21st European
Biotechnology Congress

October 11-12, 2018 | Moscow, Russia

Scientific Tracks & Abstracts

Day 1

SESSIONS

Environmental Biotechnology | Bioprocess and Fermentation Technology | Agriculture Biotechnology Molecular Biotechnology and Genetics | Pharmaceutical Biotechnology and Drug Design

Chair: **Igor Katkov,** Belgorod National State Research University, Russian Federation
Co-Chair: **Farouk El-Baz,** National Research Centre, Egypt

SESSION INTRODUCTION

Title: **Growing scenedesmus obliquus microalgae in photobioreactor for biomass and biodiesel production**
Farouk K El-Baz, National Research Centre, Egypt

Title: **Production of antibody fragments with plasmid-based and genome integrated T7 E. coli expression systems: Evaluation of systems performance in microtiter fed-batch like cultivations**
Monika Cserjan, University of Natural Resources and Life Sciences, Austria

Title: **A new direction for viral infections management**
Petrova Natalia Vladimirovna, Institute of General Pathology and Pathophysiology, Russia

Title: **Triticum monococcum based genes as a source of salt tolerance in Turkish wheat genotypes**
Erdogan Esref Hakki, University of Selcuk, Turkey

Title: **Physiological responses of nitric oxide applications on diverse crops grown under abiotic stress conditions**
Mehmet Hamurcu, University of Selcuk, Turkey

Title: **Hyper-production and stability of human serum albumin in Pichia pastoris through a combination of medium design and genetic strategies**
Saroj Mishra, Indian Institute of Technology Delhi, India

Title: **Exogenous application of dsRNA for fruit developmental improvement**
Christopher Alexis Cedillo-Jimenez, Autonomous University of Queretaro, Mexico

Title: **Standardization of products of biotechnological sericulture by parthenocloning and cryobanking of transgenic clonal silkworms**
Valeriya Zabelina, National Agriculture and Food Research Organization, Japan

Title: **Single dose acute toxicology in preclinical trial: The basic step in drug discovery and development**
Yilkal Belay, Makerere University, Uganda

Farouk K El-Baz et al., J Biotechnol Biomater 2018, Volume 8
DOI: 10.4172/2155-952X-C5-100

Growing *Scenedesmus obliquus* microalgae in photobioreactor for biomass and biodiesel production

Farouk K El-Baz and **Sayeda M Abdo**
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The aim of this study is to investigate the biomass and oil production capacity of *S. obliquus* grown in outdoor photobioreactors (PBR) under nitrogen repletion and starvation conditions. The volume of PBR was 4000 liters as a demo unit with the facility of computerized controlled system. The results showed that, the maximum biomass achieved with the highest dilution rate (0.25%) was 43.2 $gm^{-2}d^{-1}$. This was detected when the dry weight was 2.1 g/L. The maximum oil content reached to 26%±0.23 after 29 days under N repletion. However under nitrogen starvation, the oil content was dramatically increased and reached to 41.9%±0.6 after 8 days. Fatty acids profile showed that, both saturated and unsaturated acids were detected. The major saturated fatty acids were palmitic and stearic acids. The unsaturated fractions were detected as palmitoleic, oleic, linoleic and linolenic acids. The fatty acids with four or more double bonds were not detected. Total saturated fatty acids represented 60.47% and 67.43% under nitrogen repletion and nitrogen starvation respectively. The use of photobioreactor for the production of algae is economically feasible, where there is a large amount of sun energy available, which provides a great saving for energy. A high quality of biodiesel could be produced from microalgae *S. obliquus* and used efficiently and environmentally safe in conventional diesel engine

Biography

Farouk K El-Baz has completed his PhD from Cairo University, Cairo. He is a Professor of Biochemistry, the Principal Investigator of biodiesel production from algae as a renewable energy source project - which is funded by EU. He is also the PI of Industrial Pharmaceutical Alliance (NRC) sponsored by the Academy of Scientific Research and Technology, Egypt. He is the Director of Algal Technology Unit/NRC, Cairo, Egypt. He has published 152 papers in international journals; he has supervised 18 theses, and serving as the Reviewer of many international journals.

