Biological Activity of extracts from newly bred Summer prince apple peel

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The biological resources has been using natural sources from nature. Among these, fruits, leaves and flowers which have a remedial role of neuralgia, arthritis, woman disease are safe plant materials so they have been used in conventional functional science for a long time. Apple is a fruit enriched in flavonoids, which is widely distributed throughout the plant kingdom. In particular, quercetin flavanol is an active ingredient of many plant-origin pharmaceutical products. The regular intake of vegetables and fruits is associated with the prevention of cancer, cardiovascular diseases, and inflammation. Inflammatory response is a normal defense mechanism against external stimuli to regenerate and repair damaged tissues.

The objective of this study was to determine antioxidant activity(anti-aging), α-amylase and α-glucosidase inhibitory activity(anti-diabetes), as functional food activities and elastase and collagenase inhibitory activity (anti-wrinkle) as functional cosmetic activities of phenolic compounds from newly bred Summer prince apple peel extracts.

The peel of newly breed Summer Prince apple was extracted using water and ethanol for extracting solvent. Each water and ethanol extract showed relatively high phenolic compound of 6.83 mg/g and 11.11 mg/g. Each water and ethanol extract of Summer Prince apple showed antioxidant protection factor of 1.39 PF and 1.51 PF and TBARS showed anti-oxidation effect of 44.53% and 64.27% all at 100 μg/mL phenolics concentration. Therefore extract of Summer Prince apple can be considered as anti-oxidant for anti-aging. The anti-inflammatory effect (hyaluronidase inhibition) of extract of Summer Prince apple was 16.53% with ethanol extract both at 200 μg/mL phenolics concentration. Both water and ethanol extract showed low α-amylase inhibition effect but each showed 6.11% and 100% of α-glucosidase inhibition effect at 200 μg/mL phenolics concentration. In anti-wrinkle effect, water extract showed each 14.39% and 48.27% in elastase inhibition and collagenase inhibition and ethanol extract showed 61.08% and 85.63% each.

These result show high potential for functional food and cosmetic source. Summer prince apple was identified to have various functions of anti-oxidation, anti-inflammation, anti-wrinkle effect, and anti-diabetic effect. Therefore, Summer prince apple is qualified as a source for new functional cosmetics and functional foods.

Biography
Young-Je Cho Ph.D is a Professor at Kyungpook National University (KNU). He did his postdoctoral research at Yeungnam University. He has published more than 250 research articles, book chapters and edited 3 books in functional food and functional cosmetic field.
In Silico analysis of the channel interior of nonspecific porin *Yersinia Ruckeri*

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Using a theoretical model of OmpF porin *Yersinia ruckeri* (YrOmpF) spatial structure, the charge distribution in the channel mouth outer vestibule and interior was analyzed, and a quantitative assessment of the interactions between residues localized at the functionally important loop L3 and on the inner wall of the barrel ones was given. A detailed patch-analysis of the charge distribution both in the channel vestibule and interior, performed with the MOE (CCG) and MOLE programs, showed that the amount and localization of charged residues of the proteins are significantly different. Despite the comparable pore length (38.4 for EcOmpF and 38.9 for YrOmpF), YrOmpF channel inner part is characterized by more extended charged regions along the pore compared with EcOmpF. This leads to significant differences in the direction and magnitude of the dipole moments of the considered porin molecules.

In addition, the total number of L3 loop intramolecular interactions in the porins differs significantly. Thus, the position of this loop in EcOmpF is stabilized by 23 non-covalent interactions with a total energy contribution of -63.8 kcal/mol, while the conformation of L3 loop in YrOmpF is determined by 35 interactions whose energy is of the order of -131.6 kcal/mol. Obviously, this provides a lower conformational mobility of YrOmpF L3 loop. The theoretical data obtained are in good agreement with the results of the electrophysiological experiments, which revealed an anomalously high value of the critical closure potential for YrOmpF compared to that for EcOmpF. This work is supported by RFBR № 19-03-00318.

