze Medalist from Government College University, Lahore, Pakistan in 2006. She is pursuing her PhD in Fungal Biotechnology from the Institute of Agricultural Sciences, the University of the Punjab, Lahore, Pakistan.

She was a Honorary lecturer (6 months, January 2004-June 2004) involved in teaching the "Principles of Genetics" to BSc. Honours 3rd Semester form the Department of Mycology and Plant Pathology, the University of the Punjab, Lahore, Pakistan. She held the post of a Research Assistant (6 months, February 2005–July 2005) in the Industrial Biotechnology Lab under a project entitled; "Invertase Production By *Saccharomyces cerevisae*" supervised by Prof. Dr. Ikram-ul-Haq. (SI) from Government College University, Lahore, Pakistan.

Currently, (from February 2006 to date) she is a Lecturer at the Institute of Agricultural Sciences, (teaching BSc. Honours and MSc. Honours) at the University of the Punjab, Lahore, Pakistan.

Her MSc. dissertation was on "Protein changes associated with dedifferentiation and differentiation in *in vitro* callus cultures of sugar cane (*Saccharum* spp. *hybrid* cv. Cp-43/33)" from the Department of Botany, the University of the Punjab; and her M.Phil. thesis was entitled "Studies on Invertase Biosynthesis by *Saccharmyces cerevisae* in Shake Flask" obtained from the Industrial Biotechnology center, Government College University.

She is pursuing her Ph.D. on the "Isolation and Purification of Laccase Enzyme from Wood Rotting Fungi of Pakistan" in the Institute of Agricultural Sciences, the University of the Punjab.

There are two books in her credit published by VDM Verlag Dr. Muller entitled; *Induction of Resistance in Garlic Against Basal Rot Disease* and *Biosynthesis of cephalosporin C by Aspergillus and Acremonium Species.*

Bilal has published two research papers one in a national and one in an international journal entitled: Aftab F; **Aftab ZH**; & Iqbal J. in 2004. Protein Changes Associated with Dedifferentiation and Differentiation in *In Vitro* Callus Cultures of Sugarcane (*Saccharum* spp. *hybrid* cv. CP- 43/33). *Pak. J. Biochem and Mol bio.* ***37 (2)*** *67-73*; and Siddiqui I; Bajwa R; **Huma ZE** & Jaavaid A. 2010. Effect of Six Problematic Weeds on Growth and Yield of Wheat. *Pak. J. Bot.,* ***42(4):*** 2461-2471.

Abstract

Partial Purification and Characterization of Invertase by Aspergillus niger by Solid State Fermentation on Carrot Peels

Potential of different Aspergillus species, cultivated under solid-state fermentation (SSF) using carrot peels (Daucus carota L.) as substrate was investigated. The highest productivity of invertase (7.95 U mL-1) was achieved by using Aspergillus niger on 90% initial moisture content with 2.5 ml inoculum size after 72 h of incubation period. The enzyme was purified about 1.42 fold by ammonium sulphate precipitation. It showed thermal stability from 20-40o C over a pH range 5.5 to 6.5 with maximum activity at pH 5.5 and 50° C. The enzyme was highly active towards sucrose at both concentrations viz: 0.1 M and 0.5 M, but it showed less activity towards glycerol. It was completely inhibited by Hg2+ (1mM) and slightly stimulated by Co2+ and Na+1at the same concentration.

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COMPAORE, Florentin

Advanced Laboratory Technician, National Public Health Laboratory

COMPAORE Wendkuuni Florentin has a master's degree in Environmental and Industrial Risks Management from the University of Ouagadougou and an ongoing Master's degree in Management of Project from the School of Management. Florentin also holds a bachelor degree in Applied biology, food processing options and a Two year diploma (Diplome Universitaire de Technologie, DUT) in food quality control.

Florentin works at the national Public Health Laboratory in Ouagadougou, Burkina Faso as an Advanced Laboratory Technician; in charge of the section of drink analysis. His work is mainly focused on rural based mitigation solutions of environmental impact, water and carbon footprint assessment and alleviation options implementation in the rural area.

Renewable based devices introduction in main sources of revenue activities in rural area are among the project that has already been carried out, especially solar water heater to provide preheated water in main sources of revenue processing, which need hot water and long time cooking. "Environmental Impact of Street Food in the City Town of Ouagadougou" has been already done and presented at the conference on "Climate Change and Food Security" held in Karen, Nairobi, Kenya on 11-12 November 2011.

Florentin has been chosen to participate in many forums to defend water related matters in rural areas and to clearly present issues and propose rural adapted solutions.

Abstract

Life Cycle Assessment of Rural Traditional Beer Processing in Burkina Faso

Climate change if the great challenge of this day. Find sustainable solution to reduce it impact is the best way to solve it. Developing countries are the most affected of the impact due to many factors like poverty, lack of good policy and others. Rural area in developing country will be deeply threatened by Climate Change.

That is why this study has been carried out to assess environmental impact of one of the main sources of revenue in rural area in Burkina Faso in objective to reduce it contribution to environment load. Also to provide database to decision-makers and stakeholders willing find sustainable ways of development of Rural Area.

The traditional beer processing has been considered as a system and divided into four sub-systems for the study purpose: Raw material purchasing, Malting, Brewing and conditioning/sale. This study shown that the brewing is the sub-system that has a bulk impact to environment with 99.64% of GWP, 59.70% of water consumption, 64.52% of solid waste production, 40% of wastewater production. The overall contribution to GWP is 5.88 g eq C/per Functional Unit (FU) without firewood and 1 361.95 g eq C/FU with firewood. Water consumption per FU is 3.33 liters with 0.15 kg/FU for solid waste. Wastewater has been found equal to 1.84 liters/FU. Biomass demand is about 2.7 kg/FU. The annual contribution of beer processing in rural area for 2010 can be estimated at 197 483.16 tons eq C.

It comes out through this study that sustainable management of firewood source forest decrease deeply GWP of traditional beer transformation. Also, “Cleaner Production” could be implemented in the process to reduce environmental load of Traditional beer. Waste treatment has to be implementing in rural area and composting fit to the need of villagers as they are farmers. Solar water heater could be uses for preheating water for the process and reduce firewood consumption.

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DAHUNSI, Olatunde Samuel

Researcher, Covenant University, OTA, Nigeria

Dahunsi Olatunde Samuel was born over three decades ago, he had his elementary education in Nigeria before proceeding to the Ladoke Akintola University of Technology, Nigeria where he obtained a Bachelor of Technology in Environmental Biology. In order to further his academic horizon, he recently concluded his Master of Science (M.Sc) in Environmental Microbiology and Biotechnology from Covenant University, Nigeria. Dahunsi Olatunde Samuel also has other academic qualifications, including a Post-Graduate Diploma In Education, a Proficiency certificate in Management, among others. As a young researcher, Dahunsi has a profound interest in Public/ Environmental Health and the Bioconversion of Bio-wastes into useful energy products.

He has had thorough training under distinguished academics whose research work has been published in reputable journals all over the world. As part of his training, Dahunsi

has successfully imbibed qualitative leadership and managerial skills into his leadership kaleidoscope. He is a prolific reader and writer and his research efforts have produced nothing less than six academic publications, some already published while others are in press. He attended a number of international conferences within and outside Nigeria where some of his works have been presented amidst loud ovation.

Dahunsi Olatunde Samuel enjoys reading and writing outside his working hours and has authored two books focusing on general issues of life. He currently teaches at the Royal Institute of Health Technology, Ifo, Nigeria and he is an active member of the Covenant University Public Health and Wellbeing Research Group where his impact is well felt.

Abstract

Bioengineering of Anaerobic Digester and the Mesophilic Digestion of Bio-wastes for Green Energy Generation

The rising cost of fossil oil, potentially diminishing supplies, attendant pollution problems associated with petroleum and allied products as well as desert encroachment have provided the impetus to consider alternative sources of energy. An investigation was launched into the bioengineering of an Anaerobic Digester system and the production of biogas from biological wastes including food wastes and Human excreta all generated within the Covenant University campus. The experiment was carried out using a 30-liter laboratory/pilot scale anaerobic digester which was designed and constructed from locally available raw materials using local technology for a period of 30 days. The volume of gas generated from the mixture was 25,800cm^3 and further analysis revealed its composition to be 73% Methane, 17% Carbon dioxide, 6% Nitrogen,1.5% Hydrogen, 1% Hydrogen sulfide and 1.5% Oxygen. The physico-chemistry of the feedstock in the digester revealed an initial drop in pH to acidic range and a steady increase 7.2 – 7.4. The temperature remained relatively constant at mesophilic range: 32 – 35^{o}C throughout the study period. The C/N ratio was within 22:1.1. Population distributions of the microflora show that aerobic and anaerobic bacteria were the active community members although with the latter higher than the former. Among the widely distributed are Micrococcus luteus, Bacillus subtilis, Escherichia coli and Clostridium perfringens. Methanogens identified belong to the genera Methanobacterium, Methanococcus and Desulfovibrio. In developing nations and especially in the rural areas where electricity and heat are sparse and biological waste is abundant, the anaerobic digestion system could be the much awaited solution.

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DI IANNI, Mauricio

PhD Student, National University of La Plata

Mauricio was born in 1985 in the city of La Plata, Buenos Aires, Argentina. He followed his high school studies in an institute oriented to the teaching of economic sciences but his affinity to chemistry drawn him to develop an interest in the pharmaceutical sciences and the art of healing.

In 2004, he started his universitary education in order to obtain a degree in Pharmacy at the National University of La Plata. There, he realized the importance of medications to society and how often people's right to health is set aside as a consequence of economic interests. Because of this, when he reached the end of his career, he became involved in

universitary extension projects directed to the production of compounded drugs in order to provide medications to the most vulnerable sectors of society.

In 2009, he started a research training in the Medicinal Chemistry Lab of the Faculty of Exact Sciences, where he obtained his degree, under the advice of PhD Alan Talevi and Prof. Luis Bruno-Blanch. This led him to participate in a Research Project aimed to the rational discovery of new drug treatments for refractory epilepsy. He has recently, in April 2011, obtained a 3-year fellowship from the Argentinean National Council of Scientific and Technological Research (CONICET) in order to develop his PhD studies. Mauricio's first result in this field has been published recently (*J. Chemometr., 2011*).

Abstract

Computer Assisted Early Identification of PGP-substrates and Non-substrates as a Strategy for the Design of New Drugs for the Treatment of Refractory Epilepsy

P-glycoprotein (Pgp) is one of the major efflux transporters associated to multi-drug resistance issues (i.e. inability of a wide-range of unrelated drugs to control disease progression and/or symptoms) in a number of health conditions, such as epilepsy, cancer and HIV. Therefore, early recognition of Pgp substrates is an important step in the drug design process in order to develop novel therapies capable of overcoming Pgp-mediated multi-drug resistance issues My current work aims to identify -through application of computational tools- which structural features are essential for a drug to be recognized and transported by Pgp. Once a computational model (or an ensemble of models) is developed it can be applied to assist the search of new therapeutics for the treatment of Pgp-mediated multidrug resistance issues. In our case, we are interested in applying topological models to assist the design of new antiepileptic agents.

To the moment, my results include the development of an ensemble of highly specific topological models capable of differentiating a Pgp-substrate from a non-substrate (Di Ianni et al., J. Chemometr., 2011). This ensemble has been applied to select candidates for the treatment of refractory epilepsy from a large virtual repository of small organic drug-like molecules (ZINC database). We have selected a first series of six candidates that are being pharmacologically tested in preclinical animal models of epilepsy. Two of them **1-hydroxycycloheptane-1-carboxylic acid** and **7,7 dimethylbicyclo [2.2.1]heptane-1-carboxamide** have already shown to be effective to protect from seizures in an animal model of epilepsy: the *MES* test, at the minimal doses stipulated by the NIH Anticonvulsant Drug Development Program.

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DIAGNE, Nathalie

Postdoctoral Student, Laboratoire Commun de Microbiologie IRD/ISRA/UCAD Centre de Recherche de Bel-Air, Dakar, Sénégal

Nathalie is a Postdoctoral Student at the Laboratoire Commun de Microbiologie (IRD/ISRA/UCAD), Centre de Recherche de Bel-Air, Dakar, Senegal. From 2011 to 2012, she has been working on the identification of strategies for the rehabilitation of saline soils (e.g salt tolerant species such as Casuarina…). In 2011, she obtained her PhD in Plant Biotechnology from Cheikh Anta Diop University (UCAD), Dakar, Senegal on the Relationship Between Arbuscular mycorrhizea (AMF) and the Tropical Tree *Casuarina equisetifolia*.

In 2007, she obtained her MSc in Plant Biology on the "Impact of Ectomycorrhizal Symbiosis on *Acacia mangium* Growth and Development" from Cheikh Anta Diop University (UCAD) Dakar, Senegal.

Abstract

Impact of Soil Microbial Symbioses on Casuarina. glauca and C. equisetifolia Tolerance to Salt Stress

Soil salinization is a major cause of land degradation in arid and semi-arid regions and it reduces ecosystems productivity and biodiversity. The causes of the soil salinization are the solubilisation of rocks which releases salt, the seawater salt spray and the human activities such as irrigation. In Senegal, more than 1Mha are affected by salinity. Salt tolerant plants provide potential tools to rehabilate salinised soils; we choose pioneer trees from the *Casuarinaceae* family such as *Casuarina glauca* and *C. equisetifolia* for our study. These fast growing species are tolerance to salt and form mutualistic interactions with nitrogen fixing bacteria and mycorrhizal fungi that increase nutrient and water uptake.

The aims of this project are 1) to test the impact of symbiotic microorganisms (*Frankia* and Arbuscular mycorrhizal fungi) on salt tolerance in *C. glauca* and *C. equisetifolia*, 2) to test the impact of salt on the establishment of these symbioses, 3) to identify plant genes involved in salt tolerance in *C. glauca* and 4) to better understand physiological mechanisms involved in Casuarina salt tolerance.

The results of our project will lead to 1) the selection of the best combination of plant (*C. glauca* or *C. equisetifolia*) and symbiotic microorganisms (*Frankia* and Arbuscular mycorrhizal fungi) to rehabilitate salinised soils in Senegal and 2) the identification of plant genes that can be used to develop molecular markers for selection of elite Casuarina trees or to confer salt tolerance to crops.

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DOGRA, Atul

Research Associate (Socio-Economics), International centre for Agricultural Research in the Dry Areas (ICARDA)

Atul Dogra, born and raised in the rural areas of Himachal Pradesh, India; has completed his Ph.D in Agricultural Economics from Himachal Pradesh Agricultural University in 2009. Thereafter, he joined the National Centre for Agricultural Economics and Policy Research, Indian Council of Agricultural Research (ICAR), New Delhi, India for two years; where he was involved in the assessment of crop insurance schemes, validating risk assessment models in Indian agriculture and coordinating with ICAR institutes, State Agricultural Universities and private organizations.

Presently, he is working with the International Centre for Agricultural Research in the Dry Areas (ICARDA) as a Research Associate of Socio economics. He is conceptualizing, supervising and leading the socio-economic component of the South Asian pulse farmers in India, Nepal and Bangladesh, and coordinating ICARDA with ICAR and NARS partners for resource use efficiency and improving the livelihood of rural communities through pulses in India under ICARDA-ICAR work plan. He is

involved in carrying out the bench mark surveys and impact assessment studies for pulse farmers while working closely for the socio-economic component of the National Food Security Mission (NFSM) pulses projects under the Department of Agriculture and Cooperation (DAC), in Eastern India. With 8 years research experience and 18 research publications, he has presented his work at various International and National platforms. He is an active member of Young Professionals' Platform on Agricultural Research for Development (YPARD) and other societies. Some of his key interests are agricultural development in rural areas, economic issues in livestock and impact assessment studies. His hobbies are playing Hockey and cricket.

Abstract

Enhancing Pulse Production Through Intensification of Rice-fallows with Pulse as a Second Crop for Food and Nutritional Security in South Asia

With 1.6 billion inhabitants, South Asia is home to half of the world's poor; 75% living in rural areas. The region is home to a large number of urban and rural poor who spend a large proportion of their income on food. Higher food prices drive more people into poverty and increase the distress among those who are already poor. Malnutrition continues to be widespread in South Asia, a problem likely to worsen as food becomes more expensive. Even before the recent spike in food prices, child malnutrition was worse in South Asia than in sub-Saharan Africa. In the late 1990s, the proportion of children under five underweight for their age ranged from 38% to 48% in South Asia compared with 21% to 28% in selected African countries. Since then, the situation is likely to have deteriorated in both regions. Majority of population in this area is culturally vegetarians and their major source of protein is pulse for which forms a important component of their daily diet.

Sustainability of cereal-based systems have become an issue due to mono-cropping and diminishing profitability. Pulses with improved production technologies will not only increase system productivity, but also improve the nutritional status of the population. However, pulse farming is usually marked by low yields from low yield potential of local varieties, limited use of inputs and inefficient production techniques. Another major cause of low productivity and high temporal and spatial variability in yields is the susceptibility of currently grown cultivars to new environmental stresses in the context of changing climate.

In India, rice fellow area (12 million ha) is almost equivalent to the net sown area of Punjab, Haryana and western Uttar Pradesh-the seat of green revolution in India. Of the total rice fellow area about 82% lies in the eastern regions (Assam, Bihar, Chhatisgarh, Jharkhand, Madhya Pradesh, Orissa and West Bengal). Similarly there is 0.24 million ha rice fallow in Nepal and in about 0.35 million ha in Bangladesh. If this area is brought under cultivation, it may usher another green revolution. We are targeting these rice fallows.

Introduction of rabi legume crops like lentil and grass pea in these areas using various conservation agriculture techniques and other improved practices, improving the seed supply system of these countries by setting up Village based Seed enterprises (VBSEs) etc, may bring green revolution in this backward, poverty-ridden, and deprived regions of the country. This would benefit million of poor small landholders solely depended in agriculture for their livelihood.

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EGEDIGWE, Chima

Doctoral Student, Michael Okpara University of Agriculture, Nigeria

Egedigwe hails from the Abia State in Nigeria. She is presently enrolled for a Doctoral programme at Michael Okpara University of Agriculture in Umudike, Nigeria. She obtained her BSc in Biochemistry from Abia State University, Uturu, Nigeria with a Second Class Upper division and a Master of Science Degree in Nutritional Biochemistry from Michael Okpara University of Agriculture Umudike, Nigeria in 2005 and 2010 respectively. She is a student member of the following associations in her home country; the Nutrition Society of Nigeria (NSN) and the Nigerian Society of Biochemistry and Molecular Biology (NSBMB). She attended various local conferences in Nigeria and has three publications to her credit.

Her hobbies are playing Volley ball and dancing. She is receptive to innovative ideas that would strengthen her scientific skills. She has a keen interest in research and strongly believes that her participation in this conference would strengthen her development and leadership skills. She also looks forward to having an impact on scientific research for the future generation of young scientists and make significant contributions to the improvement of health among Nigerians and Africans through dietary modification.

Abstract

Effect of Bioactive Constituents from *Vernonia amygdalina* Del (Bitter leaf) on Weight Regulatory Mechanisms in Albino Rats

Food security and adequate nutrition remains Africa's fundamental challenges for human welfare and economic growth. *Vernonia amygdalina* has been used in ethnomedicine as an antidiabetic, antihypertensive and in the treatment of a wide variety of ailments. Previous studies done in our laboratory using *Vernonia amygdalina* suggest some chemopreventive effects against Cardiovascular Diseases because of its observed lipid lowering potential. My previous research showed that albino rats fed *Vernona amygdalina* at a higher percentage of incorporation into diet achieved a reduction in weight. This has formed the basis of my present research interest on how *Vernonia amygdalina* could achieve weight loss and what bioactive constituents present in this leafy vegetable could be responsible for the weight loss mechanism. I am interested in investigating the effect of partially purified fraction of *Vernonia amygdalina* extracts on neuropeptides especially leptin using Albino rats. What mechanisms are involved when *Vernonia amygdalina* is administered to the experimental rats? Obesity is one the most prevalent nutritional problem in Africa and a risk factor for several chronic diseases. Considering the high prevalence of metabolic diseases, the use of *Vernonia amygdalina* in resource poor economies by an impoverished populace should be strongly promoted.

Therefore my study is to ascertain the role of Nigerian dietary vegetables in the prevention, delay and possible reversal of symptoms associated with non communicable diseases.

Keywords: Nutrition, disease, *Vernonia amygdalina*, weight loss, obesity

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ELAGAMEY, May

Pharmacist, Tanta Fever Hospital

Elagamey obtained her Bachelor of Pharmaceutical Science, with a Very Good grade in 2006, from the Faculty of Pharmacy, Tanta University, Egypt; and her Master in Pharmaceutical Technology in 2012, from the Faculty of Pharmacy, Tanta University, Egypt.

She has been working at the Fever Hospital, Tanta, El-Gharbia, from 2007 until now. She has one publication; **Yousef, M.K.; El-Fatatry, H.M., Zein El-Dein, E. and Elagamey, M.A. (2011).** Preformulation Studies of Sustained Release Suspension of Naproxen Solid Dispersion as a Model Drug. *Venture Wise Sci. J*., 3:16-29.

Training program:

1) Management and control in pharmacy (Inspection and Storage).
2) Use of ARVs in HIV \ AIDS Management.

Abstract

Evaluation of In-vitro Dissolution and Stability of Naproxen and Sustained Release Naproxen Suspensions

The aim of this research is to evaluate the dissolution and stability of naproxen and sustained release suspensions of naproxen. The dissolution rate of formulated sustained release suspensions with different ratios (1:0, 1:0.5, 1:1, 1:1.5, 1:2 and 1:2.5) were determined at pH5 and at temperature of 37oC (± 0.5oC) the results obtained show that naproxen alone suspension is characterized by its highest dissolution rate level and the suspension containing naproxen:eudragit L100 (1:2.5) ratio is characterized by its lowest dissolution profile.

The chemical stability of naproxen and various ratio of naproxen- eudragit L100 formulated into suspensions are investigated at temperature 10oC or 30oC or 40oC the results show that drug is not affected chemically in a significant manner by increasing temperature from 10 to 40oC and the addition of eudragit L100 has no effect on the chemical stability of the drug.

By using Thin layer chromatography for detection of degradation product the result shows that all formulations tested during the storage period of 30 days and at the three levels temperatures are highly stable.

On determining the viscosity of suspension at 10 and 30^{o}C the results show that at all temperatures 10 and 30oC the naproxen-eudragit L100 (1:2.5) ratio is generally more viscous than the naproxen without eudragit L100. On the other hand the time of storage (1 to 3 days) has no effect on the magnitude of viscosity.

On determining the sedimentation rate of suspensions at 10 and 30^{o}C the result shows that at all temperatures 10 and 30^{o}C the sedimentation rate of naproxen-eudragit L100 (1:2.5) ratio suspension characterized by its high rate compared with naproxen suspension without eudragit L100. On comparing the size of each type of particle at the same magnification power by Scanning electron microscopy (SEM) the naproxen:eudragit L100 particle are characterized by relative large value compared to naproxen alone.

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ELIAS, Sabrina

Research Associate, Plant Biotechnology Laboratory, Department of Biochemistry and Molecular Biology, Dhaka University

Sabrina M. Elias is an MSc graduate from the Department of Biochemistry and Molecular Biology, Dhaka University. She is currently working as a Research Associate in the Plant Biotechnology Laboratory of the same Department. Life-science is ruling the current era, offering limitless potential and she feels fortunate being part of these human efforts deciphering the mysteries of life. Working at this laboratory on finding a solution for food crops under abiotic stress has given her the opportunity to implement the knowledge she gathered, which is also very important for climatically challenged Bangladesh to ensure future food security. Besides, she worked in a national genome sequencing project which trained her to novel approaches and advanced knowledge to deal with high throughput genome data. She has worked with the computational proteomics group at Australian National University for six months that has given her an excellent opportunity to utilize modern techniques and exchanging ideas in a multinational environment. Gaining the opportunity to perform a world class research in a developing country like Bangladesh has increased her confidence as well as keenness to acquire more knowledge and implement that for betterment of humankind.