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Monika Cserjan et al., J Biotechnol Biomater 2018, Volume 8
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Production of antibody fragments with plasmid-based and genome integrated T7 *E. coli* expression systems: Evaluation of systems performance in microtiter fed-batch like cultivations

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Although *E. coli* is the most prominent bacterial production host for recombinant proteins, some proteins with high economic potential can still hardly be produced at remunerative levels. We selected four different Fabs (Fragment, antigen binding) (BIBH1, BIWA4, CIMZIA and FabX) with identical constant domains representing such challenging proteins. Fab yield can be affected by miss-folding, aggregation or unbalanced expression, translation and translocation levels of sub-units, making it still challenging to efficiently design expression systems and production processes. For translocation to the periplasm a post-translational (ompA) and a co-translational (dsbA) leader sequence were used. *E. coli* BL21(DE3) and *E. coli* HMS174(DE3) were transformed either via pET vectors or genome integration. The resulting 32 clones, were cultivated under fed-batch like conditions in the BioLector. Cell growth was not affected by leader/Fab combinations but yield of correctly folded Fab ranged from 0 to 12.5 mg/g CDM. Higher expression rates caused higher amounts of free light chain and K12 strain reached higher yields. Except of CIMZIA with the dsbA leader, genome integrated versions showed higher Fab yields, reduced levels of free light chain and basal expression than plasmid-based systems. Independent from used expression system, highest yields were obtained with CIMZIA followed by BIWA4, BIBH1 and FabX. Leader sequence cleavage-efficiency for DsbA was significantly lower than for OmpA, both showed lowest with CIMZIA. Summarizing, we showed that the selected set of host/gene dosage/leader/Fab combinations resulted in a broad range of variation in terms of Fab yields and processing and will be studied detailed in bench-scale fermentations.

Biography

Monika Cserjan has completed her PhD at the University of Natural Resources and Life Sciences, Vienna in 1998. She is Senior Scientist in the Christian Doppler Laboratory for production of next-level biopharmaceuticals in *E. coli* at the Department of Biotechnology (Fermentation Technology Group), Vienna and Project Leader at the Austrian Centre of Industrial Biotechnology (ACIB).

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Petrova Natalia Vladimirovna et al., J Biotechnol Biomater 2018, Volume 8
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A new direction for viral infections management

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Viral diseases are still one of the most pressing global problems of society throughout the world. The problem of effectiveness and safety for currently used antiviral therapy is still a major concern; a principally new approaches and the creation on their basis of the original preparations are strongly required. The development of drugs capable of boosting host immune response and affecting target molecules involved in viral pathogenesis seems to be very promising in this respect. Products formulated on the basis of released-active forms of antibodies (RA Abs) meet this needs. The recent years brought persuasive results of RA Abs efficacy obtained in a variety models against a number of viral diseases. For instance, in a models of influenza, rota–, rhino– and herpes viruses the reduction of pathogen titers, resolution of symptoms along with the higher survival rates were demonstrated. For retroviral infection an inhibition of main viral factors involved in the process of penetration and replication was examined. Apart from that, the drugs demonstrated an excellent safety profile in full-scale toxicity studies. Thus, drugs on the base of RA Abs seems to be a worthy candidates for further development and investigation.

Biography

Petrova Natalia Vladimirovna has graduated from Saratov State University named after Chernyshevsky and since that time she launched into the scientific work. She was honoured to take part in international scientific project Marie Curie Actions: International Research Staff Exchange Scheme (Institutte of Transfusion Medicine, Berlin). At the moment, she is involved in her Postdoctoral studies at the Institute of General Pathology and Pathophysiology, where she is currently taking a position of Research Associate. She is a co-author of seven papers in reputed journals.