**Biography**

Elena Zelepuga is a senior researcher at Elyakov Pacific Institute of Bioorganic Chemistry, Far Eastern Branch Russian Academy of Sciences (PIBOC FEB RAS). She did her postdoctoral research at Peter the Great St. Petersburg Polytechnic University (SPBPU). She has published more than 100 research publications in fields of biochemistry, biophysics and molecular modelling. She has published more than 35 papers in reputed journals.
Plant Virus Nanoparticles: New applications for developing countries

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Abstract:
For over two decades now, plants have been explored for their potential to act as production platforms for biopharmaceuticals, such as vaccines and monoclonal antibodies. Without a doubt, the development of plant viruses as expression vectors for pharmaceutical production have played an integral role in the emergence of plants as inexpensive and facile systems for the generation of therapeutic proteins. More recently, plant viruses have been designed as non-toxic nanoparticles which can target a variety of cancers and thus empower the immune system to slow or even reverse tumor progression. The following presentation describes the employment of plant virus expression vectors for the treatment of some of the most challenging diseases known today. The presentation concludes with a projection of the multiple avenues by which virus nanoparticles could impact developing countries.

Biography
Kathleen Hefferon received her PhD from the Department of Medical Biophysics, University of Toronto and completed her postdoctoral fellowship at Cornell University. Kathleen has published multiple research papers, chapters and reviews, and has written three books. Kathleen is the Fulbright Canada Research Chair of Global Food Security and has been a visiting professor at the University of Toronto over the past year. Her research interests include virus expression vectors, food security agricultural biotechnology and global health. Kathleen lives in New York with her husband and two children.
Novel Development of spray drying and Theophylline releasing study from Theophylline/Chitosan-Tripolyphosphate Nanospheres

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The preparation of chitosan-tripolyphosphate (chitosan-TPP) nanospheres by the spray drying method was reported for sustained release of theophylline (TH). It may prevent the rapid drug metabolism of TH for prolonged anti-inflammatory effects in vivo. Spray drying is a very simple procedure turning a liquid feed into a dry powder with well-defined properties in a single continuous process step. However, the properties of spray dried nanospheres loaded with drugs such as the particle morphologies and particle sizes which may affect the drug encapsulation and dissolution of the drug delivery system were greatly influenced by the processing parameters and liquid feeding constitutions of spray drying system. The objective of this study is therefore to optimize the spray drying conditions for extended release of TH loaded within the chitosan nanospheres using TPP as cross-linker. The results indicate the diameter of the TH/chitosan-TPP nanospheres made by our spray drying apparatus spans from 424 to 497 nm with geometric standard deviation less than 2, and the prolonged release of TH was controlled by the chitosan-TPP matrix density under the appropriate spray drying temperature and the carrying air flow rate, 130°C and 0.075 L/min, respectively. The experimental results suggest that the characteristics of spray dried TH/chitosan-TPP nanospheres might be a good anti-inflammatory therapy.

Biography
Yu-Lin Song received the M.S. degree in the department of physics from National Tsing Hua University, Hsinchu, Taiwan, in 1998 and the Ph.D. degree in the department of physics from National Taiwan University, Taipei, Taiwan, in 2005. Song is a research fellow at Biomedical Engineering Research and Development Center, National Yang-Ming University, Taiwan. Nowadays execution plan comprises: “High Order Talent Biotechnology Training and Employment Program Phase III”(Ministry of Science, co-PI), “Rong Yang Aging Plan - Develop Novel Ultrasound Image Processing Design for Analytical Muscle Density”(sub-project PI), “SPARK YM Project”(sub-project PI), “High-Frequency Ultrasound Guided Anesthesia Puncture Probe System”(embryonic project co-PI), “The Development of Novel Ultrasound Muscle Density Detection”(integrated science program PI) and “Development of Ultrasonic Atomizer for Formulating Miniature Carrier with Chitosan-Coating”(Ministry of Science and personal type program PI).
Efficient Use of Cesspool and Biogas for Sustainable Energy Generation: Recent Development and Perspectives

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Abstract

Biogas from biomass appears to have potential as an alternative energy source, which is potentially rich in biomass resources. This is an overview of some salient points and perspectives of biogas technology. The current literature is reviewed regarding the ecological, social, cultural and economic impacts of biogas technology. This article gives an overview of present and future use of biomass as an industrial feedstock for production of fuels, chemicals and other materials. However, to be truly competitive in an open market situation, higher value products are required. Results suggest that biogas technology must be encouraged, promoted, invested, implemented, and demonstrated, but especially in remote rural areas.

Keywords- biomass resources; biogas application; sustainable development; environment.