Besides working in the laboratory to find out solutions of research problems, she loves to paint, to do graphic designing and website development as a hobby. She has also worked as a science feature writer for dailies. She is looking forward to participate in Biovision Alexandria 2012 to meet other scientists from all over the world and discuss solutions to obstacles and they face in research.

Abstract

Vacuolar Na+/H+ Antiporter Overexpression for Salt Tolerance: A complex Regulation in Rice

Richard Malo[1] Sabrina M. Elias[1], Farhana Nazneen[1], Saima Shahid[1], Touhid Omar[1], U. S. Mahzabin Amin[1], Taslima Haque[1] and Zeba I. Seraj[1*]

[1]Plant Biotechnology laboratory, Department of Biochemistry and Molecular Biology, University of Dhaka, Dhaka-1000, Bangladesh
*Corresponding author's email : zebai@univdhaka.edu

The vacuolar Na^+/H^+ antiporter has been shown to alleviate saline stress by sequestering Na^+ in both WT Arabidopsis, rice and when overexpressed in many transgenic crops. The level of salt tolerance conferred in transgenics has been substantial in dicots like tomato and Brassica but only moderate in cereals like wheat and rice. Overexpression of the Nipponbare Na^+/H^+ antiporter 1.9 kb cDNA (including the partial 5' UTR truncated at the 5′end and without the 460 bp 3′UTR) in the rice landrace Binnatoa (BA), conferred moderate salt tolerance which correlated well with the transcript levels at the seedling stage. Transformation of rice was with the cDNA corresponding to OsNHX1 transcript 2 (2394 bp), but not with transcript 1 (2265 bp) or transcript 3 (1820 bp). Transfer of the transgene into the high yielding farmer-popular background genome of BRRI dhan28 and BRRI dhan45 by cross-breeding, however lowered the level of tolerance originally obtained, despite production of comparable levels of the NHX1 protein in Western blots. The higher level of tolerance found in the tolerant control Pokkali, wild type BA and transgenic BA could be correlated with the levels of transcript 3, which was absent in WT

and transgenic BRRIdhan 28 and BRRI dhan45. Alternative splicing of the gene can be an explanation for reduction of salt tolerance when crossed with the HYV genomes.

Keywords: OsNHX1, antiporter, Binnatoa, Vacuolar, salt stress, potassium

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ELKADY, Marwa

Assistant Professor of Chemical Engineering, City for Scientific Research and Technology Applications

Elkady, Assistant professor of Chemical Engineering at the Fabrication Technology Research Department, Advanced Technology and New Materials Research Institute, City for Scientific Research and Technology Applications, has more than 5 years experience in the field of industrial wastewater treatment and nano-material preparation. She obtained her Ph.D in this field under the title; "Preparation of Ion Exchangers and its Application in Removal of Some Harmful Ions", and she made an active contribution to two STDF projects entitled: “Purification of Water and Wastewater by Natural Biodegradable Bioflocculants” (Supported by STDF (2009-2012)), and “Disinfection, Deodorizing and Improvement of Water and Treated Wastewater Quality Using Biosynthesized Nanosized Silver” (Supported by STDF (2011-2013)). Also, she gained a patent in March 18, 2010 from the Academy of Scientific Research and Technology entitled; "Preparation of Nano-zirconium Vanadate to be Used as Ion Exchanger" and she has a pending patent with the number 2011050857 entitled; "Bacterial Biopolymer for Water Purification from Turbidity and Suspended Solids". She participated in writing a book chapter in the field of wastewater treatment entitled; Handbook of Environmental and Waste Management, Volume 2, Land and Groundwater Pollution Control (World Scientific Publishing Co. Pte. Ltd, Singapore, published in March 28, 2010). Finally, she published more than 19 papers in the field of wastewater treatment as listed in her C.V.

Abstract

Solving Two Problems in Parallel, the Problem of Water Scarcity and Water Pollution

The problem of water scarcity represents the most hazardous problems that facing the world now, especially the African countries. Consequently, many governments prompting to direct a significant portion of their budget towards the research of water and wastewater treatment and the possibility of wastewater re-use at both the agricultural or industrial scale. The problem of water pollution with dust, heavy metals, organic dyes and radioactive elements was and still the most problem that threaten the human and other forms of life either plants or animals. These contaminants tend to persist indefinitely, circulating and eventually accumulating through the food chain casing a lot of dangerous diseases. As such, stringent regulations have been introduced by most countries with respect to these pollutants in water and which binds industries and other bodies to minimize the concentrations significantly before the wastewater is discharged into open landscapes and water bodies. So, I am also account for these pollutants in particular. In view of importance of these pollutants, I success in preparing nonionic polymeric materials of polyacrylamide with high molecular weight that have a large ability to flocculate the dusts, sands and suspension matters from the ground water.

Moreover, I was extract different biopolymers from different isolated microorganisms that proofed to have high ability for dust and dye removal and identified as bioflocculant. These bioflocculants characterized by its high flocculation efficiency that reached to 99% and these bioflocculant are environmentally friendship, where these biopolymers are biodegradable. Furthermore, I was succeeded in preparing very cheap advanced adsorbent materials such as a composite from natural adsorbent (kaolin) with mixture of synthetic and natural polymers of PVA and alginate respectively. This composite has a high efficiency for metal ions and dyes separation from the wastewater. Additionally, I was developed different ion exchangers either organic or inorganic in nano-scale such as Nano-sulphonated poly (glycidylmethacrylate), nano-zirconium vanadate and nano-hydroxyapatite. These synthesized nano-ion exchangers characterized by its huge capacities for heavy metals and radionuclides removal, in order to treat our wastewater and access it to the internationally limits before discharged into the outer environment. Accordingly, I was accomplished two goals which are the elimination of many pollutants that presence in wastewater to acquire clean water that can be reused again in agriculture or as cooling water inside the industrial factories, that reducing the water consumption. Also, the environment has been maintained from the contaminated water that discharged into the external environment.

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EL-SHIRBENY, Mohammed

Assistant Researcher, National Authority for Remote Sensing and Space Sciences

El-Shirbeny graduated with highest honours from the Agricultural Engineering Department, Al-Azhar University, Cairo, Egypt, in 2004. He obtained his Master's degree; "Estimation of Crop Water Requirements Using Remote Sensing and GIS" in Agriculture Sciences (Bio-System Engineering), from the Faculty of Agriculture, Ain Shams University, Egypt, during (2006-2008). He is pursuing his PhD entitled; "Modeling Yield Response to Water under Climate Change Conditions" from Ain Shams University, Egypt, 2009.

He was an Agricultural Applications Specialist, National Authority for Remote Sensing and Space Sciences (NARSS), Egypt, from 2005 to 2009. El-Shirbeny currently is an Assistant Researcher in Agricultural, Soil and Marine Division, NARSS, Egypt.

He is using Climate data, remote sensing and GIS techniques in the Agricultural Field, at NARSS, Egypt. His interests include crop water requirements, Water Resources, rationalizations of irrigation water, climate changes, remote sensing and GIS. El-Shirbeny is very ambitious, active, hard worker and appreciates team work spirit.

Abstract

Wheat Yield Response to Water Deficit Index Using Remote Sensing

The climate in Egypt is Dry Arid According to Köppen Climate Classification System, where precipitation is less than 50% of potential evapotranspiration, Annual average temperature is over 18°C. Limited water resources and scarcity of water in Egypt is the main challenge for agricultural horizontal expanding policies and strategies. El-Salhia project is located at the South Western of Ismaillia city and to the East southern of El-Kassaseen city. Normalized Difference Vegetation Index (NDVI) and Land Surface Temperature (LST) were extracted from Landsat and NOAA/AVHRR satellite data.

Water Deficit Index (WDI) uses both Land Surface Temperature (LST) minus air temperature (Tair) and vegetation index to estimate the relative water status. Yield response factor (ky) derived from relationship between relative yield decrease and relative evapotranspiration deficit. The relative Evapotranspiration deficit replaced by WDI. The relation between WDI and yearly average wheat yield was linear and R2 was 0.79. Air temperature affected by LST so the relation between Tair and LST was done and R2 was 0.74. GIS technique used to produce WDI, NDVI and LST maps. The main objective of the paper is using remote sensing to study sensitivity of wheat yield to Water Deficit.

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ENRIQUE, Andrea

PhD Student, Medicinal Chemistry, Department of Biological Sciences, Faculty of Exact Sciences, National University of La Plata

Enrique was born in 25 de Mayo town, Buenos Aires, Argentina in 1984. She completed her primary and secondary studies at the Institute Saturnino E. Unzué of San Jose. She also studied classical dance, drawing, painting, piano and organ getting the teacher title of all of these disciplines. Because of her interest in chemistry and human physiology, at the age of 17, she started her degree studies at the Faculty of Exact Sciences of the National University of La Plata, obtaining the diploma in pharmacy in 2009. Since 2007, she has been working in the Medicinal Chemistry Laboratory in the field of pharmacological evaluation of antiepileptic drug.
In 2008, she developed her professional practice at a children's Hospital in the city of La Plata; "Sor María Ludovica".

Since 2010, she has been undertaking her PhD studies, entitled "Development of Animal Models of Drug-Resistant Epilepsy" in the Medicinal Chemistry lab, where she works as a Full-Time Teaching Assistant. During the last 3 years; she has done post-graduate courses related to her thesis topic.

Abstract

Development of a Drug-resistant Epilepsy Model in Mice

Epilepsy is a chronic brain disease characterized by recurrent seizures that affects 50 million people in the world. A large percentage of these patients achieve seizure control by administering one or more currently available antiepileptic drugs but there is 30% of them do not respond to such drugs. This untreatable, multi-drug resistant condition is known as refractory epilepsy. That is why it is necessary to search for new antiepileptic drugs that can overcome drug resistance issues. In order to perform the screening of anticonvulsant candidates to treat refractory epilepsy it is necessary to develop new animal models.

The Research group to which I belong works in the design, synthesis, and pharmacological evaluation of new anticonvulsant compounds as well as in the search for anticonvulsant activity by virtual screening. My job, in particular, is the *in vivo* evaluation of anticonvulsant activity, covering the early stages of preclinical trials proposed by the Anticonvulsant Drug Development Program of the National Institute of Health (USA). I am also working in the development of a new animal model of refractory epilepsy to fit the needs of our research group. We are interested in mice models, since

they require small amounts of candidate compounds for the screening, are easy to handle and require small amounts of time for evaluation. To this day my project is in the final stages with promising results, since we have pharmacologically and histologically validated (through inmunoassays) a new mice model of refractory epilepsy that may be applied in the screening of novel anticonvulsant candidates for the treatment of efflux transporter-mediated refractory epilepsy.

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FADUL ALLA, Eltayeb

Researcher, Medicinal and Aromatic Plants Research Institute, National Center for Research

Fadul Alla has been pursuing research on antioxidant and phytochemical studies of medicinal plants, focusing on inhibition of free radicals, which generate many disorders. He was graduated from the University of Kordofan, Faculty of Natural Resources and Environmental Studies, Department of Biochemistry and Food sciences in 2006. In 2007, he joined the Department of Phytochemistry and Taxonomy, as a Research Fellow, in the Medicinal and Aromatic Plants Research Institute (MAPRI), National Center for Research (NCR), Khartoum, Sudan. Then, he became a Research Assistant in Medical Biochemistry Research Unit. He conducted his M.Sc. on biochemistry, Sudan Academy of Sciences; thesis entitled "Discovery of Natural Antioxidants from Some Sudanese Medicinal Plants". He is a member of Sudan Academy of Young Scientists (SAYS) and he has participated/ organized many workshops and conferences. Currently, he is a Researcher in Medical Biochemistry Research Unit and leading an active research project on antioxidant activity of medicinal plants traditionally used in Sudan.

Abstract

Antioxidant Activity, Phytochemical Screening of Selected Sudanese Medicinal Plants

Eltayeb. F. Fadul Alla and Asaad. KH. Mohamed Ali, Medical Biochemistry Research Unit, Medicinal and Aromatic Plants Research Institute, National Centre for Research, P. O. Box 2404, Khartoum, Sudan

Plants represent the novel source of important compounds and most fascinating drugs for human diseases. This included antimalarial, antiimmflamatory, antidiabetic, and antioxidant. In this study, five Sudanese medicinal plants namely; *Grewia tenax*.(GT), *Guiera senegalensis*.(GS), *Khaya sengalensis*.(KHS), *Geigeria alata*.(GA), and *Sida alba*.(SA), locally consumed by the herbal practioners for different types of ailments, have been collected from northern Kordofan State (West of Sudan). These plants were extracted by 80% Ethanol, fractionated using petroleum ether, chloroform, ethyl acetate, n-butanol, and distilled water. Plants extracts and fractions were screened for their antioxidant activities via 2, 2-Diphenyl-Picryl-Hydrazyl Radical DPPH, and iron chelating assays. The DPPH radical scavenging assay demonstrated that, 80 % ethanolic extract of GS was the most active extract showing interesting antioxidant activity (IC50 195 ± 6.9 µg/ml) that was more potent than the standard antioxidant propyl gallate (PG, IC50 221 ± 24.0 µg/ml). The extracts of GS, SA, GA and KHS exhibited potent DPPH scavenging activity in a concentration dependant manner. The radical scavenging activities (RSA) of GS, SA, GA, and KHS at concentration of 500 µg/ml were found to be 74% ± 0.02, 66% ± 0.05, 53% ± 0.04, and 52% ± 0.03, respectively. The antioxidant results of GT, GS, GA, SA, and KHS plants fractions showed that, the activity against

DPPH free radical were very intense in the butanol and ethyl acetate fractions. On the other hand, these five plants have shown less potent activity ranged from 28% to 5 % on the iron chelating antioxidant assay.

The results of phytochemical screening showed that all extracts and fractions of studied plants contain flavonoids, saponins, triterpenes, steroids, cumarines and tannins. This study resulted in the identification of the antioxidant properties of these plants, and showed interesting correlation with the phytochemical constituents present in different extracts and fractions.

Keywords: *Guiera senegalensis*, DPPH, antioxidant, iron chelating, phytochemical constituents, radical scavenging.

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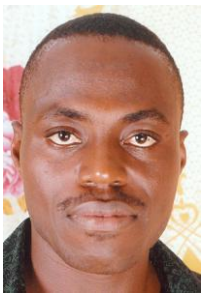
FANDOHAN, Belarmain



PhD Fellow, Assistant Professor, Laboratoire d'Ecologie Appliquée – Université d'Abomey Calavi, Republic of Benin

Belarmain Fandohan was born in Houègbo, Benin Republic, on 26th of April, 1982. After primary school in the period between 1990 and 1994, he obtained a baccalaureat from Collège Monseigneur Steinmetz in Bohicon, Benin in 2001. Thereafter, he studied at the Université d'Abomey calavi, where he obtained an Engineering degree and a DEA degree (French diploma) in Agronomy and Forestry, in 2006 and 2007 respectively. After graduation, he shifted to cross science; Conservation Biology to continue a post graduate study. In 2011, he completed his PhD dissertation at the Université d'Abomey Calavi. He is a member of several international associations, including IUCN Species Survival Commission (SSC); a specialized group on crop wild relatives, the International Union of Forest Research Organizations; Society for Conservation Biology, and Society for Economic Botany. He has been involved in several projects focusing on sustainable use and conservation of indigenous fruit and medicinal species of West Africa (*Tamarindus indica*, *Adansonia digitata*, *Afzelia africana*, *Lannea barteri*, *Lophira lanceolata*, *Maranthes polyandra*, *Parkia biglobosa*, *Uapaca togoensis*, *Caesalpinia bonduc*, etc.). From 2006 to present, his scientific activities have yielded among others; three dissertations (Engineer, M.Sc. and Ph.D. degrees) and eight scientific publications in peer-reviewed journals with ISI impact factor (including African Journal of Ecology, Agriculture, Ecosystems and Environment, Economic Botany, Fruits, Genetic Resources and Crop Evolution, Human Ecology). He hopes to contribute to conservation and sustainable use of Native Tropical Flora and Fauna through implementation of networks and effective actions, at regional and international levels. His contact is: bfandohan@gmail.com

Abstract

Assessing Local Knowledge, Use Patterns, Functional Properties and Contribution of *Synsepalum dulcificum* (Sapotaceae) to Rural Women's Income in Benin, West Africa

The search for plants with high nutritional, functional, medicinal and/or commercial potential has been intensified to find candidate species that could help empowering local women and improving livelihoods and health, especially in developing countries. In case exploitation of these species is female-biased, they can help building strategies to improve women's purchasing power in rural communities. *Synsepalum dulcificum*

(Sapotaceae) known as the miracle berry is a tropical West African shrub. The most unusual thing about this species is the extraordinary effect the fleshy pulp of its fruit has on the taste buds of the tongue that turns every sour food eaten to taste very sweet. Despite the traditional importance of the miracle berry for people in West Africa who have been using it to sweeten sour foods and drinks for centuries, the species has benefited from little scientific and public interest. There are currently very limited reports on the contribution of miracle berry to rural households cash income and human health. Likewise, in the literature they is no information describing its ecological status and the cultural variables related to its use, its management and its functional properties according to locally recognized types.

This project aims at describing (i) local perception on the ecological status, (ii) use patterns, (iii) traditional taxonomy, (iv) preferred phenotypic and taste characteristics, (v) perceived correlations between traits, (vi) functional properties of locally recognized types (vii) organs commercialization, (viii) harvesting practices and (ix) management regimes of *S. dulcificum*. Beside, (x) contribution of the species' product sales to rural women's cash income will be assessed. Finally, possible local selection processes and implications of the study for rural women purchasing power improvement and the species' conservation will be discussed. For this purpose, 60 volunteer female residents will be sampled from each ethnic group. The ultimate goal of this work is to provide insight into local policies aiming at strategies contributing to local women's poverty alleviation and *S. dulcificum* long term conservation and improvement of human health. Results from this study will be a mainstay for the use of localy valued species as key elements in the fulfilment of the millenium development goal which aims at fighting against extreme poverty and hunger. This project is expected to cover a period of twleve months including data collection and computation, paper writing and output dissemination.

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FARRUKH, Muhammad Akhyar

Assistant Professor, GC University Lahore, Pakistan

Muhammad Akhyar Farrukh has completed his B.Sc with Honors in Chemistry and M.Sc in Physical Chemistry and secured the first position in both examinations. He has been duly awarded three gold medals for his outstanding academic performance. He obtained a PhD in the field of Chemistry in 2003, conducted his first postdoctoral research (catalysis) in 2007 in Brazil, and second postdoctoral research (nanomaterials) in 2010 in Malaysia; awarded by TWAS. He has been awarded the "Young Chemist Award" by IUPAC in Italy, in 2007 and selected as the "Young Scientist" by TWAS in Egypt and IAP in Germany in 2010. He was selected, as the "Young Scientist", by IAP/World Economic Forum to participate in the annual meeting of new champions 2010, China. He participated as a representative of Pakistan in the first Assembly of the UNESCO-affiliated WAYS in Morocco in 2004.

He is a member of 12 international professional bodies. He has published 46 papers in international/ national reputed journals (IF=27.538, Citations=79), published/ edited 13 books and presented 22 papers in international/ national conferences and gave 8 invited lectures up to February 2012. He has also been selected as the "Productive Scientists of Pakistan" by PCST, Government of Pakistan since 2005. His biography has been cited in the "Who's Who in the World" in 2010 and listed in the TOP 100 Scientists and International Educator of the Year in 2011 by IBC. The areas of his research cover,

Nanotechnology/ Nanomaterials, Forensic Science, Physical Chemistry, and Environmental/ Sustainable Development. He served in the University of Karachi, PCSIR, PCST and GC University Lahore.

Abstract

Reduction of Organic Pollutants by Supported Gold Nanoparticles

Muhammad Akhyar Farrukh[a], *Hanani Yazid*[b] *and Rohana Adnan*[c]
[a]Department of Chemistry, GC University Lahore, 54000 Lahore, Pakistan
[b]Faculty of Applied Sciences, Universiti Teknologi Mara (Perlis), 02600 Arau, Perlis, Malaysia.
[c]School of Chemical Sciences, Universiti Sains Malaysia, 11800 Penang, Malaysia.
E-mail address: akhyar100@gmail.com

The *p*-nitrophenol is among the most common organic pollutants in agricultural and industrial wastewaters. It is released into the environment and causes harmful effect particularly to biological systems due to its toxicity. The catalytic reduction of *p*-nitrophenol moreover produces *p*-aminophenol, which is an important intermediate for the manufacture of analgesic and antipyretic drugs. But this requires relatively high reaction temperature and hydrogen pressure. However when the reaction is catalyzed by gold, the conversion of *p*-nitrophenol to *p*-aminophenol in an aqueous solution can be achieved under mild reaction condition to make a sustainable environment and to produce useful drugs.

Supported gold nanoparticles on titania with diameters of less than 10 nm were prepared using the deposition-precipitation (DP) method at several pH levels. The effects of pH and adjusting the pH before and after the addition of the support to the gold chloride solution below and above the iso-electric point (IEP) were investigated. The supported Au nanoparticles were tested in the reduction of *p*-nitrophenol (*p*-NP) and the highest rate constant of 16.9 x 10^{-3} s^{-1} was obtained.

Structural and elemental characterizations of the supported gold nanoparticles were carried out using X-ray diffraction (XRD), transmission electron microscopy (TEM), scanning electron microscopy (SEM), energy-dispersive X-rays (EDX), atomic absorption spectrometry (AAS), and ultraviolet-visible spectroscopy (UV-Vis).

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FAWZY, Karim

Associate Lecturer, Cairo University, Faculty of Oral and Dental Medicine

Karim M. Fawzy El-Sayed is an Associate Lecturer at the Oral Medicine and Periodontology Department, the Faculty of Dentistry, Cairo University, Egypt. He completed his BDS degree in dentistry with honors in the Faculty of Oral and Dental Medicine, Cairo University, in 2002. From 2004 till 2009, Dr. Fawzy El-Sayed worked and taught at the Oral Medicine and Periodontology Department, Cairo University. In 2006, he completed the Diploma for the Membership of the Faculty of Dental Surgeons Royal College of Surgeons of Edinburgh, and was elected as a member of the Royal College of Surgeons of Edinburgh (MFDS-RCSEd) in 2007. In 2008, Dr. Fawzy El-Sayed received a Master's of Science in Oral Medicine and Periodontology from Cairo University. In 2009, he was awarded a Grant from the German Academic Exchange Service (DAAD) to travel to Germany and

complete his PhD at the Christian Albrechts University of Kiel. Since 2010, Dr. Fawzy El-Sayed has been a member of the International Association for Dental Research (IADR) as well as its Continental European Division (CED-IADR) and the Egyptian Section. In 2011, he obtained his PhD degree from the Christian Albrechts University of Kiel, Germany, for his work on stem cells and periodontal regeneration.

Abstract

Isolation and Characterization of Alveolar Bone Proper- and Gingival Margin-derived Postnatal Mutlipotent Stem Cells

Dr. Fawzy El-Sayed's main point of research is on stem cells and periodontal tissue engineering. In 2010 Dr. Fawzy El-Sayed developed two innovative minimally-invasive techniques for the isolation of multipotent postnatal stem cells from the human alveolar bone proper and free gingival cervical marginal tissues, which are currently being patented. He explored the periodontal regenerative capacity of these cells in vitro as well as in vivo in combination with different biological mediators and tissue engineering scaffolds and demonstrated a great potential to regenerate the periodontal tissues lost during the destructive course of periodontal disease. Currently, Dr. Fawzy El-Sayed investigates the inter-relationship of the cellular molecular and regenerative mechanisms in the periodontal disease model. Dr. Fawzy El-Sayed held multiple presentations and lectures internationally on his research topic.

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FEROZ, Zeeshan

Associate Professor, Ziauddin College of Pharmacy, Ziauddin University

Zeeshan Feroz is an Associate Professor of Pharmacology, currently associated with Ziauddin College of Pharmacy, Ziauddin University, Karachi, Pakistan. He completed his Ph.D degree in pharmacology in the spring of 2011, after a successful thesis entitled; "Pharmacological Assessment of Safe Antiepileptic Combination". He is a pharmacist by profession and he has finished a B.Pharm degree, in 2006, with distinction. He has been teaching pharmacology at both undergraduate and postgraduate levels for 3 years. Moreover, he has 3 years of professional experience of working as a hospital pharmacist at JCIA accredited Aga Khan University Hospital, Karachi.