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Erdogan Esref Hakki et al., J Biotechnol Biomater 2018, Volume 8
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Triticum monococcum based genes as a source of salt tolerance in Turkish wheat genotypes

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Worldwide, around 20% of irrigated lands are damaged by salt stress. Hence, either crop production from the non-effected land should be increased or genotypes with stress tolerance should be developed to be grown in stress-affected land. Salt stress largely effects crop yield by making the spikelets sterile, inhibiting the flowering, reducing the grain weight and leading to stunted plant growth. Saline growth environment produces phenotypical symptoms that are linked to physiological and biochemical mechanism of the plant. Wheat, an important cereal crop and chief source of energy is widely consumed in different parts of the world. Apace with the continuously increasing population, it is crucial to enhance its production to meet the current nutritional requirements. However, its production is largely restricted due to salinity stress in arid and semi-arid regions of the world. In such state, developing wheat varieties with greater salt tolerance can be a preferred strategy. Hence, in a combined classical breeding and marker assisted selection program, *Triticum monococcum* based salt tolerant genes have been transferred in Turkish bread and durum wheat genotypes. In order to identify the other genes involved in the physiological mechanism, Backcross 3 material of the program will be tested for tolerance against high levels of salinity under greenhouse growth conditions.

Biography

Erdogan Esref Hakki has completed his PhD from Middle East Technical University (Ankara), Department of Biotechnology, in 2000. He is running a Molecular Genetics Laboratory in Konya (TR) within Selcuk University, Faculty of Agriculture. His studies are mainly focussed on abiotic stresses (boron, salinity etc.) of crop plants.

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Mehmet Hamurcu et al., J Biotechnol Biomater 2018, Volume 8
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Physiological responses of nitric oxide applications on diverse crops grown under abiotic stress conditions

Mehmet Hamurcu, Erdogan E Hakki, Zuhal Z Avsaroglu, Anamika Pandey, Mohd Kamran Khan and **Sait Gezgin**
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Being a colorless low molecular weight gas molecule, NO plays an important role as a second messenger in biochemical and physiological processes in plants. Researchers determined that exogenous applications of NO molecules are involved in plant defense mechanism in addition to plant growth and development, germination, de-etiolation, chlorosis, and senescence mechanism. NO plays a crucial role in signal transduction and interacts with active oxygen species to inhibit lipid peroxidation in plants under stress conditions. Induction of oxidative properties by reacting with superoxide radicals, especially under drought stress conditions, indicates the potential antioxidant role of NO in plant metabolism. Therefore, it is important to determine the effect of nitric oxide application under stress conditions. Our research group has examined the physiological and biochemical effects of NO donor SNP on different plant species like wheat, rye, barley, maize, beans, soybean and watermelon under different abiotic stress conditions such as drought and salinity. The results of the study showed that NO applications in abiotic stress conditions were effective in suppressing reactive oxygen species and MDA levels, and also had positive effects on protective antioxidant activities that produced stress responses. These effects were more effective in case of wheat, barley, bean and soybean plants.

Biography

Mehmet Hamurcu has completed his PhD from Selcuk University, Konya, Department of Soil Science and Plant Nutrition in 2007. He is running a Physiology Laboratory in Konya (TR) within Selcuk University, Faculty of Agriculture. His study focused on abiotic stresses (drought, salinity, boron etc.), antioxidant activities, and reactive oxygen species of plants.

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Saroj Mishra et al., J Biotechnol Biomater 2018, Volume 8
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Hyper-production and stability of human serum albumin in *Pichia pastoris* through a combination of medium design and genetic strategies