Biography

Abdeen Mustafa Omer (BSc, MSc, PhD) is an Associate Researcher at Energy Research Institute (ERI). He obtained both his PhD degree in the Built Environment and Master of Philosophy degree in Renewable Energy Technologies from the University of Nottingham. He is qualified Mechanical Engineer with a proven track record within the water industry and renewable energy technologies. He has been graduated from University of El Menoufia, Egypt, BSc in Mechanical Engineering. His previous experience involved being a member of the research team at the National Council for Research/Energy Research Institute in Sudan and working director of research and development for National Water Equipment Manufacturing Co. Ltd., Sudan. He has been listed in the book WHO’S WHO in the World 2005, 2006, 2007 and 2010. He has published over 300 papers in peer-reviewed journals, 200 review articles, 7 books and 150 chapters in books.

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Evaluation of an Inverse Molecular Design Algorithm in a Model Binding Site for the In silico design of a YEATS2 gene blockader for the depletion of YEATS2 and its interactions between YEATS domain and acetylated histones for the reduction of the ATAC complex-dependent H3K9ac promoter levels targeting to the deactivation of the essential NSCLC genes.

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Computational molecular design is a useful tool in modern drug discovery. Virtual screening is an approach that docks and then scores individual members of compound libraries. In contrast to this forward approach, inverse approaches construct compounds from fragments, such that the computed affinity, or a combination of relevant properties, is optimized. We have recently developed a new inverse approach to drug design based on the dead-end elimination and A* algorithms employing a physical potential function. It has recently been identified that the YEATS domain as a novel acetyllysine-binding module regulating the functional importance of YEATS domain-containing proteins in human non-small cell lung cancer (NSCLC) for cancer cell growth and survival. YEATS2 binds to acetylated histone H3 via its YEATS domain. Here, we have discovered for the first time an in silico predicted and computer-aided molecular designed YEATS2 gene blockader for the reduction of YEATS2-containing ATAC co-localized complex with H3K27 acetylation (H3K27ac) promoters of actively transcribed NSCLC genes as a histone H3K27ac inhibitor that regulates a transcriptional program essential for NSCLC tumorigenesis by utilizing the Microcrylaq™ cluster of algorithms for Large-Scale Protein-Ligand Docking experiments. Computational chemistry, NSCLC genes, Protein-Ligand Docking experiments, ATAC complex-dependent H3K9ac promoter, acetylated histones, docking, compounds libraries, Microcrylaq™ cluster of algorithms,

Biography
Ioannis Grigoriadis has completed his Pharmacist D at the age of 24 years from Aristotle University of Thessaloniki. He is the scientific director of Biogenea Pharmaceuticals Ltd, a premier biotechnology personalized cancer vaccination service organization. He has published more than 200 papers in reputed drug designing journals.

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Quality evaluation of HD2733 and its near isogenic line carrying Lr24 gene

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Rusts are the most important fungal diseases of wheat and have been one of the major biotic production constraints both in Asia and the rest of the world. The transfer of agronomically important genes from the superior wheat to the cultivated wheat varieties is being practiced as one of the common approach of wheat varieties improvement. Near isogenic line (NIL) of wheat variety HD2733 (HD2733+Lr24) and HD2733 were grown in two replications for two consecutive years 2015-2016 and 2016-2017 in the field of Indian agricultural research Institute (ICAR-IARI), India. 17 wheat grain quality tests were analyzed to study the possible effects of these genes on the wheat grain quality. The statistical analysis was carried out Analysis of variance was performed using SAS version 9.4. The F-test was applied to test the homogeneity of variances. The error variances were observed to be homogenous at 5% level of significance. Correlations among the quality traits were analysed using SPSS 20. Based on yield, grain texture, thousand kernel weight, sedimentation value, solvent retention capacity, farinographic and alveographic parameters, the introgression of Lr24 gene in the genetic background of the popular variety HD2733 serves as an improved version of the wild type. Characterization of the influence of Lr24 gene on grain quality encourages the breeders to introgress the Lr24 in several other high yielding varieties which will be beneficial from the yield, disease resistance as well as utilization in several end use products point of view.