He is the author of many research articles published in journals of international repute including those indexed in science citation index (SCI). He has also published one monograph and a book chapter published at an international level and presented papers in various seminars and conferences both nationally and internationally. His research interests include biochemical, pharmacological and toxicological assessment of various drugs used in chronic disorders.

He has also got keen interest in teaching practices and methodologies for which he was nominated for the 2011 'Best Teacher' award and has received training as a 'Master Trainer' in 2012 from the Higher Education Commission, Pakistan.

Abstract

Anticoagulant and Antilipidemic Effects of *Momordica Charantia* Fruit Extract in Cholesterol-Fed Rats

Zeeshan Feroz, Rafeeq Alam Khan, Khwaja Zafar Ahmed, Anwar Ejaz Beg and Farrukh Rafiq Ahmed

Herbs have been a great source of natural substances used to treat and prevent several cardiovascular diseases. Blood lipid levels and coagulation parameters are probably the major determinant of the development of cardiovascular diseases, hence the present study has been specifically designed to investigate the effect of *Momordica charantia* on lipid profile and coagulation parameters after high cholesterol diet for 45 days. The study will conducted on 28 healthy white rats. All animals will be equally divided into four groups-control, hypercholesterolemic control, and two treatment groups. Biochemical tests will be performed at the completion of dosing, that is, on 30th day and again after 45 days. We expect *Momordica charantia* to be used as anticoagulant and hypolipidemic in the near future which may be of value in cardiovascular diseases with no or low toxicity profile thus providing the ailing mankind a wonderful gift from nature.

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GANTNER, Melisa

PhD Student, Medicinal Chemistry Laboratory, Department of Biological Sciences, Faculty of Exact Sciences, National University of La Plata, Argentina

Gantner was born on April 13, 1986 in the city of Coronel Suárez, Buenos Aires, Argentina. She undertook her primary and secondary studies at the National College, finishing high school with an overall average of 9.72 and was honored as the best student of her calss. At 7 years old, she started the music and guitar professorate at the Conservatory Ernesto Drangosch of Buenos Aires, obtaining both titles with an average of 10 and a special mention at the age of 14.

Because of her love for the exact sciences and her great interest in human health and research, in 2004 she started her higher education studies at the National University of La Plata, obtaining a Pharmacy Degree in 2009 with an average of 8.08. She performed her professional practice at San Roque Hospital of La Plata.

She worked as an intern during her degree education conducting studies on pharmaceutical equivalence of generic medications at the Laboratory of Quality Control of Medicines of the Faculty of Exact Sciences, National University of La Plata.

At the end of 2010, she began her PhD studies in the laboratory of Medicinal Chemistry under the direction of Dr. Alan Talevi. Since 2011, she has a PhD fellowship for that purpose, granted by the Commission for Scientific Research of Buenos Aires province, thanks to which she could dedicate herself exclusively to research. The subject of her PhD thesis is Molecular topology applied to the recognition of substrates of Breast Cancer Resistance Protein.

Abstract

Molecular Topology Applied to the Recognition of Substrates of Breast Cancer Resistance Protein

Breast Cancer Resistance Protein (BCRP) is an ATP-dependent efflux transporter protein belonging to ABC transporters superfamily, that functions as a transmembrane efflux pump which use energy from ATP hydrolysis to translocate substrates from the intracellular to extracellular domain. This protein, together with other family members such as Pgp, reduces the bioavailability of drugs, so they are associated with multidrug resistance in many diseases.

The objective of this work is the development of computational models based on topological molecular descriptors for early recognition of BCRP substrates. To this purpose, we first generated a data set of 156 substrates and 106 non-substrates of human wild type BCRP from literature. This dataset presents wide structural diversity, ensuring that the models that may be derived from it would present a broad applicability domain. This dataset was partitioned into training and test sets through a two-step clustering process, based on hierarchical approach followed by k-means clustering.

The resulting representative training set was composed of 164 compounds (85 substrates and 79 non-substrates) while the test set of 98 compounds (71 substrates and 27 non-substrates). We then proceeded to obtain models able to discriminate between BCRP substrates and non-substrates, using linear discriminant analysis and Dragon's (Milano Chemometrics) topological molecular descriptors.

The best model we obtained allowed a correct classification of around 98% BCRP-substrates and 55% of non-substrates. The model was validated through standard methodologies (cross-validation, Fisher's randomization test and external validation) in order to assess its robustness and predictive ability. ROC (Receiver Operating Characteristic) curves were built in order to increase specificity (reduce false positives rate) through an adequate selection of the cutoff value to discriminate substrates from non-substrates. The area under the ROC curve for this model was 0.859 (1 representing a perfect classificatory model, 0.5 corresponding to random classification).

Two-model combination were also assessed through simple data fusion schemes. To date, no molecular topology models capable of early identifying of potential substrates of BCRP existed. Remarkably, our model only include low-dimensional descriptors, which makes them adequate to use as secondary filter in virtual screening campaigns of increasingly large virtual chemical repositories, without previous conformational analysis of database structures.

So this model can be applied for design of drugs that are not recognized for BCRP transporter and for the prediction of potential drug reactions due to competition of two drugs for this transporter.

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GOWAYED, Mennatallah

Teacher Assistant, Faculty of Pharmacy and Drug Manufacturing, Pharos University

Mennatallah Gowayed received her master's degree in Biochemical Pharmacology from Medical Research Institute, Alexandria University and is currently a Teacher Assistant of Pharmacology at the Faculty of Pharmacy and Drug Manufacturing, Pharos University, Alexandria, Egypt. As a graduate of the German school (DSB), and as she has a diploma in teaching the German language to foreigners, she is teaching the German language at Goethe-Institute, Alexandria. A strong advocate for cooperative learning, thematic planning and inquiry-based learning, she involves her students in a variety of problem-solving and technology-infused activities and projects that provide them with opportunities to develop a way of constructive thinking and upgrade their communication as well as presentation skills. Her professional interests focus on rheumatoid arthritis, and her current projects include the publishing of her master's thesis and the search for a suitable PhD Program in the field of rheumatoid arthritis. In addition, she served as a volunteer for the Bibliotheca Alexandrina, where she was a member of a team of research specialists that organized many scientific lectures and conferences. She got several pharmaceutical trainings and held many German workshops and seminars. Worth mentioning, her hobbies are tennis and rowing, where she won many national rowing competitions and achieved many medals and honors.

Abstract

Evaluation of the Effect of Losartan on Methotrexate Treatment in Experimental Adjuvant-Induced Arthritis in Rats

Angiotensin II (Ang II) is classically known as a cardiovascular mediator, with a primary role in the control of blood pressure. However, there is increasing body of evidence documenting the involvement of Ang II in inflammatory diseases and implicating it in the up-regulation of proinflammatory cytokines. The previously described up-regulation of angiotensin II type 1 (AT1) receptors in synovium samples obtained from rheumatoid arthritis (RA) patients raises the possibility that their blockade, by a specific inhibitor such as losartan, may present a novel and effective therapeutic target in the treatment of RA. The aim of the present study was to investigate the anti-inflammatory effect of losartan and to compare the efficacy of methotrexate, the most effective disease modifying anti-rheumatic drug (DMARD), alone and in combination with losartan on some inflammatory and arthritic markers, as well as on extra-articular manifestations, involving the hepatic system, in adjuvant-induced arthritis in rats.

Methods: Groups of rats with adjuvant arthritis were treated with methotrexate (1 mg/kg/week), Losartan (20 mg/kg/day) and their combination for 14 days from adjuvant application. Hind paw swelling, arthrogram scores, albumin, CRP, nitrite/nitrate concentrations, IL-1β, TNF-α, VEGF, AST and ALT were evaluated. Hind paws and livers were collected and processed for histopathological examination.

Results: Both MTX and losartan monotherapies significantly reduced all tested parameters of inflammation and arthritis. However, the combination therapy showed better results than both MTX and losartan alone. Histopathological examination of hind paws showed losartan and MTX to have more or less the same anti-inflammatory effect with better improvement of inflammatory cell infiltration and bone resorption in the

combined therapy group than rats treated with either drug alone. The significant increase in the serum levels of AST and ALT observed in the arthritic rats were significantly reduced by Losartan than MTX. The combination of both drugs provided extra benefits in reducing AST and ALT levels to normal values as well as reversion of the previously observed disturbances in the liver architecture.

In conclusion, the present data suggest that MTX and losartan combined therapy provides more effective anti-inflammatory effect than does MTX or losartan alone. Moreover, losartan as a hepatoprotective agent could decrease the extent of MTX-induced hepatotoxicity which is likely to occur after prolonged period of exposure that may require interruption of therapy.

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GUL, Saima

PhD, Instituto de Química de São Carlos, Universidade de São Paulo, Sao Paulo, Brazil

Ms. SAIMA GUL was born on March 15, 1985 in Peshawar KPK, Pakistan. She got an early education from in the Government Higher Secondary School, University town, Peshawar and got 1st Position in the school in Secondary Examination conducted by BISE Peshawar, in 2001. She got a Bachelor Degree in Biological and Chemical Sciences from the University of Peshawar in 2003, and obtained a Master in Chemistry (specialization in Biochemistry), from the Institute of Chemical Sciences, University of Peshawar in 2007. After completing her Master, she worked as a Research officer in a forest project entitled; "Strengthening the Forest Products" in Pakistan Forest Institute, University of Peshawar for one year. Then, she joined College of Home Economics, University of Peshawar and worked as a lecturer in Chemistry where she also performed duties as a research supervisor. After that, in the year 2009-2010, she got TWAS/CNPq fulltime Fellowship for PhD studies in Chemistry at the Institute of Chemistry of São Carlos, University of Sao Paulo, Brazil under the supervision of Prof. Dr. Artur de Jesus Motheo. Her area of specialization in Ph.D is Environmental and Interfacial Electrochemistry. Her research project is the degradation of endocrine disruptors and Pharmaceutical products from waste water by electrochemical, photo-assisted electrochemical, sonoelectrochemical and by other advanced oxidation processes.

Abstract

Degradation of Endocrine Disruptors and Pharmaceutical Products from Waste Water by Electrochemical, Photo-assisted Electrochemical, Sonoelectrochemical and by other Advanced Oxidation Processes

In recent years, endocrine disrupters compounds EDs have attracted the attention of the scientific community because they are suspected of causing adverse effects to human and animal health. Bisphenol A (BPA) is a compound widely used in the production of polycarbonate resins. It has estrogenic activity with minimum effective dose of between 2.29 e 4.58 μg L-1. It is estimated that the concentration of BPA in effluents from industries that produce polycarbonate is approximately 100 mg L-1. Thus, the presence of BPA in the environment is worrying and suggests that it is necessary to study methods to promote their complete destruction or at least that convert to less toxic forms. The sonoelectrochemistry has been mentioned as a promising technique for the oxidation of organic contaminants, but that has not been widely used for this purpose. In the

sonoelectrochemistry process, the cavitation bubbles are produced from the propagation of ultrasound in the electrolyte. These bubbles can directly oxidize organic substances by means of reactions that occur within them or may result in the formation of hydroxyl radicals by water sonolysis. Moreover, these bubbles are able to improve the efficiency of electrochemical processes since they intensify the phenomenon of mass transport in the electrode-solution interface and contribute to the cleaning of the electrode surface. This main objective of this project is to study the effects of electrodic material, the electrolyte medium, and the frequency and power of ultrasonic radiation on the sonoelectrochemistry oxidation of BPA, in order to compare the efficiency (energy consumption and toxicity decreasing) of both processes: electrochemical and sonoelectrochemical.

This is very broad project and we are going to use a series of methods such as, chemical, photochemical, electrochemical, photo-electrochemical and sono-electrochemical to degrade endocrine disrupters and pharmaceutical products from waste water. Initially the work was started with electrochemical method, using $Ti/Ru_{0.3}Ti_{0.7}O_2$ and various influential parameters such as Current density, pH, antibiotic initial concentration, and supporting electrolyte etc. were studies for the electrochemical degradation of pharmaceutical product (Tetracycline HCl). The monitoring of the TC HCl concentration was made by High Performance Liquid Chromatography (HPLC) analysis and the removal of the organic load was evaluated by Total Organic Carbon determination (TOC). The influence of current density and supporting electrolyte was investigated. It shown that the increase in the current density between the electrodes from 5mA cm^{-2} to 40 mA cm^{-2} V improved the degradation efficiencies as well as the TOC removal steadily.

Widespread detection of pharmaceutical compounds in water environment has been a serious concern recently. Wastewaters containing these pharmaceuticals must be treated prior to discharge to prevent development of resistance by bacteria. The degradation of tetracycline by anode oxidation with $Ti/Ru_{0.3}Ti_{0.7}O_2$ electrode was carried out with electrochemical reactor. In the last we will compare all these methods and apply the most effective and less expansive one for the pilot scale treatment of waste waters containing pharmaceuticals and endocrine disrupter compounds.

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HAMDAN, Ahmed

Postdoctoral Fellow, Max-Planck Institute for Biophysical Chemistry

Born on September 1, 1980 in Alexandria, Egypt, obtained a bachelor degree in Pharmaceutical Sciences, Alexandria University, Alexandria, Egypt (2001, with honors); Graduate studies in Natural Product Chemistry, Cairo University, Cairo, Egypt (2006); PhD degree in Pharmaceutical Sciences from Kyushu University, Fukuoka, Japan (2011); and a Postdoctoral Fellow at the Department of Genes and Behavior in the Gregor Eichele's lab at Max-Planck Institute for Biophysical Chemistry, Göttingen, Germany (2011). Studying Biorhythms, Biochronology and Chronopharmaceutics. Received many honors and awards during undergraduate and graduate studies in Egypt and Japan.

Hamdan's publications deal mainly with the molecular mechanisms of the biological rhythms and their effect on physiological body function, while others also deal with the clinical application of the chemotherapeutics, such as Cyclosporine, Interferon, etc., on the circadian body functions. Moreover, some publications deal with the effect of the drug administration's procedure and schedule on controlling its side effects. He is a

member of the Pharmaceutical Sciences and Technology in Japan "PSTJ", Egyptian Network for Bioinformatics and Genomics "ENBAG" and Asian Federation for Pharmaceutical Sciences "AFPS". Currently, he is studying the hierarchical structure of the mammalian circadian timing system by using a genetically disrupted master pacemaker.

Abstract

ATF4 is Essential for the Circadian Expression of the *Period2* Gene

Circadian clocks endow organisms with a survival advantage as they enable them to anticipate environmental changes, thereby adapting their behavior and physiology to the appropriate time of the day. Many of these changes are controlled by endogenous circadian clocks that control events such as cell signaling, gene expression, hormone production, neuronal activity, and many aspects of behavior. CLOCK and BMAL1 heterodimers activate transcription of the components of the central clock; period (*Per*) and cryptochrome (*Cry*) genes, through a conserved E-box element. The resultant transcriptional activation of these genes is subsequently repressed by their protein products, resulting in the negative feedback loop making up a portion of the central clock mechanism. Beside their role in the central oscillator, CLOCK and BMAL1 have also been reported to activate clock-controlled genes regulating the expression of clock-controlled output genes. Another transcriptional pathway that has been implicated in rhythmic regulation is the cyclic AMP response element (CRE)/CRE-binding protein (CREB) pathway, although specific target genes have not been identified yet. CREB family is stimulus-induced transcription factors that can be activated by many environmental changes including light. This family is centrally responsible for sustaining the core oscillation loop. Interestingly, the consensus sequence of the CRE is similar to the E-box sequence, and it has been suggested that there is an evolutionary relationship between these sequences.

In this study, we succeeded to uncover the molecular link between the central components of the clock oscillation machinery and the cAMP-dependent signaling pathway. We proved that the central molecular components of the circadian clock directly control CREB2/ATF4 transcription through the proximal E-box located near the transcriptional starting site in a time dependent variation. We also investigated the functional involvement of ATF4 in the circadian regulation of *Per2*; as a core component of the mammalian machinery and also the CRE-mediated transcription. ATF4-mediated transactivation of the *Per2* gene seems to sustain circadian oscillators in peripheral cells as well as in the center of mammalian circadian clock. Our results demonstrate a previously unknown role of ATF4 in the circadian timing system and revealed a molecular link between the cAMP-dependent signaling and core circadian clock machinery.

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HASSAN, Sedky

Postdoctoral Research Fellow, Kangwon National University

Sedky H. A .Hassan was born in 1981 in Assiut, Egypt, he earned his PhD in Biosensors and Bioenergy from Kangwon National University, South Korea. He was graduated from Faculty of Science, Assiut University, Egypt and received his M.Sc from the same University in the field "Bacterial Biosorption of Heavy Metals". He has an outstanding academic

record for his publications during his PhD study in Kangwon National University. He worked as an Assistant Researcher, Biologist and Researcher in Assiut University, Assiut centre for IVF and ICSI Egypt and Kangwon National University, respectively. Currently, he is a Postdoctoral Research Associate at the Department of Biological Environment, Kangwon National University, South Korea.

His research interests are bio-energy, microbial fuel cells, biosensors, and biosorption of heavy metals. He develops different research activities at Kangwon National University. He has authored over 22 manuscripts and two book chapters in the field of bacterial biosorption of heavy metals, and RNAi. He submitted three international patents in biosensors and toxicity assessment. His contact informations are the Department of Biological Environment, Kangwon National University, South Korea.

Abstract

Electricity Generation from Rice Straw Using Microbial Fuel Cell Technologies

Sedky H.A. Hassan and Sang Eun Oh*
Department of Biological Environment, Kangwon National University, 200-701, Chuncheon, Kangwon-do, South Korea
* Corresponding author. Mailing address: Department of Biological Environment, Kangwon National University, 192-1, Hyoja 2-dong, Chuncheon, Kangwon-do, 200-701, Republic of Korea; Email address: ohsangeun@kangwon.ac.kr; Phone: +82-33-250-6449; Fax: +82-33-241-6640

Microbial fuel cells (MFCs) have been used to generate electricity from different organic compounds including simple compounds such as acetate or glucose or simple volatile fatty acids. This study demonstrates the direct electricity generation from rice straw without pretreatment, in two chamber MFC inoculated with mixed culture of cellulose degrading bacteria. The power density reached 145 mW/m^2 (normalized to the total surface area of anodic electrode) with an initial concentration of 1 g/l while, the coulombic efficiencies (CEs) ranged from 54.3 to 45.3% corresponding to the initial concentrations from 0.5 to 1 g/l of rice straw. The mechanism of rice straw degradation were elucidated through the analyzing the changes in reducing sugars in the electricity generation process. When individual MFCs connected in series or parallel the current and voltage output will increase. The stackable MFC in series and parallel produced an open circuit voltage (OCV) of 2.17 and 0.723 V, respectively using 50 mM hexacyanoferrate ($K_3Fe(CN)_6$) as catholyte. The maximum power density of individual cell was 180 mW/m^2 (0.5 mA). The maximum power for serial connection of three stacked MFCs 490 mW/m^2 (0.5 mA) was obtained. In the parallel stacked MFCs, the current levels were approximately 3 fold (1.5 mA) higher than those produced from serial connection. The results demonstrated that electricity can be produced from rice straw by exploiting cellulose degrading bacteria as biocatylast. It might hopefully, provide a promising way to utilize rice straw for bioenergy.

Keywords: Microbial fuel cells, rice straw, bioelectricity generation, stack MFCs.

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HAYAT, Sumreen

PhD Scholar, Department of Microbiology and Molecular Genetics, University of the Punjab, Lahore, Pakistan

Sumreen Hayat is a Ph.D scholar in the Department of Microbiology and Molecular Genetics, University of the Punjab, Lahore, Pakistan. She is also working as a Research Scholar in the above mentioned department. Sumreen's research field is relevant to the antibacterial activity of medicinal plants. She loves to do innovative work that is quite valuable for her research work. She is quite satisfied with her life as she thinks every person has some experience in her/ his life that can be good or bad but these experiences help a lot to face troubles in the coming life. She loves to travel to different places to see how nature creates so many valuable and interesting things in our lives.

Abstract

Analysis of Antibacterial Activities of Ginger and Turmeric Extracts Against the Strains Isolated from Dental Unit Water Lines

The present study showed the antibacterial potential of ginger and turmeric extracts belonging to the family Zingiberaceae. Preliminary phytochemical screening had shown the presence of various bioactive compounds such as phenolics, alkaloids, tannins, anthraquinones, glycosides and terpenoids. Plant extracts were obtained using methanol, ethanol, ethyl acetate, hexane and water. These extracts were tested in vitro against selected bacterial strains isolated from dental unit water lines by agar well diffusion method. The results had indicated that methanolic extract was more effective as compared to other extracts and maximum inhibition was observed against the strain *Bacillus cereus*. Minimum inhibitory concentration values for ginger extract ranged from 6.25-12.5 mg/ml while for turmeric extract it was 12.5-25 mg/ml. GC-MS analysis of methanolic extracts indicated the presence of a variety of compounds including sesquiphellandrane, tumerone, zingiberene, orixane, farnesene, myrcene and gingerol. Furthermore, the effect of organic contaminants on the antibacterial activity of plant extracts was also investigated. Organic contaminants such as skimmed milk powder and baker's yeast resulted in a significant loss of antibacterial potential of the extracts as indicated by an increase in MBC (minimum bactericidal concentrations). These results showed that both the extracts posses antibacterial activity and could be used as traditional folk remedy for the treatment of bacterial infections.

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HEGAZY, Rashad

Assistant Professor, Kafrelsheikh University

Rashad Hegazy is working as Assistant Professor (lecturer) in the Department of Agricultural Engineering, the Faculty of Agriculture, Kafrelsheikh University, Egypt. He has experience in many fields related to agronomy and agricultural engineering, academic as well as demonstrating fields. He got his degrees from many places under different conditions. He worked in Egypt, India and Italy during his Master, PhD and Post-Doc studies; he was running his field experiments effectively and efficiently with the ability to run lab experiments related to soil, plant and water samples. He has the ability to manage experimental laboratories, workshops, and research activities. In addition, he has the ability to work hard on tough

conditions in field or rural areas with management and analysis of data generated through projects and surveys with best available ways. He joined also a team of on-farm practical approaches for best management in conservation agricultural in Australia, besides attending many international and national meetings and conferences.

He has studied courses and joined workshops related to data collection, management and analysis; collection, archiving, documentation and maintenance of key spatial datasets and analyzing geographic patterns of food insecurity by integrating primary food security data with other sources of data in the Geography Information Systems (GIS) environment. He passed a special program in statistical packages Gstat, Xlstat, SAS, and SPSS as well as software engineering and programming courses. Currently, he is working with different foreigner partners in conservation technology and its application in Egypt, and running different research work related to agricultural engineering aspects.

Abstract

New Residue Management Technique for Direct Seeding in Rice Fields

In Egypt, The collection of straw after paddy harvesting is uneconomical and its end use is not yet wide spread. So either residue is incorporated in the soil or burnt in the field. Incorporation of straw in soil needs many operations which involves both time and money of the farmers and it delays sowing of wheat crop. Burning the rice in field is great risk and has harmful effect on public health and environment. Beside the environmental effect, the wheat production is adversely affected if crop is not sown in time. It has been reported that wheat yield decreases by 35-40 kg/ha per day, when wheat is not sown before November 30. Overcoming the problems arising during direct seeding of wheat in rice fields not easy, and further study should be done for residue management process. If there is such a unit which can handle the residue in front of no-till drills, the direct seeding in rice fields will be successful and the residue remaining in the field will not be a problem for growing the wheat. In addition, the farmers will not spend time or money for removing the residue before wheat sowing. So In this project, the main aim is to develop a unit which can process the residue by cutting and removing them away from furrow openers of the no-till drill. This unit will be powered residue manipulating devices able to attach with no-till drill and not limited its speed.