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Human serum albumin (HSA) is an important therapeutic recommended for treatment against trauma, burn injury, hypoproteinemia, hypoalbumenia as well as for maintenance of homeostasis, transportation of hormones and microelements in blood. In this study, we report medium design and genetic strategies that lead to high production of this protein in the culture spernatant of *Pichia pastoris*. The codon-optimized gene for HSA was cloned downstream of α–factor secretory signal sequence and the mature HSA was secreted in the culture supenatant of *P. pastoris* under the control of alcohol oxidase 1 promoter. Extracellular protein level of 0.12, 0.40, 1.2 g/L were obtained in the un-optimized medium for 1-copy, 2-copy and 3-copy expression casettes respectively at shake flask level. Factors affecting production were identified which included initial peptone concentration, methanol concentration and temperature, amongst many other (pH, aeration, sorbitol concentration, initial inoculum) investigated parameters. A three level factorial design named central composite design using Plackett Burman response surface methodology was used to optimize the medium which lead to levels of protein up to 0.075, 0.40 and 0.98 g/L total extracellular protein for 1,2 and 3-copy constructs respectively. Under these conditions, HSA produced was stable and free of other contaminating proteins in the culture supernatant. A detailed transcriptome analysis of the recombinant *P. pastoris*, cultivated on unoptimized and optimized medium lead to identification of several protein coding transcripts which were up-regulated and helped in efficient HSA production and secretion. These were mapped to biochemical activities linked (and not restricted to) to carbon, nitrogen metabolism, gene transcription, protein transport and secretion. Additional genetic strategies applied included modification of signal sequences. Application of optimized medium to these mutants lead to stable production of HSA with reduced proteolytic degradation of the synthesized protein. This illustrated the robustness of the designed medium with a production of over 2 g/L protein at shakeflask level. An understanding of the underlying mechanisms is likely to play significant role in use of *Pichia* system for production of heterologous proteins.

Biography

Saroj Mishra completed her PhD from City University of NewYork, USA followed by Post-doctoral research at Institute Pasteur, Paris, France, VTT Biotechnical Laboratory, Espoo, Finland and University of California, Davis, USA. She has published more than 87 papers in reputed journals and leads a large group of scientists working in the area of enviromental biotechnology, whole cell biotransformation and recombinant therapeutics.

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Christopher Alexis Cedillo-Jimenez, J Biotechnol Biomater 2018, Volume 8
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Exogenous application of dsRNA for fruit developmental improvment

Christopher Alexis Cedillo-Jimenez
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GMO has been proposed as an alternative to improve crops to: increase the yield and production volume, using fewer sources and to resist biotic and abiotic stress. However, the debate and public opinion is still divided, and the market is not ready for GMO related to food production. Interference-RNA knowledge has been used to develop spray-induced gene silencing (SIGS) for pests and diseases control. In this new technology, ectopic application of specific double-string RNA (dsRNA) provide resistance to plants to some pathogens like and verticillium that affect fruit production. Thus, it is an improvement in plant health and consequently in food production yield without using chemical compounds that has negative impact on the environment and even preventing resistant strains induction. However, in our knowledge there is no research nor applications of SIGS technology to elicit and modify plant physiology. Some authors had proven that dsRNA is locally absorbed and then translocated inside the plant, processed like small interference RNA and strikingly remains stable for 168 hours. In this work we discussed the potential use of dsRNA and miR395 interaction to targets potentially related to ethylene biosynthesis as a new engineering genetic without GMOs to delay ripening of climacteric fruits like tomato (fleshy and climacteric model fruit) which would contribute to decrease food wasting and even open new opportunities for postharvest management and agro-logistics.

Biography

Christopher Alexis Cedillo-Jimenez has completed his Bachelor's degree in Food Chemistry, Master's in Science of biosystems from molecular perspective, and a certificated Diploma for Greenhouse Engineering and now he is siding his PhD from Autonomous University of Queretaro. He is the Director of "DETAGS" (enterprise for development of ago-logistic technology) and "Motus collective" (arts, science and technology communication). His thesis work is related to genetic material that contain miRNA sequences related to ripening and developmental targets silencing to improve some qualities of fruits at plant and postharvest level.