Biography

Anjali Rai is a PhD student at Amity University, India. She did her postgraduate from Amity University, India. Her ongoing research is in the field of genetics and plant breeding. She has worked on the screening of the popular Indian varieties for its HMW-GS, LMW-GS, puroindoline genes, disease resistant genes and several grain quality parameters. Currently she is working on marker assisted selection for transferring puroindoline and disease resistant genes in candidate wheat cultivar. She has published 2 research articles, 1 book chapter in agriculture food science and technology field.
Electrochemical stimulation of anaerobic microbial reducing reactions of persistent hazardous substances

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Anaerobic microbial respiration is important for geochemical cycles and bioremediation. Examples are organohalide respiration, iron reduction, denitrification and etc. Although the microorganisms has been known to use light and reduced compounds as energy sources, microorganisms are found to utilize electricity as energy source, recently. The electrophilic microorganisms can interact with solid electrode directly. The non-electrophiles also can interact indirectly with the solid electrode via external electron mediator (EEM). EEMs are important because the environmentally-important microorganisms are not electrophilic in many cases. Although water-soluble EEMs have been reported, such as anthraquinone-2,6-disulfate, they are often toxic and washed away with water, and therefore, not utilizable in the environment. It is important to obtain the insoluble and non-toxic EEM for the environmental use.

We have found that humin, a humic substance insoluble in any pH, functions as solid-phase EEM for multiple microbial reducing reactions: anaerobic dehalogenation, denitrification, and etc. Bioelectrochemical system using humin as solid-phase EEM achieved the electrochemical stimulation of anaerobic dehalogenation and denitrification. This suggests the significance of the bioelectrochemical system as a new bioremediation technology and also the importance of electrochemical interactions in the environmental microorganisms.

Biography
Arata Katayama is a professor of Institute of Materials and Systems for Sustainability, and Department of Civil and Environmental Engineering, Nagoya University, Japan. He has published more than 150 research articles and book chapters. He has been studying microbial degradation of persistent toxic substances, compost microbiology, and risk assessment.
Lactobacillus Found in Dairy Yogurt in Kathmandu

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Probiotics are live microbial strains which are friendly bacteria that have a positive impact on human health by maintaining the gut microflora. Probiotics are present in fermented food products. Out of many probiotics, most belongs to lactobacillus genera which are also used in commercial food products. Yoghurt is one of the most familiar source of probiotic lactobacilli. The purpose of this study is to identify and analyze the probiotic properties of isolated Lactobacillus spp. from different five commercial brand of yoghurt that are famous in Kathmandu valley. All the isolates were identified on the basis of their morphological and biochemical characteristics. These identified isolates were further examined to analyze the probiotic properties which includes tolerance to inhibitory substances like phenol (0.4%), Nacl (1-9%) and bile acid (0.1-1%); the ability to grow in acidic (pH 2.5) and alkaline(pH8.5) condition and their antimicrobial activities along with susceptibility to selected nine antibiotics which was determined by disk diffusion method. The result of this present study indicates that the isolates from commercial yoghurts sample fulfill the most common criteria of probiotic bacteria with slight variation among the sample in different properties.

Biography
Asmita Khanal is a researcher a Koirala Research Institute for Biotechnology and Biodiversity (KRIIBB). She did her MSc. in Biotechnology from Sikkim Manipal University. She works specially on food biotechnology and on natural. She is also the faculty on Amrit Science College, Department of Zoology where she teaches Applied Biotechnology for the student of MSc. and BSc. level.
Identifying the potent amino acid residues of the fungal immunomodulatory protein from *Flammulina velutipes* that attributes to its immunomodulatory and anti-cancer activities

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FIP-fve is an immunomodulatory protein isolated from edible mushroom *Flammulina velutipes* and grouped under fungal immunomodulatory proteins (FIPs) family\(^1\). FIPs are well documented for their immunomodulation, anti-allergy and anti-tumour activities. Despite high structural similarity, FIP-fve is more effective in anti-allergy, whereas FIP-glu from medicinal Chinese mushroom (*Ganoderma lucidum*) is stronger in tumour-inhibition\(^2\). Structural determinants for their divergence bioactivities are unknown. This study was conducted to delineate structural determinants that attribute to bioactivities of FIP-fve. Several aspects examined were importance of N-terminal dimerization and effects of adoption of loop DE, loop FG and hinge residues from FIP-glu. FIP-fve and derivatives genes were expressed in *Escherichia coli* system. *In vitro* bioactivities of purified proteins were examined using several assays: splenocytes proliferation, cytokines release measurement, haemagglutination, and cancer cell proliferation- and metastatic-inhibition. Recombinant protein with strengthened dimerization displayed significant enhancement in immunomodulatory activity. Results suggested an antagonism relationship between adoption of loop DE and FG regions. Loop DE was crucial in directing immune response towards Th1 and displayed significant inhibition towards MDA-MB-231 breast cancer cell, while loop FG was important for inhibiting A549 lung cancer cell. The adoption of both loop DE and FG regions counteracted enhancement effects of derivatives proteins. Loop DE adoption also abolished haemagglutination ability of FIP-fve, making it suitable for therapeutic use. The heirachy of importance of residues in determining bioactivity of FIP-fve is tabled out. This study demonstrated for the first time that immunomodulatory and anti-cancer activities of FIP-fve can be enhanced via strengthened dimerization and loop modification.