The unit, therefore, needs to be designed on the basis of cutting and removing of paddy straw away from the no-till drill. In order to facilitate the movement of straw, two processes are needed; one for cutting the residue and the other for removing them. The importance of the residues cutting include reducing the length of loose straw and cutting stand stable which may be laying in front of no-till drills but still connected with the soil. To facilitate direct drilling practices, new design is needed for cutting wheel. Removing the residue as second process very important in order to reduce the amount of residue clogged on furrow openers and make the line of sowing clear and clean from residues which affect no-till drill performance. Other important concept, that the residue management device should be powered to overcome the problems which found with using passive tools.

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HELAL, Ahmed

PhD Student, Department of Agriculture and Food Sciences, Technology and Biotechnology, University of Modena and Reggio Emilia, Italy

Ahmed Helal, was born on March 4, 1981 in Egypt. In 2002, he received his B.Sc. from the Department of Food and Dairy Technology, Faculty of Agriculture, Alexandria University, Damanhour, Egypt; with a cumulative grade of "Excellent with honor". In 2003, he got a position as a Research Assistant in the same department. In January 2007, he got his M.Sc. degree in food and dairy technology. Since March 2007, he has been holding the position of an Assistant Lecturer at the Department of Food Science and Technology, Damanhour University, Egypt.

In March 2010, he received a scholarship to follow a PhD program in Department of Agriculture and Food Sciences, Technology and Biotechnology, University of Modena and Reggio Emilia, Italy. From September 15, 2010 to March 14, 2011 he carried out a research, as a visitor PhD student about the production of antioxidant edible packaging films at INPL, Universite de Lorraine, France. He participated in different conferences and workshops in and outside of Italy. Since September 2011, he has become an Editorial Board Member of the International Journal of Agriculture, Environment and Biotechnology.

He has many publications related to his interest, the antioxidant activity of polyphenols and its interaction with caseins, the bioaccessibility and bioavailability of phenolic compounds, influence of different beverages polyphenols on digestive phenomena and the biological peroxidation effect during *in vitro* digestion. In addition, he is interested in the use of this phenomenon in the applied technology, for example, manufacturing of edible and bioactive antioxidant films, and manufacturing of novel foods products and food additives rich of antioxidants.

Abstract

Casein-polyphenols Interaction: From Test Tube to Applied Technology

Over the last years, the interest about polyphenols has become widely increasingly by the researchers. Polyphenols are the major source of antioxidant in our diet and in addition they show a wide range of activities and health benefits, such as anti-aging, anti-carcinogenic and anti-inflammatory activities. Polyphenols also play an important role in the prevention of various diseases associated with oxidative stress, such as cancer, cardiovascular and neurodegenerative disorders. Furthermore, polyphenols have been widely used as food additives to protect food nutrients against oxidative degradation.

My point of view in this research is the casein-polyphenols interaction. The effect of milk addition to different foods was evaluated by many previous studies but the conclusion was conflicts. In our study we choose 3 different famous beverages (coffee, tea and cinnamon) to test the effect of milk addition on the bioaccessibility of polyphenols during in *vitro* digestion.

We found that the addition of milk to these beverages has a protective effect on polyphenols degradation during the digestion, resulted in higher bioaccessibility of polyphenols respect to the beverage digested alone. The protective effect was dissimilar

among the different beverages depending on milk types, concentration and on the polyphenolic profile in the different beverages and their binding with caseins.
This interaction between milk caseins and polyphenols motivated us to investigate application studies with the aim to integrate polyphenols in casein matrix as liable to protect the polyphenols itself from degradation and also to have antioxidants-rich foods.

Polyphenols and flavonoids in food items are liable to be degraded upon coming in contact with air or during digestion and thereby losing their biochemical and beneficial properties. Entrapment of antioxidants in macromolecules is a good way to reduce oxidation due to limited oxygen access to molecular reactive sites. In our study, we succeeded to protect polyphenols against rapid oxidation by integrating these molecules in caseins and caseinate, these positive results, actually shows the ability to product antioxidant-rich films as packaging material for the first time as innovative idea.

Another applied study was the manufacturing of polyphenols-rich cheese; we succeeded to applied different polyphenols compounds in the cheese matrix, achieving a high retention coefficient of polyphenols with high antioxidant activity. Furthermore, the recovery of the polyphenols in cheese after *in vitro* digestion was highly. These works give us the opportunity to innovate new functional food with high antioxidant compounds exploiting the protective effect of casein on polyphenols.

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HERMASSI, Taoufik

Associated Researcher, National Research Institute of Rural Engineering, Water and Forestry

Taoufik Hermassi completed his studies as an engineer at the National Agronomic Institute of Tunis (INAT) in 2000. After graduation, he worked as a Consultant Engineer in EICO International, studies in international organization engineering. Since November 2005, Dr. Taoufik Hermassi has been an Associated Researcher at the National Research Institute for Rural Engineering, Water and Forestry (INRGREF), with experiences in hydrology, water and soil conservation. He obtained a PhD in Agricultural Sciences, Option: Hydrology, water and soil conservation in January, 2010. He has many international papers and publications in water resources management, water and soil conservation field. He was supervising 6 master's students and many final engineers study projects. He is teaching many courses designated for graduate and masters with an average of 50 hours per year. He is a coordinator of the National Environmental Monitoring Device of Oueslatia, INRGREF-OSS; Observatory of the Sahara and the Sahel.

His PhD focuses mainly on the parameterization of the physical basis hydrological models as a tool for understanding and analysis of the watersheds functioning subjected to anthropogenic actions. His actual domain of competence focuses especially on: hydrology, water resources management, rainfall-runoff-erosion modeling, hydrological statistics, hydrological effects of soil and water conservation techniques, GIS, cartography, satellite images and photo-interpretation and mapping.

Abstract

Assessing the Impact of Hydraulic Properties on Plot Scale Modeling

Most of hydrological modeling approaches consider the overall surface of the plot to be homogeneous, producing a generalized non-hierarchical flow. Field observations show that the runoff is generally hierarchical in the plot, so that surface runoff is concentrated quickly on drainage lines, the reason to consider this fact in the modeling of the hydrological behavior of plots.

This research work assess the impact of the drainage on the parameterization of the production and transfer functions at the plot scale by assuming the plot as homogeneous surface before proceeding to the flows transfer modeling in drainage systems and consider a double heterogeneity of the processes of infiltration and runoff leading to assess the impact on the flood simulation.

MHYDAS has been used to model the runoff specifically designed for small, agriculturally dominated catchments as it offers a fast flow component. This deterministic model is a spatially distributed, which takes into account the discontinuities and the spatial variability of farmed catchments. The modeling domain consists of interconnected 'hydrological units' system and linked to a ditch network.

At the fallow plot assumed to be hydrologically homogeneous, the model results show that there's a reduction factor of a value of 6 between the values of saturated hydraulic conductivity simulated under artificial rainfall and the one simulated at the plot level witch is due to the problem of upscaling. For the cultivated plot, the results show that the saturated hydraulic conductivity decreases drastically (hyperbolic decay) comparing to results obtained by the rainfall simulator (exponential decay). The results found on the plots scale showed that the drainage network has little effect on production function parameters and its impact on the runoff estimation volume is about 10%. Considering the spatial variability of soil hydraulic conductivity, different criteria timing were improved.

In conclusion, it is important to consider the spatial distribution of the saturated hydraulic conductivity in both levels. At the watershed scale, an in case of fallow plots a unique value of the saturated hydraulic conductivity could be adopted for the whole year period and at the cultivated plots for which it should be considered a decrease in the saturated hydraulic conductivity after surface ploughing. This new analytic modeling technique could improve knowledge in understanding the hydrological processes at different scales, estimating the soils hydric balance and enhancing the precision irrigation for better water resources management.

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HUSSEIN, Khalid

Assistant Lecturer, Assiut University, Science Faculty, Botany Department

Currently, Hussein is a Ph.D. candidate, in Kangwon National University, Korea. He was born in Upper Egypt (Mallawy city) on the 4th of August, 1981. He obtained the degree of B.Sc. in Chemistry and Microbiology from Assiut University. Then, he has been appointed as a Demonstrator in the Botany Department in the Science Faculty of the same university.

He received his M.Sc. degree entitled; " Studies on Insects Mycopathogens Isolated from Soil" in 2007. He received a scholarship in South Korea, and he works in a funded Korean Project; the main aims of this Project are as follows:

1) Bioremediation of the water resources polluting heavy metals (e.g. Cd and Pb).
2) Biosorption of heavy metals using dead biomass of fungi as low cost materials from stream water.
3) Study the difference between microbial species present in polluted area, such as mining area and that present in agriculture soil, and to perform physiological studies, such as Biosorpent capacity of heavy metals, resistance to heavy metals.
4) Try to isolate the strong species of Fungi and Bacteria able to bioremediate the polluted water particularly stream water.
5) He also conducts researchs on biofertilizers as alternatives to chemical fertilizers under his professor supervision.
He has many scientific publications that focus mainly on biocontrol and bioremediation.

Abstract

Biosorptive Capacity of Cd (II) and Pb (II) by lyophilized cells of *Pleurotus eryngii*

Khalid A. Hussein[1], Jin Ho Joo[1]*, Sedky H. A. Hassan[1]
[1]Department of Biological Environment, Kangwon National University, Chuncheon, Gangwon-do, Republic of Korea

The discharge of heavy metals into aquatic ecosystems has become a matter of concern in over the world the last few decades. In this study, the lyophilized cells of *Pleurotus eryngii* (mushroom) were used as an inexpensive biosorbent for Cd(II) and Pb(II) removal from aqueous solutions. The effect of various physicochemical factors on Cd(II) and Pb(II) biosorption such as pH 2.0-7.0, initial metal concentration 0.0-300 mg/l, temperature, fungal biomass and contact time 0-120 min were studied. Optimum pH for removal of Cd(II) and Pb(II) was 6.0, and the contact time was 45 min at room temperature. The nature of biosorbent and metal ion interaction was evaluated by Infrared (IR) spectroscopic technique. FTIR spectra confirmed the changes in the functional groups and the surface properties of fungal biosorbent after loading of heavy metal. IR analysis of mushroom biomass revealed the presence of amino, carboxyl, hydroxyl and methyl groups, which are responsible for biosorption of Cd(II) and Pb(II). The maximum adsorption capacities for Pb(II) and Cd(II) biosorption by *P. eryngii* were calculated from Langmuir adsorption isotherm as 78± 2.36 and 26 ± 3.56 mg/g, respectively. The adsorption isotherms for two biosorbed heavy metals were fitted well with Freundlich isotherm as well as Langmuir model with correlation coefficient (r^2>0.99). Thus, this study indicated that the *P. eryngii* is an efficient biosorbent for the removal of Cd(II) and Pb(II) from aqueous solutions.

Keywords: Biosorption, *Pleurotus eryngii*, Mushroom, Heavy metals, Adsorption isotherms.

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IDEMUDIA, Omoruyi

Doctoral Research Student/ Scientist, University of Fort Hare

Omoruyi Idemudia is a doctoral Research Student and a Student Assistant/ Tutor in the Department of Chemistry, University of Fort Hare, South Africa. He has been in the University since 2008 for his post graduate studies after graduating from the University of Benin, Nigeria in 2006 with a degree in Industrial Chemistry. He completed his MSc chemistry degree dissertation titled; "Synthesis, Characterization and Antibacterial Studies of Metal Complexes of Some Drugs Containing Pyrimidine Ring" in 2010, where he addressed the problems of disease resistance to drugs by way of coordinating transition metals within the drug system to increase its efficiency. The dissertation was submitted for examination in January 2011 and he graduated in May 2011, after a one year Honours degree in chemistry.

His research has involved the synthesis of organic based compounds, their coordination with metals to form complexes, structural characterization of these compounds (Analytical, spectroscopy etc), and lastly on evaluation of the biological activities of the synthesized compounds. Omoruyi's research studies, however, have produced notable outcomes, which include presentation of research findings in two national conferences and in academic seminars both in oral and postal forms. He has a research publication to his credit and another one accepted for publication. Amidst his research experience, he has a good teaching experience as a chemistry tutor till date. Omoruyi has recently synthesized some novel biologically active bidentate Schiff bases that can be used for a variety of applications, as part of his ongoing doctoral research project.

Abstract

Metal Complexes of Antibiotic Sulfadiazine and Dithiocarbamate Mixed Ligands; Synthesis, Characterization and Antibacterial Studies

The emergence of therapeutic drugs limitations such as disease resistance to them and their toxicity effects have ignited inorganic coordination chemist's interest in the discovery and development of new broad spectrum analogues of these drugs by way of complexation with metals. Compounds containing metal centers have been employed for many years as therapeutic agents because of their biological activities and as such commonly used drugs is been coordinated with metal centers in an effort to increase their potency [1]. Sulfadiazine has been used as a topical antimicrobial agent and its application as coordination complexes with metals have drawn a lot of research attention [2]. The biological activities of dithiocarbamates plus its chelating properties with metals have also been reported [3]. In continuation of our study on potential biological agents, their effect on coordination with metals and a look at drugs combination therapy approach, copper and cobalt complexes of sulfadiazine with N-methyl-N-phenyl dithiocarbamate mixed ligands have been synthesized and characterized by elemental analysis, FTIR and UV-Vis spectroscopy and conductivity measurement. Both ligands act as a bidentate molecule forming a tetrahedral/squre planar structure. Sulfadiazine bond to the metal ion through the pyrimidine and sulfonamido nitrogen atom, while the dithiocarbamate bond via the sulphur atoms.

Conductivity measurements show that the metal complexes are non-electrolytes in solution. Potential therapeutic agents have been identified in this study via the agar well diffusion technique and serial dilution method in duplicate, as complexes shows varying

bacteriostatic activities against selected bacterial isolates. Concentration dependent MIC values showed that the metal complexes are more active than the free ligands. Recently we have synthesized novel biologically active sulfa drugs Schiff base and studies on their anticancer activities and that of their metal complexes are ongoing.

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IGBINOSA, Etinosa

Lecturer, Ambrose Alli University, Ekpoma Nigeria

Igbinosa studied Microbiology in undergraduate and graduated levels in 2001 in Ambrose Alli University, Ekpoma, Nigeria. In 2003, he proceeded for his postgraduate training at the Obafemi Awolowo University Ile-Ife, Nigeria for his Master degree in Microbiology and graduated in 2006. He obtained a Ph.D in Microbiology in 2010 from the University of Fort Hare, South Africa. Dr. Igbinosa works on applied and environmental microbiology as well as biotechnology. To this end, he has made contributions in the area of water and wastewater qualities with findings having significance to aid in policies making within the areas of poverty alleviation and sustainable livelihood in Africa.

Currently, his research activity is focused on bioflocculant production by marine bacteria for cheap and safe municipal water, and wastewater treatment. Dr. Igbinosa has published over 30 journal articles in ISI citation index based on his research experience. He has special interest in Molecular Epidemiology and Public Health, Sanitation and Sanitary Engineering. He has held the position of investigator/ co-investigator in many research projects and have been involved in the mentoring and supervision of undergraduate and postgraduate students. In 2011, TWAS and TWAS-ROSSA selected him as TWAS Young Affiliate Fellow for the Academy of Sciences for the Developing World and the TWAS Regional Office for Sub-Saharan Africa. Dr. Igbinosa Lectures at Ambrose Alli University, Ekpoma, Nigeria. He is presently on research activity with UNESCO-IHE Institute for Water Education, Delft, Netherlands. Igbinosa is married to Isoken and blessed with a son. Igbinosa's hobbies are reading, writing and travelling.

Abstract

Detection of Antibiotics Resistance and Putative Virulence Genes Profiles of *Vibrio* Strains in Final Effluent from Municipal Wastewater Treatment Plant of the Eastern Cape Province, South Africa

This study evaluates the antibiotic resistance and putative virulence-associated genes of *Vibrio* strains isolated from wastewater final effluents in an urban community of South Africa. *V. vulnificus*, *V. metschnikovii*, *V. fluvialis* and other *Vibrio* sp (not identified to the specie level) were isolated from final effluents in a wastewater treatment plant located in an urban community of South Africa. The disk diffusion method was used for the characterization of the antibiogram of the isolates. Polymerase chain reaction (PCR) was employed to evaluate the presence of virulence-associated and resistance genes profiles using specific primer sets. The *Vibrio* strains showed the typical multidrug-resistance phenotype of an SXT element. The resistance genes detected includes *dfr18* and *dfrA1* for

trimethoprim; *floR, tetA, strB, sul2* for chloramphenicol, tetracycline, streptomycin and sulfamethoxazole respectively. Virulence gene profiling of the isolates by PCR revealed the presence of *toxR* (100%), *rtxA* (75.5%), *hlyA* (65.5%), *zot* (43.6%), and *tcpA-acfB* (21.5%) genes. The virulence gene clusters *ctxA, ompU* and *ace* were not detected. While comparing the antimicrobial resistance pattern and the virulence profile among the environmental isolates it was observed that cefotaxime, sulphamethoxazole, trimethoprim and nalidixic acid resistant strains have high incidence of *toxR, rtxA* and *hlyA* genes. Thus, it is assumed that resistance genes for these drugs are found along with the virulence associated genes. This study demonstrated not only the presence of a wide array of critical virulence factors in diverse strains of vibrios pathogens. The findings indicated that the investigated wastewater treatment plants in this region are potential reservoirs for multidrug resistant vibrios strains, and that the non-cholera vibrios pathogens can no longer be ignored as an environmental reservoir of virulence genes. Moreover, detection of virulence and resistance genes in *Vibrio* strains obtained from the wastewater final effluents suggests that these genes clusters might be further disseminated in habitats downstream of the sewage plant, thus constituting a serious health risk to the communities reliant on the receiving waterbodies for domestic, irrigation and recreation purpose.

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ISAAC, Clement

Lecturer II, Ambrose Alli University, Ekpoma, Nigeria

Isaac Clement, born on the 21st of October, 1978**,** is married with two children (a boy and a girl). His primary school was Duro Oyedoyin Primary School while his secondary school was Government secondary school, Ijanikin, Lagos in the period between 1993-1996. His University education was done in the following schools: Ambrose Alli University [B.Sc. Zoology (1998-2003)], University of Ghana, Legon (M.Phil Entomology (2004-2006) and Ambrose Alli University, Ekpoma (PhD Parasitology (2007-2010)]. I did a mandatory one year National Youth Service (2003-2004).

After his Master's programme at Legon, he was employed on full time basis as a staff of Ambrose Alli University on the 20th of December, 2006. He got promoted to Lecturer II on the 1st of October, 2010. Presently, he has published 22 research articles in both local and international journals. Isaac current research is on the genetics of *Glossina palpalis* in Abraka endemic focus and determination of blood meal source(s) of this fly. This research is conducted in collaboration with the University of Glasgow. His long term goal is to contribute significantly to knowledge in infectious diseases and attain a career goal of attaining the cadre of a professor of parasitology of international repute.

Abstract

Pro-and Anti-inflammatory Cytokines Profiles and White Blood Cell, Lymphocyte and Monocyte Counts of *Onchocerca volvolus*-infected Cameroonians in Sanaga Valley of South Cameroon

A total of 357 individuals from Sanaga River located in Sanaga valley of South Cameroon were screened for microfilariae parasite by skin snip. The positive human subjects were 85 (23.81%). Microfilarial density among the positive patients and some endemic control subjects were quantified and the blood using ELISA kit was subjected to cytokines analysis (IL-1α, IL-6, IL-10, IL-13, IL-1β, IL-4, IFN-γ, TNF-α) and

correlated with total white blood cell (WBC), lymphocyte and monocyte counts. The differences in IL-1α and IL-10 between positive and negative control subjects were not significant (P>0.05). There was a negative association between monocyte counts and IL-10 concentration in positive individuals. The concentration of IL-6 for *O. volvolus*-infected individuals was significantly depressed compared to the non-infected volunteers (P<0.05). However, a negative correlation of IL-6 with white blood cell and lymphocyte counts (P<0.05) was observed. IL-13 was elevated in positive volunteers with a positive association with parasite load (P<0.05). The differences in IL-1β and IFN-γ between positive and negative control subjects were not statistically significant (P>0.05). Depressed serum IL-4 and TNF-α concentration were seen in infected individuals. There was a negative association between microfilariae density and the profile of IL-4 in infected volunteers. Furthermore, a positive correlation of WBC and IL-4 was recorded in positive patients. The level of TNF-α in positive individuals was negatively associated with WBC and lymphocyte counts (P<0.05). Conclusively, depressed IL-6, IL-4 and TNF-α may be indicative of suppressive immunity which could influence the pathological effects of *O. volvolus* infection. Raised IL-13 concentration in positive volunteers could be used as a predictive tool of *O. volvolus* infection among Cameroonians.

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JHA, Ajay

PhD fellow, Harbin Institute of Technology, Harbin, China

Jha have completed his bachelor's degree in mechanical engineering during 1996-2000 and master's degree in renewable energy engineering during 2003-2005 in Pulchowk Campus, Institute of Engineering, Tribhuvan University, Kathmandu, Nepal. Presently, he is doing his Phd in environmental engineering at the State key Laboratory of Urban Water Resource and Environment, School of Municipal and Environmental Engineering, Harbin Institute of Technology, Harbin, China and working as an Assistant Professor at Kathmandu Engineering College, Tribhuvan University, Kathmandu, Nepal. He has also been involved, as an energy and environment expert, in providing short-term training and awareness program about non-carbon emitting renewable energy and its appliances.

Abstract

Psychrophilic Dry Anaerobic Digestion of Cow Dung for Recovering Biogas and Organic Fertilizer: Effect of Inoculum

Ajay Kumar Jha

State Key Laboratory of Urban Water Resource and Environment, School of Municipal and Environmental Engineering, Harbin Institute of Technology, Harbin 150090, P. R. China

Low-ambient temperatures, < 20 ^{o}C, are known to cause drastic reduction in the efficiency of anaerobic bio-digesters due to low growth rate of the constituent bacterial consortium. The performance of bioreactors even more decreases with the increment in solid content in the feedstocks. It is therefore great challenge to stabilize organic solid waste economically in cold and hilly regions. The objective of this study was to evaluate the effect of inoculum percentages on solid state anaerobic digestion of cow dung at 15^{o}C in single-stage batch reactors. The specific biogas production obtained for 30% mesophilic, and 30%, 50% and 70% psychrophilic inoculi based on wet-weight were 13, and 19, 25, and 22 L/kg with methane yield 8, and 11, 15 and 13 L/kg, respectively. The

experimental results indicated that the reactor containing 50% psychrophilic inoculum achieved the highest methane yield of 0.1 m^3/kg_VS and 0.09 m^3/kg_COD and the greatest organic material removal efficiency of 31% VS and 33% COD compared to those for other bio-digesters. It can be observed that low temperature adapted inoculum could relatively enhance microorganism activity and ultimately digestion process because it might contain psychrophiles and mesophilic bacteria acclimatized on psychrophilic temperatures. The increment in the amount of the inoculum could considerably boost treatment efficiency but its larger mass (> 50%) failed to produce higher quantity of biogas as bioreactor with higher amount of inoculum contained more inorganic carbon. Compared to mesophilic and thermophilic anaerobic digestions, the methane yield and the biodegradability were lower but superior methane content in the psychrophilic anaerobic digestion process. It can be concluded that psychrophilic solid state anaerobic digestion has the potential to become an economical and easy-to-use process to treat cow manure for methane production in cold area.

Keywords: Psychrophilic; Anaerobic digestion; Cow dung; Biogas

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KABIR, MD. Firoz

PhD Scholar, National Centre of Excellence in Molecular Biology (CEMB), University of the Punjab, Lahore, Pakistan

MD. Firoz Kabir, a Bangladeshi national doing PhD at National Centre of Excellence in Molecular Biology (CEMB), University of the Punjab, Lahore, Pakistan. His PhD research is on Retinitis Pigmentosa (RP) disease that affects the retina, with a project entitled; "Molecular Characterization of Inherited Retinal Dystrophies". He obtained his MSc. in Genetic Engineering and Biotechnology from the University of Rajshahi, Bangladesh. His research areas of interest are genetic disease, microarray techniques, expression analysis, stem cell and so on. After the completion of his PhD, Kabir will go back to his country Bangladesh and serve his nation.