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Valeriya Zabelina et al., J Biotechnol Biomater 2018, Volume 8
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Standardization of products of biotechnological sericulture by parthenocloning and cryobanking of transgenic clonal silkworms

Valeriya Zabelina, Naoyuki Yonemura, Keiro Uchino, Hideki Sezutsu, Vyacheslav Klymenko, František Sehnal, Yuji Mochida, Yoko Takemura and **Toshiki Tamura**
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Current genetic engineering of the silkworm enables to produce new kinds of silk and to use silkworms as proteosynthetic bioreactors for obtaining precious proteins. Nowadays a lot of target products derived from the silkworm are already used in many areas of life from cosmetics through pharmacy, regenerative medicine to cosmonautics. The problem of product standardization we propose to solve by easy and inexpensive decision – parthenocloning, which enables rapid fixation of transformed genotypes and conservation of any unique man-made complexes. Parthenocloning is based on exact copying of maternal genome and a single female initiates a clonal line with the same genetic and morphological traits, which can be easily maintained without sexual reproduction as exclusively female populations. Such populations exist already for more than 50 years as genetically stable females whose unfertilized eggs are induced to develop by heat-shock treatment. This is the best time-tested evidence of genome stability. We constructed new non-diapausing parthenogenetic strains and developed efficient injection method adapted for the eggs of parthenoclone. We showed that transgenic silkworms could be obtained in high frequency and propagated as clonal populations. We obtained successful transgenesis in a parthenoclone and inserted transgenes were faithfully transferred to successive generations. We showed the possibility of cryopreservation of ovaries of transgenic clonal strains and obtained recovery as individuals by ovary transplantation into female larvae, which opens door for cryobanking of any specific standardized genotypes used for obtaining of precious target products.

Biography

Valeriya Zabelina has completed her PhD in the field of Genetics at the age of 26 years from Karazin Kharkiv National University, Ukraine, was involved in teaching of Developmental biology and worked at the Laboratory of Germ and Stem Cells at the same University, Biology Faculty, Chair of Genetics and Cytology. Then continued her postdoctoral studies at the Biology Centre of the Czech Academy of Sciences, Czech Republic under several European projects (Mobitag, Postdoc Bioglobe), containing research stays abroad (Spain, Japan) and presenting her results at international meetings. She was also involved in teaching of Developmental biology and supervision of a student at the University of South Bohemia, Czech Republic. At the moment she is conducting her research in Japan under JSPS fellowship with the group working in transgenic silkworm. She has been a member of Ukrainian Society of Genetisists and Breeders and Japanese Sericultural Society.

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Notes:

Yilkal Belay, J Biotechnol Biomater 2018, Volume 8
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Single dose acute toxicology in preclinical trial: The basic step in drug discovery and development

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The dose, in preclinical trial, refers to the amount of test material administered at once to study subject for pharmacological evaluation. Acute toxicity study of three different pesticides (Dichlorvos, Chlorpyrifos and Cypermethrin) with five level of doses each (10, 30, 50, 70 and 90) mg/kg body weight, were evaluated on15 Balb c mice for a maximum period of 5 days. The main clinical signs and symptoms developed after treatment with five levels of doses prepared from chloropyrifose was salivation, lacrimation, miosis (pinpoint eyes), trembling and breathing difficulty with hypo-activity which was significantly manifested within about 30 minutes to 2 hours after treatment depending on the amount of dose administered orally. Distended stomach, tremor and restlessness, breathing difficulty, salivation and bulging eyes was the clinical signs of toxicity developed after treatment with the five levels of doses prepared from Cypermethrin pesticide which was also administered orally. The Balb c Mice treated with five levels of doses prepared from dichlorvos pesticide developed slow respiration immediately after oral administration. The dose had never limited the toxic property of test chemicals but the magnitude of adverse effect and length of time at which the undesired effect manifested in treated Balb c Mice. Even if the higher dose (90 mg/kg) from each test chemical was lethal within 24 hours, the second and third highest doses (70 & 50 mg/kg) which was prepared from Cypermethrin caused lethal effect in the second day after dosing orally. This implies that the undesired effect of test chemicals was due to its toxic reaction rate (r) in the biology of treated Balb c Mice. Blood samples from each treated Bulb c Mic were drawn from the tail and facial vein using micro tubes labeled with numbers and quantitative immunoglobulins test had been conducted using architect system – Abbot before treatment as reference test and four hours after treatment for comparison. The toxic reaction rate and toxic severity of each test substances was then calculated using the formula [r =-(± lg plasma concentration)] in mg/sec and (s = x 100) in %/sec respectively and recorded in different tables. The study revealed that the value of toxic reaction rate (r) determines the margin of safety whereas the value of toxic severity (s) of test chemicals predicts the length of time at which lethal effect of test substance might be manifested in treated Balb c Mice. Tested doses with calculated value of toxic reaction rate (r) less than zero had no lethal effect to treated Balb c Mice. This means that the administered test chemicals had negligible adverse effect at the organismal level rather than at the cellular level. A test substance said to be toxic not only when it causes death but also pharmacological mechanism against the biology of an organism. If the higher dose kills treated organism, the lower dose is most likely to have a higher risk of ill health in the long run. There is no scientific ground to categorise a single test material as safe dose (ED_{50}) and lethal dose (LD_{50}). It is most likely to be a waste of time and resources to categorise a single test chemical as effective dose (ED_{50}) and lethal dose (LD_{50}) at a period of time during the experiment and proceed to the next phase of preclinical trial with inadequately validated data. The presentation will have more details on single dose acute toxicology in preclinical trial.