**Biography**

Won Ting is a PhD student under Department of Biomedical Sciences in University of Nottingham Malaysia Campus. Her current research interests include application of mutagenesis approach in developing a greater efficacy fungal immunomodulatory protein by investigating on bioactive sites of proteins for use in anti-allergy, anti-cancer as well as immunotherapy.
Synthesis of pH/redox dual-responsive polylactide cross-linked micelles with a targeting ability for anticancer drug delivery

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Cancer has been a major cause of mortality for a long time, and significantly threaten the health of human beings. Until now, chemotherapy is still a first-choice modality for treating cancer in clinical. To decrease its adverse effects and to enhance its therapeutic efficiency, anticancer drug carriers have been extensively developed. Of these carriers, micelles have gained significant attention due to their recorded biomedical merits. However, there are still several innate drawbacks associated with micellar carriers, such as low in vivo stability, low drug loading contents, lack of biodegradability. In this context, a new polymer-drug conjugate, poly(ethylene glycol)-block-allyl functional polylactide-block-polylactide-graft-Dox (PEG-PLA_{ene}-PLA_{DOX}) was designed to address the mentioned challenges. A well-known anticancer drug Doxorubicin (Dox) was grafted on the PLA_{DOX} block of the new conjugate through an acid-labile Schiff-base linkage. Having a hydrophobic PLA segment and a PEG hydrophilic block, the new conjugate thus can form micelles through self-assembly. Sequentially, the reserved allyl functionalities on the PLA segment can be further cross-linked with the use of allyl disulfide as the cross-linker. Accordingly, the resulting cross-linked micelles are allowed to be responsive to redox potential. With PLA as the backbone, the pH/redox responsive micelles are capable of having biodegradability. Additionally, the chain end of the PEG block can be decorated with a desired targeting moiety by a chemistry approach. So far, the new conjugate has been successfully synthesized via ring-opening polymerization and click modification. The formation of the micelles with pH/redox dual responsive property and targeting ability is underway in our laboratory.

Biography
Chih-Kuang Chen is an Associate Professor at the Department of Chemical and Materials Engineering, National Yunlin University of Science and Technology. Currently, he has published 38 SCI peer-reviewed research and review articles in the fields of nanomedicine, polymer chemistry, functional nanofibers and antimicrobial materials.
Tumor microenvironment-selective imaging and anticancer therapy

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The combination of imaging and anticancer therapy has recently emerged as a promising strategy. However, nonspecific imaging signals and distribution of anticancer drugs at normal tissues limit the specificity of the combination therapy. To overcome the challenges, we designed a system which can selectively visualize cancer tissues and initiate the subsequent action of therapeutic molecules in tumor microenvironment. Exploiting the overexpression of matrix metalloproteinase (MMP) in the tumor microenvironment, we designed a graphene oxide (GO)-based nanosheet system loaded with a pegylated MMP-cleavable imaging probe and an anticancer peptide shielded under the imaging probe. GO loaded with pegylated imaging probe derivative and anticancer bufforin IIb peptide (IPGO/BF) was not fluorescent and BF hidden within pegylated surfaces did not exert anticancer activity. However, in tumor microenvironment, IPGO/BF selectively provided imaging by liberating pegylated fluorescent moiety. The activation of imaging signal triggered subsequent exposure of shielded BF on GO and enhancing its therapeutic function. SCC7 tumor-bearing mice treated with IPGO/BF exhibited selective fluorescence in tumor tissues, and greater imaging signal-dependent antitumor effects compared with other groups. The selective imaging-dependent sequential activation of anticancer therapy in tumor microenvironment would be a feasible strategy to reduce the nonspecific false-positive signals of tumor imaging and undesirable side effects of anticancer drugs at normal tissues.