Abstract

Exclusion Analysis of *TULP1* Gene in Consanguineous Pakistani Families

M. Firoz Kabir, S. Amer Riazuddin, Shaheen N. Khan, Sheikh Riazuddin, Tayyab Husnain

Inherited retinal dystrophies are a broad group of hereditary disorders affecting the retina. One of the most common forms of retinal dystrophies is retinitis pigmentosa (RP) affecting 1 in 3,500 people. RP is clinically and genetically the most heterogeneous disease with a wide variation in severity, mode of inheritance, age of onset, progression, and phenotype. RP can be inherited in autosomal dominant, autosomal recessive, X-linked, mitochondrial, or as a digenic trait.

Consanguineous families having three or more RP affected individuals have been identified and blood samples were collected. Genomic DNA extracted from blood samples. Fluorescently labeled markers used for screening of families for linkage to known autosomal recessive RP loci.

Family PKRP 227 has a total of 9 members including 6 affected members. Linkage analysis of this family showed to be linked to TULP1 gene on chromosome 6. The

markers D6S1611, D6S439 and D6S1645 were used for linkage analysis. All the affected members of the family had night blindness since their early childhood with progressive loss of peripheral vision. Fundus photographs of affected individuals showed changes typical in RP. Unaffected parents did not show any funduscopic signs of RP. No unaffected individuals in the family reported night blindness. Affected individuals had typical RP changes on electroretinograms (ERG), including loss of both the rod and cone responses, whereas the parents showed no changes consistent with RP. Sequencing of TULP1 gene will be carried out to find mutation in this gene.

The present study will have long-term benefits for visually impaired population of Pakistan. Pakistani population is ideal for genetic studies of recessively inherited diseases because of intermarriages. Genetic testing will enable pre-symptomatic diagnosis of the members of affected families. It will permit a more accurate genetic counseling to families. This research will ultimately pave the way for the development of new specific therapies.

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KIMANI, John

Tutorial Fellow, University of Nairobi

Kimani was born in Uasin Gishu county on the 24th of May, 1984 as the second born son in his family. He attained primary and high school education in Eldoret, Kenya. In 2004, he joined the University of Nairobi to pursue his undergraduate studies. He served as Director of Information and Publication and treasurer positions in Veterinary Student Association. He also helped in the revival of the *vet digest* magazine where he became the editor till the completion of his undergraduate course. These positions helped him gain crucial management and administrative skills. In 2008, he was attached to the Central Veterinary Laboratories in Nairobi, where he gained the hands on experience in disease diagnostic and biochemical procedures.

He registered as a master's student in November 2009, upon completing bachelors of veterinary medicine course. He has a special interest in wound healing studies, where the information attained can be utilized by clinics and multimillion dollar pharmaceutical industry to solve the clinical conditions associated with wound healing.

In 2010, he was employed by the University of Nairobi to offer lectures on veterinary anatomy and mammalogy in the department of Veterinary Anatomy and Physiology. He has computer-proficiency in Microsoft office packages 2007, Publications, presentations, Internet use and photography. Through innovation and hand work, he motivates himself and those around him to do their best. He is a creative teacher and excellent role model who is dedicated to his work. He maintains high standards for himself as well as those he works with.

Abstract

Comparative Skin Histology and Wound Healing of African Mole Rats: *Tachyoryctes ibeanus* and *Heterocephalus glaber*

John. M. Kimani [a,*], Stephen G. Kiama [a], Ashley W. Seifert [b], Philemon K. Towett [a]
[a] Department of Veterinary Anatomy and Physiology, University of Nairobi, Riveside Drive, P.O Box 30197, Nairobi, Kenya [b] ***Department of Biology, University of Florida, Cancer Genetics Research Complex***

2033 MOWRY ROAD GAINESVILLE, FL 3261

This far, several animal models have been advanced to study wound repair each with one or more characteristics that are useful for evaluating skin repair. The morphology of subterranean rodents, African mole rats, *Tachyoryctes ibeanus* and *heterocephalus glaber* differ markedly. *T.ibeanus* are covered with hairs while the *H. glaber* are hairless. This study was designed to provide the implications of their different skin features on the process of wound repair. Two full thickness excisional wounds were made using 4mm biopsy punches on the dorsum of each animal. Progression of wound repair was monitored daily and collection of biopsy samples for histology processing until completion of healing. *T.ibeanus* dorsal skin was significantly ($p<0.05$) thicker than *H. glaber* despite it having a thinner epidermis. There was significant difference on protective scab, detachment time between *H. glaber* and *T.ibeanus* ($p<0.05$). There were significant spatiotemporal differences on regeneration of the dermis in *H. glaber* and *T.ibeanus.* Despite the absence of skin appendages in the dermis of *H.glaber* the remodeling period was longer than *T.ibeanus.* Epithelial cells resulting in regeneration of compound hair follicles of *T.ibeanus* arise from the regenerating dermis which differs with the classical development of simple hair follicle where cells arise from the epidermis. These results indicates that there are differences in the mode of wound healing between the two species of mole rats, however the extent whether this is determined by the present or absence of hair needs to be fully explored.

Keywords: *Tachyoryctes ibeanus, heterocephalus glaber,* Skin, Wound healing and Regeneration.

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MAHOMOODALLY, Mohamad

Lecturer, University of Mauritius

Mohamad Mahomoodally holds a first class BSc with honours in Biology Environmental Sciences, following which he secured the competitive Tertiary Education Commission postgraduate national scholarship to read for his MPhil/ PhD in Biochemistry/ Pharmacognosy. He has also secured the AFASSA fellowship (Funded by ISP programme, Sweden) and has worked on novel methods to assess pharmacological/ nutritional properties of medicinal/ food herbs/ plants at H.E.J Research Institute of Chemistry and Dr Panjwani Center for Molecular Medicine and Drug Research, Pakistan. After his PhD, he has worked for a Contract Research Organisation as a Clinical Trial Manager and in 2009 he joined the University of Mauritius as full-time lecturer. He has published around 24 original research papers in ISSN/ impact factor journals and edited 4 book chapters, 2 academic books and presently editing the UNESCO Life Encyclopedia.
Mahomoodally has also secured numerous fellowships/ travel grants to attend international seminars, teaching tool workshops and conferences, namely the IBRO's

sponsorship to attend neuroscience schools in Africa (University of Cape-Town, South Africa, Fayoum University, Egypt, Rhodes University, South Africa, and Reunion University, Reunion Island) and the SAN-Bio (Nepad) workshop, South Africa. In 2011, he was invited as a key speaker at the 14th Asian Chemical Congress, Thailand.

Mahomoodally is presently the PI and Co-PI of two on-going research grants/ consortiums and is currently the scientific editor/ reviewer of several peer-reviewed international journals. He has been nominated to several national committees; e.g. currently member of the National Pharmacovigilance committee, and has been a technical member for the innovators award 2010 by National Productivity and Competitiveness Council.

Abstract

Bioprospection of the Mauritian Biodiversity for its Biopharmaceutical and Nutritional Potential

Public interest in complementary and alternative therapies, including the use of botanical and natural dietary supplements has experienced spectacular rise throughout the world. Indeed, a growing body of scientific evidence in the past decade has revealed that many medicinal herbs and food plants exhibit specific and potential biological activities against pathogenic microbes, in addition to their established nutritional value. The World Health Organisation has estimated that 80% of the population of developing countries relies on traditional medicines, mostly plant drugs, for their primary health care needs. To this effect, since the past few years, we have been evaluating the huge unexplored potential of indigenous herbs and food plants of Mauritius as alternative therapeutic agents to manage/treat various infectious and non-communicable diseases. Several novel protocols have been developed and adapted to probe the therapeutic potential of these natural resources against common infectious diseases (e.g. MRSA and neglected tropical viruses such as Chikungunya (CHIKV)) and non-infectious diseases (NIDDM and CVD).

Results amassed for more than 150 herbs and food plant species are very promising as being not cytotoxic to human cells, possess the potential to modulate the immune system and possible mode of action of these plants have also been elucidated. Interesting, promising anti-CHIKV leads were discovered for the first time from 4 fractions which showed a maximum inhibition of 88.8% at 20µg/mL; 3.9% at 4µg/mL; 100% at 20µg/mL and 95.3% at 20µg/mL against the CHIKV respectively. Additionally, we are currently establishing the nutritional profiles of some underutilized medicinal food plants as per FAO guidelines. The rational of this was to further ascertain the theory that the quality of food plays a very important role in combating infectious diseases. We have been focussing more on the underutilized crops as they represent potential in ensuring food security and would easily enlarge the staples crop food base. To this effect, our study is an illustration of how scientific data can be translated back to society with potential socioeconomic significance as many indigenous/endemic plant species of Mauritius have been used in folkloric medicine to manage and treat panoply of various human ailments. Furthermore, the present research tends to establish that the unique tropical biodiversity of Mauritius can be turned into cheap sources of commercially important phytomedicines that can be made accessible to the local and regional communities. Furthermore, results emanating from this project will also be disseminated to those countries/institutions that stand to benefit.

Keywords: Bioprospection, Biodiversity, Biopharmaceutical, Nutritional Potential

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MUNIEN, Suveshnee

Student, University of KwaZulu-Natal

Suveshnee Munien has a B.Sc. Honours in Environmental Sciences and an M.Sc. in Forest health assessment and remote sensing from the University of KwaZulu-Natal, UKZN, South Africa. In addition, she is currently pursuing a Ph.D. in renewable energy and rural development, also at UKZN. Her interests are focused primarily on the physical and social aspects of geography and environmental sciences, more specifically, the use of spatial tools to address socio-economic and environmental aspects in an integrated manner. Her studies have equipped her with a number of useful skills in data collection and analysis in both physical and social geography. Suveshnee has also lectured both undergraduate and post-graduate courses at UKZN and Durban University of Technology. Her involvement in lecturing has also given her the opportunity to be involved in research projects with senior collaborators, allowing her to develop skills in project design and management. Her prior work has been presented at two international conferences and been published in peer-reviewed journals. Furthermore, Suveshnee is actively involved in community outreach programmes and is a founding member of a non-profit organisation servicing greater Durban for the last 5 years.

Research Publications:

- V. Moodley, A. Alphonso and **S. Munien** (2010) Rwanda's Genocide and Environmental Impacts. *African Journal of Conflict Resolution* 10 (2):103-119
- **S. Munien** and F. Ahmed (2011) A Gendered Perspective on Energy Poverty and Livelihoods - Advancing the MDGs in Developing Countries. *Agenda* (in press)
- U. Bob, C. Potgieter and **S. Munien** (2011) *Journal of Social Sciences* (submitted)

Abstract

Solar Thermal Technologies-Opportunities and Constraints in Poor Communities: A Case Study of Inanda, Durban, South Africa

Energy remains a fundamental aspect of the sustainable development–poverty nexus and the implementation of the renewable energy sources is deemed to be critical, especially in the context of climate change. It is therefore imperative that appropriate and sustainable energy options are explored, particularly in developing countries where increased energy demands are likely to occur. Renewable energy is considered to be a more viable option in addressing energy poverty among the poor, in facilitating the improvement of livelihoods and maintainance of environmental integrity. The new Scaling up Renewable Energy in Low-Income Countries programme (SREP) promoted by the World Bank and Regional Development Banks is aimed at addressing the demand for reliable and affordable energy in poorer countries.

This study examines the opportunities and constraints associated with introducing Solar Thermal Technologies (STTs) on livelihood activities at both the household and community levels in poor residential areas, in KwaZulu-Natal, South Africa. Emerging

from the COP 17 meetings, the emphasis especially for Africa, was on the implementation of technologies that not only aim to mitigate the impacts of climate change but also reduce vulnerability and enhance existing livelihood practices in poor communities, such as agriculture. In this regard, however, there is a dearth of empirically-based studies that examine the perceptions and concerns pertaining to renewable energy options (such as STTs) and energy practices in poor communities. The present study examined the energy profile of a typical peri-urban community in relation to current energy use patterns, future aspirations, and attitudes towards renewable and more specifically, solar thermal energy.

The key findings indicate a heavy reliance on electricity and fuelwood sources, specifically in the more rural parts of Inanda (peri-urban). Moreover, assessments of the knowledge levels in relation to energy practices (including renewable energy options) reveal that concerns for sustainability and environmental well-being are almost non-existent, with the main demand being affordable and reliable sources of energy. This study emphasises the fact that there is presently insufficient understanding of local community needs and constraints in relation to energy use, options, policies and programmes. The study recommends greater integration and representation of poor communities' understanding of renewable energy options in general, particularly STTs.

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NABIL, Asmaa

Assistant Researcher, National Institute of Oceanography and Fishers (NIOF)

Asmaa Nabil Adam, is a biochemist/ chemist, graduated from the Chemistry/ Biochemistry Department, Alexandria University in 2002. She worked in the Biochemistry Department, Alexandria University in 2006, and has been working in the National Institute of Oceanography and Fisheries (NIOF), Marine Biotechnology Unit since 2009. She obtained her degree in marine biotechnology and natural products, worked from several marine sources from micro up to macro, experienced with marine natural product discovery in medical, industrial and agricultures application, from extraction up to identification and classification by different chemical incorporation also of Nano-application to improve the extract activity, and molecular techniques in order to investigate their activity in in *vitro* and in *vivo* (as antioxidants, anticancer, anti-diabetics, hepatoprotective, anti-Alzheimer,….etc.) Nabil participated in many national projects concerning monitoring in the marine field and other projects in National Institute of Oceanography and Fisheries (NIOF). She is a member of many associations;

- From 2011 to date: Member of "The Arab Biotechnology Association"
- From 2011 to date: Member of "The Egyptian Natural Toxin"
- From 2011 to date: Reviewer in Biotechnology and Molecular Biology Journal
- From 2011 to date: Member of the "Moroccan Society of Bioinformatics (SMBI)"

Abstract

Marine Derived Fungi as Promising Hepatoprotective Drug Candidate

Marine derived fungi have been shown in recent years to produce a plethora of new bioactive secondary metabolites. These compounds are of interest as new lead structures for medicine as well as for plant protection .in our vivo study the effect of ***Trichurus spiralis*** extract as antioxidant and anti-inflammatory as well as anti-toxic has been studied on induced hepatotoxicity in rats. To fulfill the in vivo study the male sprgue-

Dawely rats were assigned into four groups, seven rats on each group, where: Group I: received saline subcutaneously for 7 days and served as negative control. Group II: received i.p ***Trichurus spiralis*** extract of dose 40 mg /100g b.wt/day for 7 days and served as positive control. Group III: received subcutaneously for 7 days, 0.25mg /100gm/ b. w/day heavy metal mixture (mixture of Cd, Co, Hg, Ni chloride and Pb acetate) and served as induced group. And, Group IV: pretreated with ***Trichurus spiralis*** extract for 7 days as group II, as a protection dose and then treated with heavy metal mixture as group III and served as protective group. Our result show that, the rats treated with heavy metal mixture (Co, Ni, Hg ,Cd chloride and Pb acetate) showed a significant increase in both the level of lipid peroxidation and activity of the liver function enzymes (ALT& AST). However, the activities of glutathione S-transferase (GST) and superoxide dismutase (SOD) were significantly decreased as compared to the control group. In contrast, the rats treated with ***Trichurus spiralis*** extract showed significant elevation in the SOD and GST as compared with the control. While, the activities of LPO were significantly decreased. This may be related to the effects of polyphenol (especially flavnoids) compounds that acts as potant antioxidants in ***Trichurus spiralis*** extract.

Keywords: Antioxidants - Hepatoprotective - Marine derived fungi- Anti-inflammatory-drug discover –heavy metals.

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NGENO, Kiplangat

PhD Student, Wageningen University

Ngeno holds a Bachelor of Science degree in Animal Production from Egerton University and Master of Science degree in Animal Production (Animal Breeding and Genetics option) from the same University. His Master of Science project was on Indigenous chicken and the thesis title was: "Genetic Analysis of Growth Patterns in Different Ecotypes of Indigenous Chicken in Kenya". From the MSc research project, he has managed to write two publications that have been submitted to international journals and presented his results in national and international conferences. Currently, he is pursuing a PhD degree in Animal Breeding and Genetics at Wageningen University, The Netherlands.

He has an experience with a wide range of activities through academic projects, research and part-time employment. He works as;

i. A Research Technician for International Livestock Research Institute (ILRI),
ii. Student Tutor in Egerton University within INCIP and the Value Chains for Poverty Reduction project,
iii. Part–time Lecturer at Mt Kenya University,
iv. Representative of the IFAD funded FAO/INFPD Project; "Smallholder Poultry Development in Uganda",
v. Trainer and Supervisor of data collection for EAAP-KARI Project,
vi. Lead Investigator in the project "Assessment of the Vulnerability and Adaptation Strategies to Climate Variability and Change of the *Bos-taurusd*airy Genotypes Under Diverse Production Environments in Kenya", funded by the African Technology Policy Studies Network (*ATPS*),
vii. Trainer of Trainers. Trainers were small scale farmers and pastoralist from SADC and COMESA regions on pastoral management, animal breeding and genetics, feeds and water conservation and Feeding management

Abstract

Assessment of the Vulnerability and Adaptation Strategies to Climate Variability of the Bos-taurus Dairy Genotypes in Nandi South and Rongai District in Kenya

The study assessed the vulnerability and adaptation strategies to climate variability of the Bos-taurus dairy genotypes (DBG) under two diverse production environments (PEDs); Rongai and Nandi South districts. The impacts of climate change were low (2.60) to high (3.96). Impacts were high for seasonal heat stress (3.74), droughts (3.96), flooding (3.57) and feed resource shortage (3.80) and moderate for disease epidemic (3.39) and water resource decline (3.26) in Nandi South district. On the other hand, impacts in Rongai district were high for frequent droughts (3.60), disease epidemic (3.87) and feed shortage (3.60) and moderate for heat stress (3.30), flooding (2.60) and water resource decline (3.10). The current and earlier production systems in the two PEDs were different. Efficient and affordable response strategies to impacts of climate change were different in the two districts. Climate change has already impacted DBGs differently in the two PEDs.

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NWAICHI, Eucharia

Lecturer, University of Port Harcourt

Eucharia Oluchi Nwaichi was born to the family of late Sir Donatus Nwaichi and lady Eunice Nwaichi of Nsirimo in Umuahia, South Local Government Authority in Abia State of Nigeria. She holds a B.Sc, M.Sc and Ph.D in Biochemistry. Eucharia bagged two awards on her convocation in January 2001 as the Best Graduating Student (1999/2000 session) in the Department of Biochemistry, University Of PortHarcourt, and AkwaIbom state government award as a Corps Member (2002). She has worked in corporate industries including Dangote (2003 -2004), Coca Cola (2004-2008), Shell Petroleum Development Company (2009-2010) and now lectures at the University of PortHarcourt. She distinguished herself among peers with her participation in NGO activities and consultancy services given to TPI Ltd on Sea Eagle FPSO Environmental Monitoring project (2009/2010) and Macphed ventures; an Oil services contracting firm (2009 to present).

She enjoys affiliations with American Chemical Society (2010), International Phytotechnology Society (2009), Third World Organization For Women In Science (2007), International Society For Environmental Technology (2004), and Nigerian Institue of Management (2003). Her significant contribution in the world of Science is evident in her over 16 scholarly articles in renowned academic journals and a textbook. Dr. Eucharia is a reviewer in 4 academic journals to date. She, at a young age, has supervised over 20 undergraduate students and has presented 3 resounding research findings at international conferences and many other local presentations. She has extensively and is still making a wave in the area of Phytoremediation which has Agricultural, Biological and environmental Implications.

Abstract

Phytoextraction of Cadmium from Petroleum Contaminated Soil by *Vigna subterranean*

Pot experiments were carried out to investigate cadmium (Cd) uptake and accumulation by *Vigna subterranean* from soil artificially spiked with Nigerian Bonny light crude oil up to 10 % (v/w). Effects of amendments such as poultry manure, NPK and UREA fertilizers on phytoextraction were also investigated. Cd uptake levels of 118.8 mg kg^{-1} and 60.3 mg kg^{-1} for the shoots and roots, respectively within 12 weeks of study, giving a shoot: root quotient of 1.94 at the highest contaminant dose, were observed. Shoot and root Cd concentrations increased linearly with increasing contaminant dose with or without amendments except for UREA that peaked at 8% contamination. Cadmium uptake by shoots were 104.4, 106.9, 111.5, 118.1 and 118.8 mg kg^{-1} at 2, 4, 6, 8 and 10% (w/v) contamination, respectively suggesting that additional cadmium removal could be achieved by successive revegetation over a growing period. Amendments generally improved Cd phytoavailabilty, thus the levels found in tissues. There was no significant difference between the plant's performance under stress in the nutrient un-amended and amended treatments except at the highest dose of contaminant in the poultry manure amended regime. The results indicate that *V. subterranean* is a Cd hyperaccumulator with a high capacity to accumulate Cd in the shoots and could be explored in the clean-up of Oil-contaminated sites.

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OGUNMWONYI, Isoken

PhD Student, University of Fort Hare, South Africa

Isoken Henrietta Ogunmwonyi obtained a BSc in Microbiology in 2006 from the prestigious Obafemi Awolowo University Ile-Ife, Nigeria. She proceeded to the University of Fort Hare South Africa in 2008 for her MSc degree in Microbiology and completed it with *Cum laude.* Currently, she is studying towards a PhD degree in Microbiology at the University of Fort Hare, South Africa.

Ogunmwonyi's research focuses on pharmaceutical, applied and environmental microbiology and biotechnology. She has special interest in Molecular Epidemiology and Public Health. Ogunmwonyi has published over 7 journal articles in accredited journal from her various research output. She has attended several national and international conferences with both oral and poster presentations.

Apart from her research experience, Ogunmwonyi has been a tutor since 2008 where she has taught different courses including Microbial Genetics, Applied Microbiology and Biotechnology, Immunology, Virology and Antimicrobial Chemotherapy. She is a member of several professional bodies including Third World Organisation of Women in Science (TWOWS); South African Society for Microbiology (SASM); Water Institute of Southern Africa (WISA); Nigerian Society for Microbiology and Nigerian Society for Experimental Biology (NISEB). Ogunmwonyi is married to Dr. Etinosa Igbinosa and blessed with a son.

Abstract

Multiple Antibiotic Resistance Profiles and Resistance Genes Cluster of *Pseudomonas* Isolates in the Eastern Cape Province of South Africa

Pseudomonas species are ubiquitous group of bacterial in soil, plant root and rhizosphere microbiota milieu whose species are of great environmental interest. Seasonal distribution of isolates was revealed as; summer (70.59%), winter (20.59%), autumn (6.86 %) and spring (1.96%). In summer, the highest number of *Pseudomonas* isolates was recovered from plant rhizosphere (95.83%), followed by plant root (2.77%) and cultivated soil 1.38%. *Pseudomonas putida* was revealed as the most prevalent of *Pseudomonas* species among all samples collected and distributed profile as follows; 95% plant rhizosphere, 41.2% plant root and 20% cultivated soil. The antibiotic susceptibility pattern of *Pseudomonas* isolates reveals 100% resistance against clinamycins, trimethoprim, vancomycin and oxacillin across all samples. Gentamicin had the highest susceptibility among *Pseudomonas* isolates across all samples; plant root (92.86%), cultivated soil (75%) and plant rhizosphere (85%). Ofloxacin showed susceptibility against *Pseudomonas* isolates from plant root (78.57%), cultivated soil (75%) and plant rhizosphere (55%). Ciprofloxacin was also susceptible among *Pseudomonas* isolates and revealed as cultivated soil (75%), plant root (64.29%) and plant rhizosphere (63.75%). Among the antibiotic resistant genes determined, integron gene was detected in 29.76% of *P. putida* 100% *P.aeruginosa* and 6.25% of other *Pseudomonas* species. The study reveals the presence of multidrug resistance *Pseudomonas* species in the studied microenvironment. The presence of integron gene in some *Pseudomonas* strains is of immense environmental and public health concern because they are potential disseminator of antibiotic resistance genes in the environment.