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Scientific Tracks & Abstracts

Day 2

SESSIONS

Oncolytic Biotechnology| Molecular Biotechnology and Genetics| Microbial Biotechnology

Chair: Sergey Suchkov, I M Sechenov First Moscow State Medical University, Russia

SESSION INTRODUCTION

Title: Research on the testing of products with biostimulatory effect based on amino acid with potential in the treatment of rape seed
Mihai Gidea, University of Agronomic Sciences and Veterinary Medicine of Bucharest, Romania

Title: Elevated expression of cytosolic phospholipase A2 delta is associated with hepatocellular carcinoma progression: Animal study validated with sera of liver cancer patients
Maryam Ranjpour Aghmiouni, Jamia Hamdard University, India

Title: Single nucleotide polymorphisms and haplotype analyses in tilapia fish inferred from mtDNA D-loop and Cyt-b regions
Ekei Ikpeme, University of Calabar, Nigeria

Title: BACTEC MGIT 960 system and Classic Lowenstein-Jensen culture in the diagnosis and drug susceptibility of Mycobacterium tuberculosis from pulmonary specimens, at the Pasteur Institut of Algeria
Ferhat Djoudi, Abderrahmane Mira University of Bejaia, Algeria

Mihai Gidea et al., J Biotechnol Biomater 2018, Volume 8
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Research on the testing of products with biostimulatory effect based on amino acid with potential in the treatment of rape seed

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[2]Scientific Research And Technological Development In Chemical And Petrochemical Industry
[3]National Research And Development Institute For Textil And Leader
[4]Probstdorfer Saatzucht Romania Srl

Due to its major potential for biofuel production, the rape-cured areas have steadily increased lately, reaching a cultivated area of 38 million ha worldwide at 2016 (FAOSTAT). In these conditions, the problem of increasing the level of the obtained productions is raised more and more, The paper presents the results of the researches regarding the treatment of rape seeds with products containing amino acids (aa). In this context, there were 4 products based on keratin hydrolyzed wool and chelated (co) of Zn, Mn, Cu, Mg and Mo. For testing, a bifactorial experience was performed where Factor A tested the product with 5 graduations a1 14% aa + 0.5% co, a2 12% aa + 0.3% co, a3 10% aa + 0.4% co, a4 14% aa+0.4% co+1% Caryophyllus aromaticus oil microcapsules, and Factor B seed immersion time in products tested with a1 control, a2 1h, a3 2h, a4 3h. The assays were performed under laboratory conditions. The treatments were film-coated and, after treatment, the seeds were seeded, the TopPaper recommended by ISTA for rapeseed testing.The research found that all the treatments applied had a stimulating effect on the monitored parameters, thus increased the rate and germination rate, and increased the average daily germination rate, the average germination time. From a biometric point of view, there was an increase in the average length of plantlets and roots, as well as the average daily growth rate. The treatments applied did not show phytotoxic effects.