Keywords: matrix metalloproteinase-cleavable imaging probe, graphene oxide, tumor microenvironment, anticancer therapy

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CO₂ biofixation via microalgae cultivation using wastewater for production of biofuel

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Emission of extra of carbon dioxide into atmosphere is the main cause of air pollution, climate changes and global warming. Use of microalgae in mega scale is a promising technique to convert ambient CO₂ to biofuel. However, algal oil production costs in commercial scale may be high, but we can eliminate atmospheric CO₂. Wastewater as source of nutrients was used. The combination of biological post treatment and CO₂ biofixation would reduce the costs of operation. The impact of wastewater with various organic load and light intensities on a unique strain of Scenedesmus sp. in batch system was investigated. The aim of study is to find the optimum condition for biomass production, CO₂ consumption rate and nutrient removal by the microalgae. The results showed that use of wastewater 750mg L⁻¹ sCOD with maximum cell growth and CO₂ consumption rate were 2.77 g L⁻¹ and 55 mg L⁻¹ d⁻¹, respectively. Microalgae was able to consume all available and soluble CO₂ after incubation period of four days. When CO₂ was limited, Scenedesmus sp. isolated strain was continued to utilize wastewater as carbon source. The highest sCOD, TKN, nitrate and TP removal at such condition, were 55, 91, 87.5 and 100%, respectively. The lipid content of microalgal biomass was measured under different light intensity and the maximal amount of lipid was determined to be 51% under illumination of 2300 lux. Finally, CO₂ consumption rate and biomass productivity of microalgae using continuous gas flow (6%: 94%) under optimum conditions were investigated.

Biography
Ghasem D. Najafpour is a well-known professor in Chemical Engineering and Chairman of Biotechnology Research Center, Babol Noshirvani University of Technology, Iran. He is an educated scholar from University of Arkansas, USA with strong background in biological processes. He is deeply involved in research and teaching in biochemical engineering subjects and he has conducted many practical researches in enzyme technology, fermentation processes, biodiesel, biofuel, biosurfactant, wastewater treatment and biochemical engineering.

He is a Chemical Engineer and Biotechnologist, M.Sc., Chemical Engineering University of Oklahoma, USA (1977) and Ph.D., Chemical Engineering University of Arkansas, USA (1983). He served University of Mazandran, Iran (1983-1989), Visiting Professor at University of Waterloo Canada and University of Arkansas, USA (1990-1991). He also spent his sabbatical leave at University of Arkansas, USA (1992-1993). There, he has expanded his scientific research activities on single cell protein (SCP), Microbial fuel cells, renewable energy and synthetic fuels. He served as associate professor at Universiti of Sains Malaysia, Malaysia (1998 – 2005). Since 2005, he was appointed as professor in Faculty of Chemical Engineering at Babol Noshirvani University of Technology, Iran.
Genetic differentiation among Egyptian sheep breeds based on microsatellites

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Sheep represents one of the most important domestic animals in Egypt, where meat and coarse wool production are the basic breeding objectives for Egyptian sheep. Animals from the three major Egyptian sheep breeds (Ossimi, Rahmani and Barki) were genotyped for 14 microsatellites. All loci tested were highly polymorphic. The total observed number of alleles per microsatellite ranged from 6 to 12 for markers MAF65 and OarHH47, respectively. Estimates of effective number of alleles were between 3.11 for TGLA53 and 6.12 for OarHH47. The mean of polymorphism information content was 0.73. Overall gene diversity for all microsatellites analyzed was 0.66, 0.69 and 0.75 for Ossimi, Rahmani and Barki, respectively. For all breeds studied, estimates of observed heterozygosity were significantly lower than the expected heterozygosity. Average observed and expected heterozygosity estimates were 0.55 and 0.67, respectively. Significant departures from Hardy-Weinberg equilibrium were observed for all the markers analyzed. The three breeds revealed significant deviation from HWE. The overall indicator of population subdivision (FST) was 0.071; pointing out that about 7% of genetic diversity is due to genetic variation between breeds. Estimates of total inbreeding (FIT) and within-breed inbreeding (FIS) coefficients were 0.187 and 0.118, respectively. The estimates of pair-wise genetic differentiation were 0.039, 0.051 and 0.056 for Ossimi-Rahmani, Barki-Rahmani and Ossimi-Barki pairs, respectively. Measures of genetic distance between pairs of sheep breeds ranged from 0.423 to 0.615 for Rahmani-Ossimi and Barki-Ossimi sheep breed pairs. The results obtained in this comprehensive study may be useful in sustainable breeding programs of Egyptian sheep breeds.