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OKELOLA, Olumayokun

M. Tech Research Student, Federal University of Technology, MINNA, Nigeria

Okelola is an M.Tech research student at the Federal University of Technology, Minna, Nigeria. He is a foremost prodigy connoisseur in Environmental-cum-Climate Change studies, contributing significantly to institutional academic excellence by advocating, researching and fostering partnerships towards advancement of environmental sustainability with global impacts.

His innovative research interests straddle applied science development in the actualization of the Millennium Development Goal number 7; Environmental sustainability. He is the focal point of a network of youths advocating the use of renewable energy sources aside fossil fuel energy resources to mitigate Climate Change and other environment problems.

A participant of numerous World Bank institute courses and various capacity building programs. He has served at the highest decision making organ of Model UN sessions in the Security Council leading member nations to pass resolutions on the subject of Climate Change as a global concern.

He was among the global top rated 101 Young African Leaders. He was nominated for the 2010 UNEP Champion of the Earth Award and Semi –Finalist of The Future Awards for his initiative projects on Climate change. He recently received the LEAP Africa

national youth Leadership award, supported by the International Youth Foundation (IYF), USA and sponsored by NOKIA. Okelola was listed among the youngest and brightest Nigerians by The Future Project. As a member of the African Youth Forum for Science and Technology (AYFST), he presently leads a team of researchers on an ongoing pilot climate change innovation research for the African Technology Policies Study (ATPS) network.

Abstract

Geographical Information System Analysis of Carbon Dioxide Vehicular Carbon Footprints Emissions Concentration Level in Minna, Niger State, Nigeria: The Environmental Pollution CUM Climate Change Implications

This study gives a geographical Information System (GIS) view and trends of the level of vehicular carbon footprints emissions in Minna, Niger state, Nigeria. It provides a spatial view insight into the obtainable emissions level in the selected flashpoints for the study. These flashpoints are spread across the city of Minna's road network. The measurements were achieved with the use of gasman meters for each type of gas investigated in this study. The obtained datasets were georefrenced on a digital map of Minna. The datasets were obtained high traffice density and low traffic density periods. This includes the data collation for the peak and off peak traffic times within the city due to temporal variations of traffice counts and vehicular movements. The emission values for the data collated during the peak and off- peak times were calculated and also represented with the Arc-GIS software.

A comprehensive dataset of the data was also made with a Statistical package for Social Sciences (SPSS) software. The analysis and data collected reveals the deviation of the major green house gas, carbon dioxide measured to have deviated from the internationally accepted safe limit of 350 parts per million for its upper limit in the atmosphere to mitigate the current global rate to what it was in the pre industrial times. These emissions were established to be emanating from vehicular exhausts from transport activities on Minna roads. The dataset and subquent analysis becomes a working tool for the government, legislators,private sector, civil society and other stakeholders for appripriate understanding on the trends of green house gas emission on Minna roads and necessary policy formulation to reduce the emissions in other to improve the ambient air quality of Minna and also mitigate global warming.

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OLIVEIRA, Jaqueline

PhD Student, University of Sao Paulo

Oliveira studied Biomedical Science in 2003, at the University of Londrina-Brazil. Since the first year she was involved in scientific projects, such as the Analysis of Genetic Polymorphism CCR5-delta32 in HIV and Multiple Sclerosis Patients (Kaimen-Maciel et al., International Journal of Molecular Medicine, v. 20, p. 337-344, 2007; Reiche et al., International Journal of Molecular Medicine, v. 22, p. 669-675, 2008), and Molecular Detection of TT Virhus in Hepatic Damaged Patients (Oliveira et al. The New Microbiologica, v. 31, p. 195/201, 2008).

She graduated in 2006, and in 2007, she pursued a master's degree in Genetics from the University of Sao Paulo, Brazil. The project was related to epigenetics changes in Silver-

Russell syndrome and was completed in 2009. In the same year and institution, she joined the PhD program; Analyzing MicroRNAs Expression in Childhood Acute Lymphoblastic Leukemia (Oliveira et al. Leukemia Research, v. epub, p. of print, 2011). Additionally to the main project, she is associated to other oncogenetics projects (Brassesco et al., Cancer Genetics, v. 204, p. 108-110, 2011; Morales et al., Anti-Cancer Drugs, v. aug, p. 4, 2011; Pezuk et al., Clinical and Experimental Medicine, v. epub, p. of print, 2011).

Furthermore, she made a technical visit to the University of Calgary, Canadá, (2011), participated in Biovision 2011, Lyon, France and spent four months in MD Anderson Cancer Center, Houston, USA (2011), realizing experiments associated to her PhD project.

Abstract

Differential miRNA Expression in Childhood Acute Lymphoblastic Leukemia and Association with Clinical and Biological Features

Acute lymphoblastic leukemias (ALL) represent the most common type of childhood malignant neoplasia. Despite the significant progress in treatment, 20-30% of affected children relapse and new efforts aiming to improve the outcome include the development of more precise risk classification strategies and the development of more specific therapies.

MicroRNAs (miRNAs) are small (17-25 nucleotides) single-stranded noncoding RNAs that function predominantly as sequence-targeted modifiers of gene expression through translational repression and participate in a wide variety of physiological processes such as cell cycle progression, apoptosis and differentiation. The miRNAs expression profile analysis has been highly informative to identify different type of tumors and classification, however, in ALL patients very little is known about the involvement of miRNAs in development of distinct phenotypes and miRNAs as prognostic markers.

The present study aimed to analyze the expression profile of the microRNAs previously described as associated with childhood ALL, miR-92a, miR-100, miR-125a-5p, miR-128a, miR-181b, miR-196b and let-7e, and their association with biological/prognostic features in 128 consecutive samples of childhood acute lymphoblastic leukemia (ALL) by quantitative real-time PCR. A significant association was observed between higher expression levels of miR-196b and T-ALL, miR-100 and patients with low white blood cell count at diagnosis and t(12;21) positive ALL.

It was also evaluated the in vitro effects of miR-100 forced-expression in B and T ALL cell lines. Pre-microRNA miR-100 and negative control were transfected into Jurkat (T-ALL) and ReH (B-ALL) cell lines using Lipofectamine 2000 at a final concentration of 100 nM. Cell proliferation by XTT kit, colony formation assay in methocult® medium and apoptosis by anexin V were assesed. A small but significant decrease of proliferation in ReH after 120 hour and decrease the number of colony formation in Jurkat were observed. The apoptosis index was not altered after transfection. These findings suggest a potential negative effect of miR-100 in ALL cell line growth and support the association between lower expression levels and poorer prognosis in childhood ALL found in patients samples. These findings suggest a potential activity of these microRNAs in pediatric ALL biology.

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OYINKAH, George

MPhil Student, University of Ghana, Legon-Accra, Ghana

Oyinkah George Marfo is a Ghanaian, born on the 30th of June, 1986. He grew up in a village in the Eastern region of Ghana where he had his elementary education. He proceeded to Pope John Senior High School from the year 2001-2004 where he majored in science. He gained admission to the University of Ghana, Legon-Accra in 2005 to read biological sciences. He graduated in 2009 with a Bsc. in Zoology. He was appointed a Teaching/ Research assistant in the Department of Botany as part of a mandatory one year national service undertaken by every graduate from a public university in Ghana.

He is currently enrolled in a master of philosophy program in insect science at the African Regional Post Graduate Program in insect science, University of Ghana Sub-Regional Centre, Legon-Accra.

He has been involved in a number of research works, the most prominent amongst them was the evaluation of effectiveness of Success Appat®-GF-120 for the control fruit flies in Ghana. He has also been involved in the process of creating fruit fly catalogue through host range research being conducted currently.

Abstract

Host Range of Fruit Flies (Diptera: Tephritidae) from Northern Ghana

Fruit flies are major pest of several cultivated fruits and vegetables. They inflict heavy losses on fruits and vegetable crops because of their phytophagous nature. Losses of up to 40% have been recorded in mango in East Africa and 12-50% in Benin. One of the difficulties of controlling these fruit flies is the fact that when major cultivated crops such as mango, cashew and shea nuts are not in season, they find refuge in alternative host plants till their preferred host plants are in season. This study was therefore aimed at cataloguing the host ranges of all fruit fly species, their preferred host plants and any natural enemies associated with them from both cultivated and wild fruits and vegetables from the three northern regions (Northern, Upper-East and Upper-West) of Ghana. Samples of potential host plants were collected and incubated for fruit fly emergence.

From 103 samples, a total of 1,722 fruits and vegetables representing 50.98 kg, were collected. These belonged to 15 species in 11 plant families. Twenty-nine samples were positive for emerging fruit flies yielding a total of 1,110 fruit flies belonging to three genera (*Bactrocera*, *Ceratitis*, *Dacus)*. Four host associations were established. *Bactrocera invadens* Drew, Tsuruta & White was the only species recorded from two host plants belonging to different families. *Luffa aegyptiaca* Miller was the only host plant that recorded two fruit fly species, *Bactrocera cucurbitae* (Couquillet) and *Dacus bivittatus* (Bigot). *Ceratitis cosyra* (Walker) was recorded from African peach, *Nauclea latifolia* Smith. Recent field studies show that the once dominant species in mango (*C. cosyra*) is showing signs of being competively displaced by the recently introduced and more devastating Africa invader fly, *B. invadens*.

Our results could therefore be a pointer as to the new home of *C. cosyra* or indicate the African Peach as an alternative host of the fly during this season of the year. Whichever way it is, it has a huge implication on the development of management strategies of fruit

flies in the country, and continuation of sampling all year round will be critical to give a holistic picture of the trend.

Keywords: *Bactrocera, Dacus, Ceratitis*, host range, Northern Ghana.

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RAYA, Rudra

Research Coordinator, Centre for Socio-Environment Conservation Nepal (SEC-Nepal)

Rudra Bahadur Raya has been a Research Coordinator in the Centre for Socio-Environment Conservation, Nepal since 2008. SEC-Nepal investigates Climate change impact on water quality in Nepal which is funded by IFS-Sweden. From 2007, he has been a Researcher in the organization.

Previously, he conducted investigations on the impact of Climate change on water around the nation, devoting special attention to issues of mountain ecosystem and climate change adaptation. Raya authored more than 40 general articles and more than eight research articles on climate change topics in such publications as the "Voice of Nature", "The Kathmandu Post", "The Himalayan Times" and "Kantipur Daily". He also conducts research in the environment sector regularly and so many research articles have published in Nepali Newspaper.

He completed his Bachelor degree in Environmental Science and Master's in Watershed Management from the Institute of Forestry, Tribhuwan University, Nepal. He is working on Environment and climate change research sector on different organizations and developing countries. The organization (SEC-Nepal) has quadrupled in size, while greatly expanding its geographic reach, and adding special programs devoted to Environmental Conservation and Climate Change research sector.

Abstract

Climate Change Impact on Water Quality (A Case study of Mardi River of Nepal)

Freshwater resources are highly sensitive to variations in weather and climate. The changes in global climate that are occurring as a result of the accumulation of greenhouse gases in the atmosphere will affect patterns of freshwater and will alter the frequencies of floods and droughts. Climate model simulations and other analyses suggest that total flows, probabilities of extreme high or low flow conditions, seasonal runoff regimes, groundwater-surface water interactions and water quality characteristics could all be significantly affected by climate change over the course of the coming decades. In an effort to identify the ecological risk associated with anthropogenic and global climate change stressors on the environment, I followed the EPA's Ecological Risk Assessment framework. As a good starting point for this project, I decided to create a concept model involving the main interactions surrounding macro-invertebrates in Mardi streams. I looked at natural processes to gain an understanding of the role BMI's play in a northeastern environment and created a list of possible stressors related to human impacts for insight into potential future scenarios. I discussed the importance of macro-invertebrates as the foundation of an ecosystem and cited several stressors by climate change. The core of my research was based on benthic macro-invertebrate response to climate changes in Mardi River.

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RIZKALLAH, Mariam

Research/ Teaching Fellow, The American University in Cairo

Mariam Rizkallah is a graduate student at the Biotechnology Graduate Program, and a research and teaching fellow in the Biology Department at the American University in Cairo, Egypt. She graduated from the Faculty of Pharmacy, Cairo University, Cairo, Egypt and subsequently studied software engineering with a specialization in open source technologies at the Information Technology Institute, Egypt.

As an undergraduate student, she performed several research projects, including working on annotating bacteriophage proteins as a part of the "Phage Annotation Tools and Methods" (PhAnToMe) project. She is currently involved in ongoing projects: PharmacoMicrobiomics Database project, iTree and metatranscriptomics of polar microbial communities.

Her main research interests are microbiology and computational biology. She is also interested in open-source software development, bioautomation and development of bioinformatics tools.

Mariam's Master's thesis project is the metagenomic and metatranscriptomic analysis of marine microbial communities in the Arctic Ocean in terms of biochemical pathways and host-pathogen interactions, and the related potential pharmaceutical and biotechnological applications.

Abstract

The PharmacoMicrobiomics Portal: A Database for Drug-microbiome Interactions

The Human Genome Project provided insight into genetic variations among humans; yet, such information has not sufficiently accounted for all phenotypic differences between individuals. Thus, the Human Microbiome Project was launched to investigate the microbial involvement in human variations. As they outnumber the human cells (10^14 vs. 10^13), microbial communities residing in the human body are an integral part of the human gene pool, and various studies have investigated the relationship between resident microbiota and human health and disease. However, very little information is available on the effect of the microbial gene pool on drug fate and action in the human body.

Here, we present the PharmacoMicrobiomics database, which aims to collect, classify, and cross-reference all known drug-microbiome interactions through manual literature mining, curation and classification of interactions according to body site, microbial taxonomic classification, drug chemical and pharmacological classifications, and biochemical pathways. The database is integrated in a web portal including a search engine through which students and scholars can locate drug-microbiome interaction of interest, linked to and compiled from public literature and drug databases, such as: PubMed, PubChem, NCBI Taxonomy Browser, Comparative Toxicogenomics, and SEED.

The PharmacoMicrobiomics database and web portal were designed and created by the use of open-source technologies. MySQL was used as a database management system, and

Django, a Python-based framework, was used for the creation of the relational database to store drug-microbiome interactions and classifications.
Currently, the database contains drug-microbiome relations for more than 50 drugs curated from over 100 research papers. Further developments may include the automation of data updating using BioPython libraries for Entrez Programming Utilities, and the participation of the community into data analysis, curation and database design.

Database URL: http://www.pharmacomicrobiomics.org

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SAAD, Dalia

PhD Student, University of the Witwatersrand, Johannesburg, South Africa

Saad obtained her basic degree in Science from Khartoum University, Sudan (2006) and her MSc (with distinction) from Wits University (2011), Johannesburg. Currently, she is pursuing her PhD research focusing on wastewaters treatment; the main thrust of the research is to develop feasible and cost-effective adsorbents based on polymeric and polymer-nanocomposite materials for the removal of heavy metals from industrial wastewaters. She developed viable, environmental-friendly and cost-effective materials that efficiently removed toxic metals from wastewaters. Throughout her research, Saad has presented her work in local and international conferences, she has also published several articles in international scientific journals including:

- Saad D. et al., 2011, Development and application of cross-linked polyethylenimine for trace metal and metalloid removal from mining and industrial wastewaters. J. Toxicological and Environmental Chemistry. 93, 914-924.
- Saad D. et al., 2012, Phosphonated cross-linked polyethylenimine for selective removal of uranium ions from mining wastewater, J. Water Science and Technology, In Press.
- Saad D. et al., Sulphonated Cross-linked polyethylenimine for selective removal of mercury from aqueous solutions. J. Toxicological and Environmental Chemistry, Submitted 2012.
- Saad D. et al., Functionalized cross-linked polyethylenimine for the removal of oxo-anions (Se & As) from aqueous solutions. J. Water Science and Technology, Submitted 2012.

Saad is a member of number of professional bodies including: Golden Key international honor society (GKIHS), Young Water Professionals (YWPs), Water institute of South African (WISA), and South African Chemical institute (SACI).

Abstract

Modification of Polymeric Adsorbents for Feasible and Cost-effective Removal of Trace Elements from Mining and Industrial Wastewaters

Water pollution is an increasingly pressing problem. Recently, the world is facing a challenge in meeting rising demands of unpolluted water since the available supplies of freshwater are decreasing due to population growth, extended droughts, extensive industrialization and improper disposal.

Water pollution by toxic heavy metals is one of the global environmental concerns as it affects the quality of drinking water and hence human health. Among many remediation techniques for metal ions removal, polymeric adsorbents are efficient and widely applied. This has made them comparable to other remediation methods in terms of technical and economical efficiency, feasibility as well as green technology.
This research was dedicated to the development of insoluble chelating polymers for use as adsorbents to abstract heavy metal ions from mining and industrial wastewaters. Branched polyethylenimine (PEI), well known for its metal chelating potential, was cross linked by epichlorohydrin in order to convert it into a water-insoluble form. The water-insoluble property gives the advantage of being used in situ and a possibility of regeneration and re-use, making it a more feasible and cost-effective method. Its surface was also modified for selective removal.

The binding affinity of the synthesized materials to heavy metal and metalloid ions has been determined as well as their ability to be regenerated for reuse. These processes demonstrated that cross-linked polyethylenimine (CPEI) exhibited good complexation ability with high affinity to Cr and some divalent metal ions such as Fe, Zn, and Ni. On the other hand, it showed very poor ability to bind oxo-anions such as SeO_3^{2-} and AsO_2^- which has been attributed to the unavailability of suitable functional groups to interact with these ions. The observed order of complexation was: Cr > Zn> Fe >> Ni > Mn > Pb >> As > U > Se.

The phosphonated polyethylenimine (PCPEI) showed high selectivity for As, Mn and uranyl ions. The observed order of removal was: U > Mn> Ni > Zn > As >> Cr > Pb > Fe >> Hg > Se; whereas the sulphonated polyethylenimine (SCPEI) exhibited high affinity to Se, and Hg. The observed order of adsorption was: Hg > Se >> U > Zn >Pb > Ni >> As > Cr > Fe. The existence of the chelating groups in SCPEI and PCPEI thus facilitate the removal of oxo-anions.

The developed polymeric adsorbents have potential to use in filters for household taps in areas where communities inevitably have to consume polluted water. This is the intended application of the synthesised materials.

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SALAH, Jalila

Assistant Professor, Higher Institute of Biotechnology of Monastir, University of Monastir, Tunisia

After her graduation from secondary school, Salah attended the Faculty of Sciences, Bizerte, University of Carthage, where she graduated with a Bachelor of Sciences Degree in Natural Sciences. From there, she went on to get her Master's degree from the University of Carthage. She obtained her master's degree in 2002 with honours. Upon graduating from the Faculty of Sciences, Bizerte, she became a member in the Unit of Immunology, Environmental Microbiology and Cancerology, University of Carthage, where she was interested in the field of food contaminate and immunotoxicology.

In the 6th of January 2009, she received her PhD Degree and her dissertation subject was the use of bioactive compounds as additive to food and feed against mycotoxin contaminated diet. Salah returned to Zeramdine to work as a teacher in the secondary school and in relation with my Unit of research in the Faculty of Sciences of Bizerte. She is now a partner and shareholder in a research project, where she specializes in searching

bio-molecules from plants against mycotoxin toxicities. Ever since she got her PhD degree, Salah published many publications in peer-reviewed international journals. She volunteered to supervise many students and to plan many projects.

Early on, she worked hard to establish the Tunisian Cancer and Immunotoxicological Society and it will bear soon. In April 2009, she was selected by the International Union of Toxicology to be the official correspondent of her country to offer news to the scientists worldwide about the research of Toxicology since it is under represented in her country. Curently, she is a permanent Assistant Professor in the Higher Institute of Bitechnology of Monastir; University of Monastir.

Abstract

The Biotechnology Use of 4-(Methylthio)-3-butenyl isothiocyanate (MTBITC) Isolated from Tunisian Radisch Against Mycotoxins Toxicity in Animals

The safety of the food and feed supply is paramount to the health of every person in the world. A major health concern is the presence of microbial contaminants in agricultural crops that may cause disease or death to the consumer. An important class of undesired food and feed contaminants are the mycotoxins, produced by numerous fungi. In Tunisia the climate is favorable to fungal growth and contaminated in pre or post harvested corps. Recently, the report of Tunisian health ministry indicated that more then 45% of analyzed sample of food or feedstuff contain mycotoxins especially Zearalenone (ZEN). It is a fusarotoxin, it has been shown to cause diverse toxic effects in livestock, experimental cells, humans and animals. Epidemiological studies in Africa and Asia have shown a strong positive association between liver cancer rates in humans and dietary mycotoxin intake. Several studies suggested that ZEN caused an oxidative stress and make a risk factor for human hepatocarcinoma. As liver cancer causes at least 100,000 deaths in developing countries per year, prevention measures must be developed to reduce the incidence of this largely fatal disease.

Our aim is to prevent humans and animals from ZEN toxic effects by addition of natural product collect from Tunisian environment to animal diet in order to decrease the ZEN damage. Many bioactive compounds has been extracted and purified from Tunisian radish (Raphanus sativus). The most potential compound isolated from radish is the 4-(Methylthio)-3-butenyl isothiocyanate (MTBITC). The later sulphurous compound has been evaluated for in vitro and in vivo study against ZEN toxicities. The in vitro study indicated that MTBITC was able to prevent many human cell lines against ZEN toxicities. Besides, we demonstrated that MTBITC is a strong anti-proliferative compound. It killed cancer cells by an ROS dependent apoptotic mechanism and neither increased ROS nor toxicity in normal cells, and is capable of modulating biotransformation enzyme activity and preventing certain cancers. The most pertinent results demonstrated in our research carrier are the antigenotxic effects of MTBITC against ZEN. The possible mechanism of protection offered by MTBITC against ZEN-genotoxicity is due to its ability to inhibit oxidative process by neutralizing reactive oxygen species as well as its interaction with estrogen receptors that are occupied by the mycotoxin ZEN. In addition, it could not be excluded that MTBITC acts as antigenotioxic complex which enhances the DNA repair system or DNA synthesis which is proved by the disappearance of the new DNA band caused by ZEN treatment.

In summary, we have shown that MTBITC extracted from Tunisian R. sativus exerts its chemoprotective abilities by modulating the activities of ZEN-sensitive enzymes and protecting DNA from ZEN induced damage. These results may prove useful in

developing MTBITC based chemoprotection regime and as an additive in food and feed contaminated diet.

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SALEH, Mohamed

Lecturer, Faculty of Sciences, University of Benha

Since he was a child, born in Behira, Egypt, Saleh was always inspired by scientific discoveries and was looking forward to be a world lead scientist. However, for many reasons, he doubted that he could achieve his dream, until Dr. Ahmed Zwail won a Nobel Prize in 1999. At that time, he was in his 2nd year in the Faculty of Sciences, University of Benha. The Winning of Nobel prize by an Egyptian, who was born in the same governorate and had similar conditions as his, made Saleh optimistic towards his childhood dream. Two years later, he graduated with a 1st class honor degree and have been selected to be an academic member of staff. Luckily enough, he received a PhD scholarship to the UK. At that time, he thought that this is his golden chance to take his first step on the international track. Indeed, he worked very hard until he got his PhD from the University of Leeds and published his results in world lead journals. He was chosen to work as a postdoctoral research fellow in the same university.

However, a year later, the Egyptian revolution has started, which prompted him to come back home and help building his new country. Thus, he is currently, a lecturer of Molecular Biology in the University of Benha, writing up research grants to establish a research group with a main goal of beating breast cancer in Egypt.

Abstract

Investigating CSMD1 Signalling Pathways and Evaluating their Prognostic Values in Breast Cancer Patients

Carcinoma of the breast is the most prevalent cancer among Egyptian. The prognosis and clinical management of patients with breast cancer is commonly determined by traditional clinical and pathological factors. Nevertheless, patients may have significantly different clinical outcomes despite presenting similar clinic pathological features. This has prompted intense research to find biological markers that may closely reflect tumour biology and thereby clinical outcome.