Biography
Hossam E. Rushdi is Associate Professor of Animal Breeding and Genetics, Cairo University, Faculty of Agriculture, Giza, Egypt. He gained his Ph. D. from Universidad Complutense de Madrid, Facultad de Veterinaria, Departamento de Producción Animal, Madrid, Spain in 2002. He has published more than 23 research articles, book chapters and edited 2 books in animal production and biodiversity field.
Journey towards the end of CLCVs - Friends from Foe

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Cotton leaf curl disease (CLCuD) is the major limitation to cotton production in Pakistan. The disease is caused by Begomoviruses (family Geminiviridae), which contains single stranded, circular DNA genome and is transmitted by a single species of whitefly (Bemisia tabaci Gennadius). Approximately 5-6 species of begomoviruses are infecting cotton. Cotton leaf samples showing typical begomovirus like symptoms were collected from distinct locations of Pakistan. Full length begomoviruses, alphasatellite and betasatellite were cloned from the symptomatic samples which showed high identity to Cotton leaf curl Kokhran virus (CLCuKV), Cotton leaf curl Multan Betasatellite and Cotton leaf curl Multan Alphasatellites, respectively. The partial tandem repeat constructs of begomovirus and associated components were developed which were infectious to Nicotiana benthamiana. An innovative approach of program cell death was used to reduce cotton infecting begomoviral infection, by targeting the viral genomes using modified cotton leaf curl betasatellite. The Nicotiana benthamiana transgenes showed no symptoms compared to control plants. The expression analysis of transgenes’ showed high expression of Cyt c gene and reduced titre of CLCuKV compared to control plants. Further analyses are required to prove the concept of sustainability and durability of the technique compared to RNAi-mediated approaches to control cotton infecting begomoviruses.

Biography:
Muhammad Tahir is an Assistant Professor at Plant Biotechnology Dept. Atta-ur-Rahman School of Applied Biosciences (ASAB), National University of Sciences and Technology (NUST), Islamabad, Pakistan. He did post-doctoral research at University of Arizona, USA. His area of interest are viral diseases of Cotton, Sugarcane, Tomato and Wheat. He has published more than 40 research articles. He won competitive grants from USDA and higher Education commission of Pakistan.
Development of C-based single domain antibodies as therapeutic candidates against viral infection

Rui Gong

Abstract
Monoclonal antibodies have been successfully used for the therapy of many diseases. However, because of their large size (~150 kD), many limitations have also been found during their development and manufacture. The use of antibody fragments with smaller sizes is one of the attractive strategies to overcome these limitations. Antibody constant CH2 domain (~12 kD) was proposed as scaffold for library construction and selection of specific binders as novel therapeutic candidates termed C-based single domain antibodies (C-sdAbs). The isolated CH2 is a monomeric, independently folded domain with solved crystal structure, which contains seven β-strands connected by three loops (loop BC, loop DE, loop FG) and two helices. In our previous work, we engineered the wide type CH2 scaffold for improve its stability and extension of its serum half-life to about 10 hours. We constructed a phage display library based on modified CH2 scaffold which has complexities in excess of 10^{11} independent clones. Panning of this library against the antigens from envelope glycoproteins of several important viruses resulted in selection of specific neutralizing C-sdAbs with EC_{50} at nM range. These candidates could neutralizing virus with high potency. Epitope analysis reveals that these C-sdAbs bind to membrane proximal external region (MPER), glycan cap or receptor binding domain (RBD) in the envelope proteins. These C-sdAbs have potential for being developed as novel antiviral therapeutic candidates, and the C-sdAb technical platform could be very useful in screening of new candidate drugs for prophylaxis and treatment of infectious diseases.
Molecular imprint: an efficient marker towards sustainability assessment for some degrading mangroves of Indian Sundarbans

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Mangroves, the distinctive plant populations of tropical and sub-tropical coastlines, have attracted considerable scientific attention during the last few decades. High salinity, periodical tidal influence, strong winds, high temperatures, high precipitation and extremely anaerobic soils are the typical physiognomies of this vegetation. They possess unique morphological and physiological adaptive features to cope with these extreme conditions. Mangrove forest provides supports significantly to the coastal inhabitants both productive and protective ways. Since industrial revolution, due to elevated salinity, caused by several environmental and anthropogenic liabilities, it suffers much throughout the world. As the mangroves are assemblage of heterogeneous group of taxa, they exhibit differential magnitude of adaptability in relation to sustainability. Apart from the different morphological and physiological adaptive traits, wide genetic plasticity complies as a vital role towards sustainability.