Recently, we have identified CUB and Sushi multiple domain protein 1 (CSMD1) as a novel independent prognostic marker for breast cancer(Kamal *et al*., 2010). Our strong preliminary data showed that down regulation of CSMD1 expression modulates cell behaviour in a way makes it more metastatic. However, the mechanism/s of CSMD1 action is still unknown. Understanding how CSMD1 regulates cell behaviour will not only help identify better measures for breast cancer prognosis, but will also help stopping cancer metastasis.

Our hypothesis is that using the expression level of CSMD1 along with the expression status of one or more of its signalling cascades components will give better prediction of patient's prognosis than using CSMD1 or any of these components alone. Thus, we aim to determine CSMD1 signalling pathway/s components and investigate their use as prognostic factors in breast cancer.

Recently, we have down regulated CSMD1 expression in three cell lines; MCF10A, MDA-MB-435 and LNCaP, using shRNA. In this study, qPCR multiplex arrays for 48 genes will be designed to test their expression in the normal breast cell line MCF10A shCSMD1. Protein expression of genes which show big differences in their expression between CSMD1 positive cells and CSMD1 negative cells (termed CSMD1 affected genes) will be confirmed, in the three cell lines using western blotting assays. Co Immunoprecipitation experiments will be conducted to examine physical interactions between CSMD1 and CSMD1's affected proteins.

After determining CSMD1 affected genes, their expression patternalong with CSMD1will be investigated, using Immunohistochemistry, in two hundreds breast cancer patients. Statistical analyses will be performed to evaluate their prognostic values individually or in combinations.

Results from Aim 1 will identify potential future targets for breast cancer therapy. Whereas, Aim 2 will give a very useful and strong prognostic signature. This will help clinicians to better differentiate between patients with good or poor prognosis and therefore make the right treatment decision.

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SAYED, Khaled

Lecturer, Modern University for Technology and Information (MTI)

Khaled S. Ahmed received his B.Sc. and M.Sc. degrees from the Biomedical Engineering Department at Cairo University in 2001 and 2007 respectively. During this time, he received a Diploma in Biophysics "Medical Radiation Protection" in 2004. He received his Ph.D. from the Biomedical Engineering Department at Cairo University in 2011. He worked as a Senior Biomedical Engineer at many places, such as: CASBEC, General Egyptian Trading Company, and Dar Al-Fouad Hospital. He also worked during the same period as the Manager of Bio-medical Department at the Advanced Diagnoses Systems company. He is currently a Lecturer of Bio-Electronics Engineering at the Modern University for Technology and Information. Also, he is working as a Biomedical Consultant at the Engineering Consultant Group. He is an editorial board member in the American Journal of Bioinformatics Research, and peer reviewer in many journals such as: Global Journal INC, AJMB….Now, his fields of interest are Brain Computer Interface and Protein Function Prediction.

Abstract

Improving Yeast Protein Function Prediction Using Weighted Protein-protein Interactions

Bioinformatics can be used to predict protein function, leading to an understanding of cellular activities. In the past, Biologists tried to determine protein functions from the structure of the protein and similar proteins. Possible roles of similarity between the protein and its homologies; from other organisms; are suggested and investigated to predict protein functions. Because of the diverse groups of homologous, these methods were found to be exhaustive and non-certain. Other techniques have been used to predict the protein functions as analyzing gene expression patterns, protein sequences, protein domains, and integrated multi sources. But these technologies suffer from high error rates because of their inherent limitations. The computational approach is adopted to solve this

problem by using information gained from physical and genetic interaction maps to predict protein functions. Recently, the researchers introduced different techniques to determine the probability of protein function prediction using the information extracted from PPI. Although these trials are promising, they lack the addressing of effective problems such as network topology and strength of interaction. Network topology represents the interaction between proteins and how they are connected. Usually, equally-weighted (PPI) are used to predict the protein functions. The present study provides a new weighting strategy for PPI to improve the prediction of protein functions. The weights are dependent on the local and global network topologies furthermore the number of experimental verification methods. The proposed methods were applied to the yeast proteome and integrated with the neighbor counting method to predict the functions of unknown proteins. The results revealed improvement in the sensitivity and specificity of prediction in terms of cellular role and cellular locations.

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SHAH, Nihir

PhD Student, SMC College of Dairy Science, AAU

Shah is a registered PhD student (Reg. No. 04-1458-2010) at SMC College of Dairy Science, Anand Agricultural University, Anand, India. He completed his master's in Dairy Microbiology, as a major subject and Food-biotechnology as a minor subject from the same Department in August 2009 while he studied General Microbiology and graduated from Gujarat University. He worked as a Research Fellow in Niche Area of Excellence on 'Fermented Functional Dairy Products with Synbiotics'.

As it is the requirement of earning masters degree, Shah carried out independent research work for six months and submitted thesis entitled "Development of Artificially Carbonated Fermented Milk", where he worked on the optimization of product technology and evaluating the product by sensory, microbiological and chemical parameters.

His PhD project deals with "Studying the Growth Behaviour of *Lactic Acid Bacteria* and Clinical Pathogens in Co-culture System". He has been permitted by Prof. Olle Holst, Biotechnology Dept, LTH, LU, Sweden to work on a research project of about 12 months as a part of his doctoral studies; thus, he gained experience of working in Sweden, Europe.

Shah's career objective is to conduct research in the frontier areas of microbiology, biochemistry, food biotechnology and molecular biology to contribute knowledge to result in high impact and quality. He is able to work alone or as a part of a team and eager to learn new things. He has a strong background of basic things required to fulfill the criteria of the BioVisionAlexandria.NXT fellow.

Abstract

Studying the Antagonistic Behavior of Lactic Acid Bacteria Against Clinical Pathogens Through Co-culture System

Use of Lactic acid bacteria (LAB) to produce safe and high quality fermented milk and cereal-legume based products have been practiced since ages in different parts of the world. In connection to this, it is also proven that LAB are the potential producers of

wide range of antimicrobial compounds including organic acids, H2O2, CO2, proteinaceous agents known as bacteriocins which exerts either narrow or wide spectrum antimicrobial activity towards spoilage or disease causing organisms. The direct interaction between LAB and pathogens against each other is of quite interest and can be studied through experiment known as co-culture.

In the present work, we aimed at observing the growth behaviour of LAB strains namely W. confusa and L. plantarum when each of them were grew together with two pathogens viz. enteropathogenic E. coli and S. aureus. They were inoculated in to peptone yeast extract glucose (2%), each culture per 1 O.D.595 nm and incubated at 370C/24 h. The change in pH and total viable count were measured from the zero hour (initial count) and 24 h (final count) samples on MRS agar, Chromo agar, and Mc Conkey´s agar plates for LAB, S. aureus , and E. coli, respectively. The dose dependent effect of LAB strains and pathogens were also studied.

Results showed significant reduction in the growth of each pathogen while co-cultured with LAB strains compared to control (without LAB). Both the lactic acid bacteria showed 2 log cycle reduction for each of the pathogenic strain used in the study. The difference in pH was non-significant and very minute in case of S. aureus which could reveal the combine action of some other metabolites such as H2O2, antimicrobial peptide etc. along with organic acids.

Our next objective is to find the possible mechanism of this antagonistic behavior of the LAB strains in co-culture system, to characterize the antimicrobial agent and as well as studying the co-culture system in to the food models that would serve to provide better resolutions with respect to their behavior.

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SHAHIN, Hasnaa

PhD Student, City of Scientific Research and Technology Applications (CSRTA)

Hasnaa Rabia Mohammed Shahin graduated from the Faculty of Pharmacy, Alexandria University. She has consistently ranked in the top 5 students of her class during university education. Consequently, she received a scholarship financed by the Scientific Research and technology Academy to obtain the master degree from the Faculty of Pharmacy, Alexandria University. The practical work was conducted at the City of Scientific Research and Technology Application (CSRTA).

Shahin's previous work experiences helped her to easily adapt to a new environment and the commitment necessary to succeed as an individual and as a member of a team. As a result of the participation in several research projects, she henceforth become quite familiar with the Cell culture technique for either monoclonal antibody production using the hybridoma cells, or *in vitro* drug assessment using normal cells (lymphocyte, WBCs, and mice's splenocytes) and HepG2. She also excels in full cell and product characterization using different analytical techniques, such as Image Analysis System, Flow Cytometry, and Enzyme Linked Immunosorbent Assay (ELISA). She is also able to perform the Polymerase Chain Reaction (PCR); RNA, DNA extractions and their gel electrophoresis as well as the Biochemical tests for protein and polysaccharide determination. Shahin's new findings in her work has got her the "Innovation Award" in the 3rd International Conference on Biotechnology for the Wellness Industry (ICBWI 2010), Malaysia.

Shahin's overwhelming desire is to contribute to the field of Immunotherapy (active or passive) which will be the alternative for the conventional treatment for cancer and infectious diseases.

Abstract

Preparation and Production of Monoclonal Antibody (Muromonab CD3): A Reversal of Kidney Transplant Rejection

El Enshsy H[1,2], El Demellawy[2], Abou Shleib H[3], Omar H[3], El Sayed E[4,5], Shahin H[2*] and El Shereef A[2]

1, Institute of Bioproduc Development (IBD), Universiti Teknologi Malaysia, Skudai, Johor, Malaysia.
2, Institute of Genetic Engineering and Biotechnology, City for Scientific Research, New Burg Al Arab, Alexandria, Egypt.
3, Faculty of Pharmacy, Alexandria Unviersity, Alexandria, Egypt.
4, Advanced Chair for Proteomics and Cytomics Research, Faculty of Science, King Saud University (KSU), Riyadh, Saudi Arabia.
5, Natural and Microbial Products Department, National Research Centre, Dokki, Cairo, Egypt.

Nowadays, Monoclonal antibodies (MAbs) have many potential applications indifferent areas such as diagnostic assays, therapeutics and downstream processing. MAbs accounted for 32 % of all revenues in the biotech market in 2008, and the worldwide market revenues for therapeutic and diagnostic antibodies reached about $ 26 billion in 2010. This has stimulated the need for the optimization of the existing production methods as well as the development of innovative and new processes for MAb production. In the present study, several successful methods for optimization and scaling up of MAb (IgG2a) production using hybridoma cell line (OKT3) were performed: The first objective of this study was to adapt hybridoma cells to grow in complete serum free medium using the technique of sequential adaptation at both T-flask and spinner flask levels. This approach of optimization was targeted to overcome the problems associated with using serum in culture medium such as: high cost, lack of homogeneity between different batches, and high protein content, which make the downstream process more difficult and costly. The second objective of this study was to optimize the MAb production by determining the effect of glutamine and insulin when added to serum free medium on the kinetics of cell growth, metabolism, and on MAb production. Moreover, the effect of several osmotic stresses on MAb productivity, as well as the effect of shear stress on the kinetics of hybridoma cell growth and MAb production were investigated.

The third objective of this work was to optimize a new process for continuous production of MAb by using basket spinner system. This type of spinner flask belongs to the packed bed bioreactors that are capable of supporting the growth of hybridoma cells for long cultivation periods under low shear conditions, due to the immobilization of cells within microcarriers. Packed bed bioreactors have the advantage of being capable of generating high cell densities with a low concentration of free cells in suspension. This is possible due to the low shear forces present in the system, which in turn lessens the requirements for the downstream process. Concluding, the integration of all these three successive improvement methods lead to significant increase in MAb production yield, decrease the overall the production cost through decreasing the medium cost, facilitating the downstream processes, and reducing MAb production time.

Address of Corresponding Author:
Ms. Hasnaa Shahin
Genetic Engineering and Biotechnology Research Institute
City of Scientific Research and Technology Applications
New Burg Al Arab, Alexandria, Egypt.
E-mail: hassnaa_shahen@yahoo.com

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SHIBL, Hala

MSc Student, Environmental Studies and Research Institute (ESRI)

Shibl is a master's student at the Environmental Studies and Research Institute (ESRI), Minoufya university, Sadat branch, Minoufya, Egypt.

Her Master's research is about the "Fabrication and Characterization of Dye Sensitized Solar Cells (DSSCs)".
Shibl is a Member of Master Scholarship organized by Academy of Scientific Research and Technology (ASRT), Egyptian Ministry of Scientific Research, Egypt, 2009, cycle1. (Scientists for Next Generation scholarship: SNG). She obtained a B.SC in Science from the Department of Chemistry (Grade: very good) in 2004, Faculty of Science, Minoufya University**.**

Abstract

Environmental Friendly, Low Cost and Efficient Flexible Dye-Sensitized Solar Cell; Green Chemistry Applications of NR/NP TiO_2 Thin Films

Environmental Friendly, Low Cost and Efficient Flexible Dye-Sensitized Solar Cell; Green Chemistry Applications of NR/NP TiO2 Thin Films
H.M. Shibl1, H. S. Hafez1, R.I. Rifai1 and M.S.A. Abdel Mottaleb2
1Nano-Environmental Photochemistry Lab., Environmental Studies and Research Institute, Minoufiya University, Sadat Branch, Minoufiya, Egypt.
2Nano-Photochemistry and Solarchemistry Lab., Department of Chemistry, Faculty of Science, Ain Shams University, Abbassia, 11566 Cairo, Egypt
Halashibl@yahoo.com

Dye-sensitized solar cells (DSSCs) have received considerable attention as a cost-effective alternative to conventional solar cells. DSSCs operate on a process that is similar in many respects to photosynthesis, the process by which green plants generate chemical energy from sunlight. A typical DSSC comprises a dye sensitized mesoporous, nanocrystalline TiO2 film interpenetrated by a liquid electrolyte containing an iodine/iodide redox couple. Solar light to electrical energy conversion efficiencies of approximately 10% have been reported for such devices. However to date DSSCs have largely been limited to glass substrates due both to high temperature processing (450 °C) of the nanocrystalline metal oxide and the need to encapsulate the liquid electrolyte.

In this work of research, a new environmentally-friendly low-temperature method has been used in order to fabricate a hybrid nanorod/nanoparticle (NR/NP) TiO2 thin film electrodes on both FTO/glass and ITO/PET substrates. The incorporation of the titania NRs into the mesoporous titania nanoparticles (NP) offers the electron conducting path as well as prevent the formation of relatively large open pores or microcracking amongst the aggregated titania nanoparticles. The structural properties of the NR/NP films are characterized by X-ray diffractometry (XRD), transmittion electron microscope (TEM), Electron dispersive x-ray (EDX) and UV-Vis spectroscopy. The maximum overall solar to electric energy conversion efficiencies that have been achieved on the FTO/glass and ITO/PET plastic substrates are η= 3.2% and 0.88 (under 1sun), respectively.

ACKNOWLEDGMENT. This work was supported by the Academy of Scientific Research and Technology, Egyptian Ministry of Scientific Research, Egypt, Master scholarship 2009 (cycle 1).

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SOMORIN, Yinka

PhD Student, Federal University of Agriculture, Abeokuta, Nigeria

Somorin holds a Bachelor of Science (Honours) in Microbiology and a Master in Food and Industrial Microbiology. After completing his Master's degree, he was a Visiting Researcher at the Institute of Food and Feed Science and Nutrition, Universita Cattolica del Sacro Cuore, Piacenza, Italy, where he conducted research on mycotoxins in yam flour with funding under the MycoRED project of the European Commission FP7. He has also had specialized training in basic molecular biology techniques and organic agriculture. In 2008, he volunteered as a facilitator for a school vegetable garden project. He is motivated and promising young scientist with a strong passion for academic and research activities.

He has 4 publications in international peer-reviewed journals and has presented his research at national and international conferences. Somorin won grants/ awards/ fellowships at national and international levels. In order to develop his scientific capacity, he attended several training workshops and he is a member of several international learned societies, including the American Society for Microbiology, the Society for Applied Microbiology and Young Professionals Platform for Agricultural Research for Development, among others. His research interest is food microbiology and mycotoxicology. His current research is on the optimization of yam flour processing for safety from microorganisms and mycotoxins. Somorin hopes to use his skills to promote innovation and drive industry especially in Nigeria. He loves meeting new people, sharing knowledge and volunteering for developmental activities.

Abstract

Microbiological Safety of Yam Flour Paste *amala* in Southwestern Nigeria

Amala, a paste obtained from yam flour is a cherished delicacy consumed in Nigeria and parts of West Africa. Tubers of *D. rotundata* (white yam) are thought to give the best *amala* though recent studies have shown that *D. alata* (water yam) can produce *amala* as appreciated as those from *D. rotundata*. This study was conducted to determine the microbiological safety of *amala* from white yam and water yam. Yam flour from white yam and water yam were obtained from 3 major markets in southwestern Nigeria. *Amala* was prepared by mixing one part of the yam flour sample with approximately 1.5 parts of boiling water (v/v) in a 1 L heat-resistant glass beaker. The paste was further cooked (with stirring at intervals), with an electric laboratory hot-plate set at medium heat (70-75 $^{\circ}$C) until it was done. Total Viable Count and Enterobacteriaceae count of *amala* samples were determined by the pour plate technique and the bacteria and fungi identified. Mean Total Viable Count for white yam was 1.94 x 10^5 cfu/g whereas it was 1.15 x 10^5 cfu/g for water yam. Mean Enterobacteriaceae count was 6.95 x10^3 cfu/g and 4.7 x 10^3 cfu/g for white yam and water yam respectively. Bacteria isolated from *amala* include *Bacillus badius, B. megaterium, Enterobacter aerogenes, Klebsiella pneumoniae, Proteus mirabilis, Staphylococcus aureus, S. saprophyticus* while *Aspergillus candidus, A. flavus, A. fumigatus, Cladosporium* spp, *Penicillium citrinum* and *P. oxalicum* were the isolated fungi. *Klebsiella pneumoniae* and *Staphylococcus saprophyticus* were found only in *amala* from white yam while *Bacillus badius* was found in *amala* from water yam. *Amala* from water yam had lower total viable bacterial count and Enterobacteriaceae count than *amala* from white yam. The isolation of *Staphylococcus aureus* and *Bacillus* spp from *amala* raise a huge health concern. This study confirms the presence of potential foodborne pathogens in *amala* and also that *amala* from water yam

is microbiologically safer than *amala* from white yam. The hazard analysis critical control point (HACCP) concept should be applied in order to achieve a greater safety margin in this cherished food product so as to minimize possible health risks, especially with the increasing food poisoning cases associated with *amala* consumption in Nigeria.

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TAHA, Ahmed

Assistant Researcher, Soil, Water and Environment Research Institute, Agriculture Research Center

Since he was young, Taha loved to study biology. After he graduated from high school, he chose the Faculty of Agriculture Science. He was the third rank among the students in his college. Thus, his university awarded him a scholarship for master's study. He studied the microbial-pant-soil interaction.

Taha participated in various local and international training courses and internships which were focusing on environment and sustainability. Recently, he has been doing his PhD at UNEP-Tongji-IESD, Shanghai, China. His research is about the application of nanofiber technology in wastewater treatment. He has three papers published in international journals (Journal of Environmental Science, Journal of Environmental Management and Journal of Colloid and Interface Science).

Additionally, he was in one of the research teams that obtained The First reward "Klaus Töpfer Environment Innovation Award." Also, he obtained the university grant for the "Outstanding Student for the Year 2012". Now, he is engaged in writing a manuscript for NANO LETTER Journal.

Abstract

Synthesis and Characterization of Functionalized PVP/Sio_2 Mesoporous Nanofiber Membranes via Electrospinning

Mesoporous silica materials fabricated in bulk or in powder form are widely used as adsorbents for water treatment. To come over the difficulties of recycling the powder nanoparticle materials, a novel amino ($-NH_2$) functionalized mesoporous poly(vinyl alcohol)/SiO_2 composite nanofiber membranes were fabricated by a one-step electrospinning method, using poly (vinyl alcohol)/tetraethyl orthosilicate (TEOS) mixed with cationic surfactant, cetyltrimethyl ammonium bromide (CTAB) as the structure directing agent. Furthermore, Urea [$(NH_2)_2CO$] was used for functionalization of the internal pore surfaces. The membranes were characterized by scanning electron microscopy (SEM), high-resolution transmission electron microscopy (HRTEM) images, X-ray diffraction (XRD), Fourier-transform infrared spectroscopy (FT-IR) and N_2 adsorption–desorption isotherms. The nanofiber diameters, average pore diameters, surface areas and pore volumes were 100-200 nm, 4.38 nm, 284.48 $m^2\ g^{-1}$ and 0.31 $cm^3\ g^{-1}$, respectively. These membranes functionalized with $-NH_2$ groups have a great potential application in water treatment such as adsorption of heavy metal ions, dyes and other pollutants from aqueous solutions.

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TALEVI, Alan

Assistant Researcher/ Assistant Professor, Faculty of Exact Sciences, National University of La Plata

Talevi was born in Buenos Aires, Argentina, in November 9th, 1980. He obtained his Pharmacy degree in 2004 at the National University of La Plata (La Plata, Buenos Aires). He received a doctoral fellowship from the National Council of Scientific and Technological Research (CONICET) in 2004 and completed his PhD studies on the application of computational methodologies in the search of new antiepileptic agents at the Institute of Theoretical and Applied Physicochemical Research in 2007. In 2008, he received the Enrique Herrero Ducloux Award from the Argentinean Chemical Society to the best doctoral thesis in Theoretical Chemistry. He obtained a postdoctoral fellowship from CONICET in 2009, and performed his postdocoral studies in the Medicinal Chemistry group, at the Faculty of Exact Sciences of the UNLP.
He received travel and/ or accommodation grants and bursaries from the European Federation for Medicinal Chemistry in 2006, the Academy of Sciences for the Developing World and Bibliotheca Alexandrina (Biovision.Nxt 2010-2012), the ICGEB (2010, 2011), the UNLP (2010), the International League Against Epilepsy and the Hebrew University of Jerusalem (2011), among others. In 2010, he obtained a Pacifichem Young Scholar Award. At present, he holds a position as CONICET Assistant Researcher and Assistant Professor of the Biopharmaceutics Course of the Faculty of Exact Sciences. He has published over 25 scientific original and reviewing articles in national and international journals, plus several book contributions.

Abstract

Virtual Screening for the Selection of Novel Antiepileptic Drugs for the Treatment of Refractory Epilepsy

Epilepsy is the most common chronic disorder of the central nervous system (CNS). According to recent estimations from the World Health Organization, 90% of the world epileptic population comes from developing countries and around 30% of the patients that have access to medication do not achieve an adequate control of the symptoms with current available chemotherapy, a condition known as refractory or intractable epilepsy. In these cases, surgery is the only known treatment, with the risks and costs associated to a surgical procedure in the brain. Recent research reveals the association between refractory epilepsy and over-expression on glycoprotein P (Pgp) at the blood-brain barrier and epileptogenic tissue. Pgp is an ATP dependent efflux carrier, which eliminates xenobiotics from different tissues and organic barriers (such as liver, gut, kidneys, blood-brain barrier and placenta). Its presence at the blood-brain barrier and epileptogenic tissue appears to limit the amount of the antiepileptic agent that reaches its molecular target. My current project focuses on developing topological models to predict whether a chemical compound is or is not a Pgp substrate. Once developed and adequately validated, the model is applied in the identification of new antiepileptic agents with no affinity for Pgp, selecting new anticonvulsant agents capable of overcoming the Pgp-mediated multi-drug resistance issue.

The selected structures are pharmacologically tested in animal models of epilepsy according to NIH Program for the Development of New Anticonvulsant Agents; those compounds with promising anticonvulsant profile will be tested in Caco-2 cells in order to confirm they are not transportable substrates of Pgp. The knowledge obtained through

the experimentally validated model of Pgp affinity could also be used in the development of drugs from other therapeutic categories in which Pgp-mediated resistance has been reported (e.g. antiHIV and antineoplastic medications).

New medications that provide good symptomatic control for those patients suffering from refractory epilepsy (around 16 million people worldwide and 160,000 people in Argentina) would significantly improve life quality, social and work insertion of epileptic patients (even in developed countries 40-60% of epileptic patients are unemployed or sub-employed, and 20% retire ahead of time). New drugs for the treatment of refractory epilepsy will also alleviate the morbility and costs associated to brain surgery, the only currently effective alternative for the treatment of intractable epilepsy.