Present work describes the molecular (enzymes and genetic polymorphism) validation of four mangroves (**Bruguiera gymnorrhiza**, **Excoecaria agallocha**, **Heritiera fomes** and **Xylocarpus grnatum**) from Indian Sundarbans, of which first two are well-growing and rest are suffer much from enhanced substrate salinity since last three decades. Peroxidase and Superoxide Dismutase (in different isoforms) are antioxidant enzymes subsidizing combat forces against ROS-damaged crisis of plant cell in traumatic substrate. In the present work, it was revealed that, both the enzymes show excess isoforms in **Bruguiera** and **Excoecaria** than the other two. It is also presumed that genetic diversity is allied to morphological variance and survival of the plants. DNA polymorphic experiments with molecular markers (RAPD and ISSR) also revealed that per cent DNA polymorphism are higher in the first two taxa over **Heritiera** and **Xylocarpus**. Enzyme and marker assisted molecular study might be pointed out towards the differential sustainability among the studied taxa in the presently elevated saline regime of Sundarbans mangrove swamps.

**Biography**

Sauren Das was awarded PhD from Calcutta University. Stared research career with plant anatomy of a typical tropical coastal vegetation – mangroves and understanding their salt management mechanisms. Presently he is affiliated to Indian Statistical Institute, Kolkata, India as a Associate Scientist. His research domain is physiology and molecular biology of abiotic stressed plant, antioxidant characteristics of mangroves, molecular marker assisted DNA polymorphism study in relation to mangrove sustainability, tea antioxidant ability and their molecular consideration related to desired agronomic traits etc. He was a visiting scientist in National Sun-Yet Sen University, Taiwan. He is working with several intra and extramural funding projects. He has published more than 50 papers in reputed National and International journals and two book chapters. He has been serving as an editorial board member, regular reviewer of various international publishing groups.
Direct evidence of viral infection and mitochondrial alterations in the brain of fetuses at high risk for schizophrenia

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There is increasing evidences that favor the prenatal beginning of schizophrenia. These evidences point toward intra-uterine environmental factors that act specifically during the second pregnancy trimester producing a direct damage of the brain of the fetus [1]. The current available technology doesn't allow observing what is happening at cellular level since the human brain is not exposed to a direct analysis in that stage of the life in subjects at high risk of developing schizophrenia. Methods. In 1977 we began a direct electron microscopic research of the brain of fetuses at high risk from schizophrenic mothers in order to finding differences at cellular level in relation to controls. Results. In these studies we have observed within the nuclei of neurons the presence of complete and incomplete viral particles that reacted in positive form with antibodies to herpes simplex hominis type I [HSV1] virus, and mitochondria alterations [2]. Conclusion. The importance of these findings can have practical applications in the prevention of the illness keeping in mind its direct relation to the aetiology and physiopathology of schizophrenia. A study of the gametes or the amniotic fluid cells in women at risk of having a schizophrenic offspring is considered. Of being observed the same alterations that those observed previously in the cells of the brain of the studied foetuses, it would intend to these women in risk of having a schizophrenia descendant, previous information of the results, the voluntary medical interruption of the pregnancy or an early anti HSV1 viral treatment as preventive measure of the later development of the illness.


Biography

Segundo Mesa Castillo. As Specialist in Neurology, he worked for 10 years in the Institute of Neurology of Havana, Cuba. He has worked in Electron Microscopic Studies on Schizophrenia for 32 years. He was awarded with the International Price of the Stanley Foundation Award Program and for the Professional Committee to work as a fellowship position in the Laboratory of the Central Nervous System Studies, National Institute of Neurological Diseases and Stroke under Joseph Gibbs for a period of 6 months, National Institute of Health, Bethesda, Maryland, Washington D.C. USA, June 5, 1990. At present he is member of the Scientific Board of the Psychiatric Hospital of Havana and give lectures to residents in psychiatry.

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