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TAMGUE, Ousman

PhD Fellow, Department of Biochemistry and Molecular Biology, Northwest A&F University, Shaanxi, China

Tamgue is a national from Cameroon holding a master's degree in Biochemistry from the University of Yaounde I, Cameroon. Presently, he is a Ph.D. fellow. Tamgue is working on the anti-inflammatory and the anti-proliferative properties of some plants' extracts against prostate cancer. Though he is more interested in research on medicinal plants, drug discovery and development, he is also interested in research aimed at fighting poverty in Africa, as testified by the Development Cooperation Prize he received in 2007 from the Belgian government. As a language passionate, he has a good command of French, English and Chinese mandarin, and he also teaches French to some Chinese students. In order to keep a healthy mind in a healthy body, he frequently practices Soccer and Tae Kwon Do.

Abstract

Effect of Tripterygium Wilfordii Hook F. and Thymus vulgaris Extracts on the Expression of the Proinflammatory Genes iNOS and COX-2 in Prostate Cancer

Cancer is a major worldwide health problem which has claimed the life of 7.4 millions people in 2004. with a fastly growing incidence, it is projected that there will be around 20 millions new cancer cases by the year 2020, 70% of them in poor countries where access to cancer treatment is not obvious because of the lack of fundings amongst other reasons. Within this context, plant extracts from T. wilfordii Hook F. and T. vulgaris which are being used for ages in China and Africa for their anti-inflammatory activities, represent new source of therapeutics and need to be valorized. We therefore decided to provide more scientific evidences of their antiinflammatory effect, especially in prostate cancer. As the link between inflammation and cancer development and progression is being established, we hypothesized that the downregulation of 2 proinflammatory genes , namely iNOS and COX-2 by our plant extracts could lead to the inhibition of tumor growth and even can trigger the tumor regression. At the medical level, the regression of the tumor volume might allow some surgery to be done. At the pharmaceutical level, our work could provide new source of leading compounds that may be useful in the manufacturing of more efficient anticancer drugs. At the socio-economical level, the recognition of an antiinflamatory property to those plants can trigger their massive production, packaging and commercialisation by poor farmers who by so doing can diversify their source of income and improve on their standard of living

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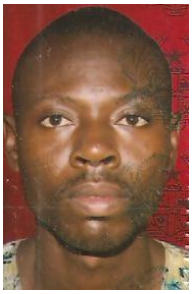
TEKPETEY, Stephen



Research Scientist, Forestry Research Institute of Ghana (CSIR-FORIG)

Stephen Lartey Tekpetey is currently a Research Scientist at the Forestry Research Institute of Ghana (CSIR-FORIG) and a Part-time Lecturer at the Faculty of Technology Education of the University of Education, Ghana. He holds a BSc (Hons) Degree in Natural Resource Management from Kwame Nkrumah University of Science and Technology (KNUST), Kumasi, Ghana. After his graduation in 2003, he worked as a Teaching Assistant at the Faculty of Renewable Natural Resources, KNUST. He later enrolled for his doctoral degree in 2004 with sponsorship from the government of Ghana through KNUST Staff Development Programme and obtained the PhD Degree in 2009.

Dr. Tekpetey has received a number of research grants and awards from reputable organizations like International Foundation for Science (IFS), International Tropical Timber Organization (ITTO), and International Centre for Bamboo and Rattan (ICBR). He has actively participated in TWAS and AAS conferences and workshops on climate change and energy security, sustainable forest management and sustainable utilization of non-timber resources, especially bamboo resources. He also participated in TWAS-Young Scientists Conferences in Africa and Asia on climate change. He is an active member of Society of Wood Science and Technology (SWST, USA).

His research interests include sustainable utilization of renewable natural resources, impact of climate change, adaptation and mitigation strategies, innovative processing techniques of resources, bamboo technology, renewable energy and waste management in the timber processing facilities. He is enthusiastic about putting his ideas into practice and a prolific writer.

Abstract

Promoting Innovative Processing and Sustainable Utilization of Bamboo Resources in Ghana: What are the Technological Issues?

The sustainable use of bamboo resources is an important part of sustainable forest management because bamboo is believed to be an essential tool to balance technological advancement with environmental sustainability in most tropical countries like Ghana. Substituting the many underutilized lesser-known-timbers and non-timber forest products such as bamboo for the few 'economic' timbers has been one effective strategy being pursued by Government and Non-government Organizations to sustain the forest resources of Africa and improve livelihoods. In Ghana, bamboo species are underutilized. They are mainly used for fencing garden, as props in construction and as television antennae in many communities in Ghana. Innovative processing techniques are needed for sustainable utilization of bamboo resources. In this present study, the technical issues involved in the enhanced processing and the development of a viable bamboo based industry in Ghana were addressed. The technological properties of native bamboo species in southern Ghana: thermogravimetric, phytochemical and selected physical and mechanical properties of *Bambusa vulgaris(* the predominant bamboo species in Ghana),harvested from different sites in Ghana- were examined. Preliminary phytochemical screening revealed the absence of alkaloids (an important decay resistance indicator) and the presence of anthraquinone glycosides.

Furthermore ,the results of the thermogravimetric analysis indicate a rapid weight loss between temperature of 200 °C and 400 °C in all samples. There was no marked trend in the shrinkage for outer diameter and culm wall thickness of bamboo samples.The shrinkage values from three different sites were not statistically significant at 5% . The information on the technical properties of bamboo in Ghana will be relevant for innovative processing and utilization of our bamboo resources. The study concluded with recommendations for capital investments supported by research to establish some bamboo-based industries in southern Ghana where over 200,000 hectares of bamboo covers exist. This step is also relevant towards developing location-specific adaptation tools to the impact of climate change as the forest cover in Ghana dwindles at alarming rate.

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THAKUR, Tarun

Scientist, Mission Biofuels India Pvt. Ltd., Bhopal

Tarun Thakur is an Indian Agriculture Scientist, born on November 27, 1979, in Niwari, Madhya Pradesh of India. His father is a farmer and he has a brother. His ancestral home is in a small village of Mandla District of Madhya Pradesh, India.

He obtained his Ph.D. in Forestry (Specialization in Remote Sensing and GIS from Indira Gandhi Agricultural University, Raipur, Chhattisgarh), M.Sc. Forestry (specialization in Agroforestry from IGAU, Raipur, Chhattisgarh), Indian Council of Agricultural Research-NET. Specific area of interests includes Remote Sensing and GIS, Natural Resource Management and Tribal Development.

He was awarded the "Young Scientist Award" in 2006 by the Chhattisgarh Council of Science and Technology, Raipur (India), and also received the "Best Paper Award" in the National Conference on Awareness Creation on Mushroom diversity and conservation being sponsored by the National Biodiversity Authority, the Government of India, in 2005, and the "Best Articles Award" in 2005 in the field of Agroforestry/ Forestry by Krishak Shrankhla monthly National Agriculture magazine.

During the research and education he delivered a good number of speeches and imported trainings to Post graduate students and presented sixteen capsules on National Television *E-TV*, Madhya Pradesh Under the farmers programme 'Annadata' on various aspects.

Involved in Teaching, Research and Extension of Forestry/Agroforestry and allied sciences in the capacity of Scientist at Mission Biofuels India Pvt. Ltd., Bhopal, Madhya, Pradesh and worked for International Sustainability and Carbon Certification (ISCC) internal audit report for certification of MBPIL Jatropha plantations to European Union Renewable Energy Directive (RED) mandatory requirements.

Abstract

Analysis of Land Use, Structure, Diversity, Biomass Production, C and Nutrient Storage of a Dry Tropical Forest Ecosystem Using Satellite Remote Sensing and GIS Techniques

The present study was carried out to characterize the land use, vegetation structure, diversity, biomass production, C and nutrient storage of a dry tropical forest ecosystem in Barnawpara Sanctuary, Raipur district of Chhattisgarh through satellite remote sensing

techniques and GIS. Nine land cover types were delineated and the classification accuracy for different land use classes ranged from 71.23-100 per cent.
Results revealed that density of different forest types varied from 324 to 733 trees ha^{-1}, basal area from 8.13 to 28.87 m^2 ha^{-1} and number of species from 9 to 26. Similarly, the diversity ranged from 1.36 to 2.98, concentration of dominance from 0.07 to 0.49, species richness from 3.88 to 6.86 and beta diversity from 1.29 to 2.21. Sal mixed forest type recorded highest basal area and diversity was highest in Dense mixed forest, while Teak forest recorded maximum density. It was lowest in Degraded mixed forests.

The standing biomass and net production varied from 18.65 to 101.48 Mg ha^{-1} and 5.28 to 12.73 Mg ha^{-1} yr^{-1}, respectively among different forest types. The highest biomass was found in Dense mixed forest, while net production was highest in Teak forests. Both were lowest in Degraded mixed forests in different forest types.

The total storage of nutrients in vegetation (OS+US+GS) varied from 105.1 to 560.69 kg ha^{-1} in N, 4.09 kg ha^{-1} to 49.59 kg ha^{-1} in P, 24.59 kg ha^{-1} to 255.58 kg $ha^{-1}$for K and 7310 to 4836 kg ha^{-1} for C in different forest types. They were highest in Dense mixed forest and lowest in Degraded mixed forest. The study also developed reliable regression model for the estimation of LAI, biomass, NPP, C & N storage in dry tropical forests by using NDVI and different vegetation indices, which can be derived from fine resolution satellite data.

The study shows that dry tropical forests of Chhattisgarh are quite immature and not in standing state and have strong potential for carbon sequestration. Both quantitative and qualitative information derived in the study helped in evolving key strategies for maintaining existing C pools and also improving the C sequestration in different forest types. The study explores the scope and potential of dry tropical forests of Chhattisgarh for improving C sequestration and mitigating the global warming and climatic change.

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TUVSHINTUR, Buyankhuu

Lecturer, Department of chemistry and biochemistry, School of Biomedicine, Health Sciences University of Mongolia

Tuvshintur was born in Uvsaimag, Mongolia, and grew up in the countryside. The high school she attended in the Baruunturuun of Uvsaimag was one that focused on providing academic education. From 2002 to 2007, she studied in the School of Biomedicine, Health Science University of Mongolia (HSUM). Her major field is bio-medicine. When she was a 3rd grade student, she started to be interested in microbiology and started to work at the microbiological laboratory of the 1st Central Hospital voluntarily. It was so interesting for her and, then, she has done research regarding infertility and ectopic pregnancy for her diploma work. In this small research work which determined C.trachomatis and N.gonorrhoeae infection among infertility patients, she collected serum and swab (urethral and vaginal) samples, determined C.trachomatis specific IgG by the ELISA testing. Also, she extracted DNA from swab samples, determined C.trachomatis and N.gonorrhoeae infection by using PCR method. It was her first experience to do molecular biological research and it was so amazing to study invisible things.

From 2008 to 2010, she obtained her master's degree (in the disciplines of biochemistry and molecular biology) from the University of Inha, Incheon, South Korea, under the

supervision Suh, Jun-Kyu. In South Korea, he began to study the biochemistry of human and other animals. Now, she is studying a PhD course of HSUM in the field of human medicine. Her field of study, today, is biochemical endocrinology and andrology. Her other interests include educational methods in biochemistry, because she is realizing that biochemistry is the most powerful tool to do biomedical research and all biomedical researches can be use the biochemistry methods. Using the biochemical and molecular biological technique, researcher can explain biological processes and disease mechanisms.

Furthermore, we will find out the way to prevent diseases or to treat patients. She received several awards for her research from the Second Outstanding Presenter, the Biomedical Section at "Erdem-2007" Student Research Conference of Health Sciences University of Mongolia, Ulaanbaatar, Mongolia.

Abstract

The Relation Between the Androgen Receptor Level and Androgens Level in Mongolian Aging Man with Hypogonadism

Recent studies show that the decrease in testosterone (T) levels during aging is characterized by high inter-individual variability. The mechanisms responsible for the age-related decrease in T are still being debated and probably involve the hypothalamic and testicular portions of the hypothalamus–pituitary–testicular axis to some degree.In addition to aging, lifestyle factors and health status might influence individual T levels. However, discrepancies in the sensitivity to biological effects of the androgens, exerted through the binding of the hormone to the androgen receptor (AR), may also be involved in the inter-individual variation of T as well as in agerelated decline. The aim of this study is to investigate the effect of the human androgen receptor level on hypogonadism and androgen level of Mongolians.

First, we evaluated level the human androgen receptor in 45 cases in which men had hypogonadism and in 90 controls. Androgen receptor level was significantly associated with hypogonadism and control in the present samples.
Conclusions: The human androgen receptor level is associated with hypogonadism in men from a present sample in Mongolia.

Keywords: Androgen, hormone, reproductive genetics, testosterone, CAG polymorphism

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UJAN, Javed

PhD Student, Northwest A&F University, Yanggling, China; and Assistant Professor, IBGE-University of Sindh, Jamshoro, Pakistan

Javed Ahmed Ujan was born on September 18, 1985 in the village of Ali Bakhsh Ujan, Tehsil Gambat, District Khairpur miras Sindh province of the Islamic Republic of Pakistan. He completed his undergraduate studies (Bachelor's degree /B.Sc) in the field of Microbiology from Shah Abdul latif University, Khairpur miras, Sindh, Pakistan during the period between 2002-2004 and, received his graduation (Master's degree/MSc) in the field of Biology/ Animal Sciences from Quaid-I-Azam University, Islamabad, Pakistan during the period between 2005-2007.

After the completion of his master's degree, Ujan appeared for International subjective graduation examination, which was conducted by the National Testing Service *(NTS)*, Pakistan. He was also successively qualified for the *Provincial Merit* Criteria in Pakistan and Chinese Scholarship counsel (*CSC*). Thereafter, he was sent to China for the degree of Doctorate of Philosophy (PhD) under the Cultural Exchange Scholarship Program, jointly supported by the Ministry of Education, the Government of Pakistan and the Ministry of Education, the Government of China.

Mr. Ujan joined Northwest A&F University, Yangling, China for the period of four years (2008-2012) under the supervision of Prof. Dr. Zan Linsen in the Animal Genetics and Breeding Group.
Mr. Ujan is author and co-author of 16 international abstracted research papers; most of them are SCI impact factor publications. During his stay in China, he finished his research work with stipulated period and has published six papers; four of them are SCI publications. In addition, he also has two international abstracts from his PhD research work. Moreover, one more SCI paper having impact factor 2 is also accepted for publication and some other papers are in the pipeline to be published soon.

Besides, he is also the author of 6 more Chinese articles.

Abstract

Polymorphisms in Myod Family Genes and their Effects on Meat Quality Traits in Chinese Indigenous Cattles

Beef is the culinary name for meat from bovines, especially domestic cattle. Beef can be harvested from cows, bulls, heifers or steers. It is one of the principal meats used in the cuisine of the Middle East (including China, Pakistan and Afghanistan), Australia, Argentina, Brazil, Europe and the United States, and is important in Africa, parts of East Asia. Myogenic determination (MyoD) family genes encode for skeletal muscle-specific transcription factors with highly conserved basic helix-loop-helix domain and these are the key genes for meat quality and production traits and are thereafter conceived as candidate genes for meat quality traits in farm animals.

In this research, PCR-SSCP technology was used to determine the single nucleotide polymorphism (SNP) in four MyoD family genes (MyoD1, MyF3, MyF5 and MyF6) and their associations with meat quality traits in Chinese indigenous cattle. Primarily, the SNPs were detected by PCR and sequencing, and they were confirmed by single stranded confirmation polymorphism (SSCP) method. Six SNPs (1 from MyoD1, 1 from MyF3, 2 from MyF-5 and 2 from MyF-6) were screened in these genes, while one of them was missense mutation. The g.1142A>G and g.141T>G SNP genotypes of My5F5 and MyF6 genes, respectively, had significant associations with intramuscular fat (IF), rib area (RA), water holding capacity, loin eye area (LEA) and Meat tenderness (MT), in Chinese cattle ($P<0.05$). In addition, g.959 A>G polymorphism in MyoG gene has shown highly significance associations for meat tenderness and water holding capacity ($P<0.01$). Remarkable differences in allele and genotypic and frequencies were observed for the 6 selected SNPs among 6 different cattle breeds.

Based on the **$\chi 2$ test**, without few exceptions, the genotype distributions of all the SNPs among most of the cattle breeds were not in Hardy-Weinberg equilibrium ($P < 0.05$) and showed moderate diversity ($0.25 <$ polymorphism information content < 0.5). Our result suggests that A1142G, A959G and T141G SNPs have potential effects on meat quality traits in the above mentioned cattle populations and are therefore useful for marker-

assisted selection. Furthermore, it is also inferred that the results mentioned here will provide selective information for improving meat quality traits in cattle.

Keywords: Association; Cattle; MyoD gamily genes; meat quality and Single nucleotide polymorphism

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ULLAH, Anwar

PhD Student, UNESP/ IBILCE São Jose Do Rio Preto São Paulo, Brazil

Ullah's philosophy for life is that there always has to be an aim and an ambition to go further, to improve, and to give the very best that is in us and develop healthy values for life. He does not only wish to progress and prosper well, but also do as much as he can to be useful and helpful to the family, society and his country. Mr. Ullah was born in a small village, Wazir Garhi, Nowshera, Khyber pakhtunkhwa, Pakistan on the 18th April, 1983. After completing his primary and secondary education, Mr. Ullah joined Government Degree College Pabbi from where he obtained his Bachelor degree. He got first position in all of his education career and top position in his school and college. He received his M.Sc. Degree from the University of Peshawar; one of the best universities of Pakistan. After completion of his M.Sc., he was looking for a foreign fellowship to pursue a Ph.D in a good university, and this dream was fulfilled by TWAS-CNPq, which brought him to Brazil to pursue his Ph. D. His research area comprises cloning, expression, purification, crystallization, biochemical and structural characterization of proteins from snake and spider venoms and later on to try to use these proteins to cure some fatal disease of human beings like cancer, AIDs and Leishmaniasis.

Abstract

Purification, Characterization and Crystallization of an L-amino acid oxidase from *Bothrops jararacussu* Venom

Anwar ullah[1]; Rehana Masood[1]; Santana, V.S.[1]; Regatieri, L. J.[1] ; Garcia, L. G.[1]; Mariutti, R. B.[1]; Coronado, M. A[1]., Brognaro, H[1]; Carolina Wilson[1]; Liliane M. F[1]. Oliveira, Murakami, M. T[2]; Arni, R.K.[1]

1. Centro Multiusuário de Inovação Biomolecular, Departamento de Física, Universidade Estadual Paulista (UNESP), São José do Rio Preto, 15054-000, SP, Brasil.
2. Laboratório Nacional de Biociências (LNBio), Centro Nacional de Pesquisa em Energia e Materiais, Campinas, 13083-970, SP, Brasil.

About 2.5 million people are bitten by snakes annually, more than 100,000 fatally. Snake venom is a natural biological resource, containing several components that could be of potential therapeutic value. Snake venom is complex mixture of proteins, enzymes and peptides. So far the enzymes isolated from snake venom include acetylcholine esterases, phospholipases, serine proteinases, L-amino acid oxidases and metalloproteinases. Snake venom L-amino acid oxidases (SV-LAAOs) trigger a wide range of local and systematic effects including the inhibition of platelet aggregation, cytotoxicity, hemolysis, apoptosis and hemorrhage. These effects are mainly due to the uncontrolled release of hydrogen peroxide which is produced by the redox reaction involving L-amino acids catalyzed by these flavoenzymes. They have been tested for anti cancer, anti HIV and antibacterial activities. They kill *leishmania spp*. Besides their clinical relevance, few SV-LAAOs have been structurally characterized and the structural determinants responsible for their broad direct and indirect pharmacological activities are unknown. In this work, we purified, characterized and crystallized this enzyme from *Bothrops jararacussu* venom

(Bjsu-LAAO). Functional assays showed that Bjsu-LAAO has a marked preference for hydrophobic and aromatic L-amino acids. Bjsu-LAAO crystals belong to the space group $P2_1$ with cell constants of a = 66.38, b = 72.19, c = 101.53 Å (β = 90.9º). The asymmetric unit contains two molecules and the structure was determined and partially refined at 3.10 Å.

Keywords: L-amino acid oxidase, purification, crystallization, *Bothrops jararacussu.*

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WOUATSA NANGUE, Arlette Vyry

CSIR-TWAS PhD Fellow, Central Institute of Medicinal and Aromatic Plants, (CIMAP) Lucknow/ Babasaheb Bhimrao Ambedkar University, Lucknow, India

Born in November 1984, Wouatsa Nangue was the eldest of eight children. In 2001, she was among the laureates of the SOS Dialogue Excellence Award which was a national award given by the NGO SOS Dialogue which recognizes the best Baccalauréat (equivalent of A level degree) candidates. Curious by nature, she was always fascinated by sciences, so she opted for biology series in lower and upper sixth classes. After she obtained her degree, she enrolled in a Biochemistry class at the University of Douala where she obtained both her Licence (French equivalent of Bachelor) and Maîtrise (French equivalent of Master), in 2004 and 2005 respectively. Then, she got her DEA (French equivalent of Master with Thesis) from the University of Yaoundé I. Later on, in 2009, Wouatsa Nangue was awarded the TWAS-CSIR Postgraduate fellowship to enable her to pursue her studies in India.

Currently, as a TWAS-CSIR Postgraduate Fellow, she is working on her PhD project at the Central Institute of Medicinal and Aromatic Plants (CIMAP), Lucknow, India. Her main research activities are focused on the discovery of bioactive substances from medicinal and aromatic plants. She is a very passionate and dedicated person. One of her favorite leisures is traveling, she travels to discover, exchange, and especially learn new things. Through platforms, such as BioVision, youngsters have the opportunity to learn and take advice from the elders. Wouatsa Nangue knows that there is so much more for her to learn in order to develop and hone her own path, that's why she believes taking part in BioVision.NXT will be one way to help her attain her goals.

Abstract

African Traditional System of Medicine: Valorization Through Development of New Drugs from Medicinal and Aromatic Plants

Traditional medicine in sub Sahara African countries like in other developing countries is among the first provider of remedies to local populations. Cultural beliefs as well as the limited availability and expensiveness of the pharmaceutical drugs account for the high interest towards traditional remedies by local folks as the sole source of therapeutics. Medicinal plants increasingly used by the tradipractitioners are the richest bio-resources of drugs of traditional medicinal systems but also modern medicines, pharmaceuticals, intermediate and chemical entitled for synthetic drugs.

Despite the recent advances of modern medicine, infectious diseases still account for high mortality in low income countries. In addition to economic constrains, reported side health and environment hazards of the current drugs as well as the resistance developed by some microorganisms highlight the need to look for safe and economic alternatives to

cure chronic diseases. The inherent safety in plant products has therefore shown greater attraction in the human population these days and has increased the scientific interest towards plant-derived metabolites. Improving the health condition in developing countries being one of the millennium development goals, the investigation of plants as a source of human disease management is imperative. Tropical countries possess an extraordinarily rich pharmacopoeia of medicinal plants that is yet to be explored for their bioactive chemical constituents**.** This is a broad subject that constitutes a new and interesting direction for African countries rich in countless floras to valorize their medicinal plants. Therefore, the aim of this research is to investigate and characterize important phytochemicals from some Cameroonian plants which may yield bioactive compounds. Based on their folklore uses, a number of plants were selected and the extraction and separation of their secondary metabolites was carried out using non-polar and polar solvents followed by chromatographic techniques. The structure of some isolated and purified compounds was elucidated by spectroscopic methods and chemical transformations. The laboratory tests used to assess the biological activities, viz. Anti-inflammatory, anti microbial, of the plant extracts, fractions and pure compounds are done in accordance with standard protocols. The expected outputs of this project are to develop new or existing drugs from the purified bioactive compounds and/or modify their molecular structures to synthesize modern drugs, helpful to cure specific illnesses or diseases. Hence, starting from natural substances to isolate and produce, by modern methods, many pharmaceutical substances not only is going to assist in developing affordable drugs for the majority of the world's population from developing countries but also will promote the creation of pharmaceutical industries from Africa.

Keywords: Traditional medicine, medicinal plants, bioactive compounds, drug discovery

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