Biography

Mihai Gidea is form University of Agronomic Sciences and Veterinary Medicine of Bucharest, Romania

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Maryam Ranjpour Aghmiouni et al., J Biotechnol Biomater 2018, Volume 8
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Elevated expression of cytosolic phospholipase A_2 delta is associated with hepatocellular carcinoma progression: Animal study validated with sera of liver cancer patients

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Jamia Hamdard University, India

Liver cancer is the third common cancer to cause maximum death among patients diagnosed with cancers. The search for new biomarker discovery is necessary as none of the identified biomarkers alone are enough sensitive toward hepatocellular carcinoma (HCC). In order to find out novel biomarkers that can diagnose HCC at very early stage, we have developed a rodent model using chemical carcinogens, N-Nitrosodiethylamine (DEN) and 2-aminoacetylfluorine (2AAF). The disease progression was monitored by histological evaluation. Proteomic approaches such as 2D-Electrophoresis, LCMS/MS and Western blot analyses have been used to analyze the differentially expressed proteins in carcinogen-treated animals vis-a-vis controls. The total serum proteins were isolated, solubilized and resolved on 2D-Gel Electrophoresis using broad pH range IPG strips. PD-Quest analysis revealed proteins that are differentially expressed in serum of the carcinogen-treated rats as compared to controls. Some of these proteins have been identified by LCMS/MS. Histological analysis confirmed liver inflammation and disease initiation at one month and tumorigenesis at four months after carcinogen treatment. One of the differentially expressed proteins, namely, cytosolic phospholipase A_2 delta was significantly up-regulated at very early stage of cancer development and continued to remain elevated with disease progression up to tumor stage. The increase in its expression has been confirmed by Western blot analysis. Further, the analysis of serum of liver cancer patients also showed elevated expression of this protein that validated our experimental data. The study suggests that elevation in cytosolic phospholipase A_2 delta expression is associated with progression of HCC.

Biography

Maryam Ranjpour Aghmiouni has completed her PhD from Jamia Hamdard University. She has applied for Post-doctoral position at Illinois University and her application is under process. She has published two manuscripts and three more manuscripts are under re-revision status at high repute journals.

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Single nucleotide polymorphisms and haplotype analyses in tilapia fish inferred from mtDNA D-loop and Cyt-b regions

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Objective: The research was aimed at analysing single nucleotide polymorphisms and haplotypes on D-loop and Cyt-b regions of the mitochondrial DNA of tilapia fish.

Methods: Fifteen and thirteen tilapia fish were obtained from two populations, South-South (Domita farm) and South West (Odeda farm). DNA extraction from fish tissue was done using Quick-gDNA™ mini prep kit after which PCR amplification was carried out. Sequencing of the two mtDNA regions were done using forward primer 5'- GGATTYTAACCCYTRCCCC- 3' and reverse 3'-AGTAAGTCAGGACCAAGCC-5' for D-loop and 5'-GGATTTTAACCCTTACCCC-3' and 3'-AGTAAAGTCAGGACCAAGCC-5' for Cyt-b region. Statistical analyses were carried out on the aligned sequenced data using MEGA version 6.06, DnaSP 5.1, Codon code aligner 6.06 as well as NETWORK 4.6.1.1.

Results: mtDNA polymorphism was highest in the D-loop of South-South (SS) population with 176 polymorphic sites, while South-West (SW) population had 162 polymorphic sites translating to 176, 162 and 144 SNPs with non-synonymous substitutions higher than synonymous substitutions. Haplotype diversities (Hd) were 1.00±0.024 and 1.00±0.030 while nucleotide diversities were 0.168±0.086 and 0.161±0.084 for D-loop of SS and SW populations, respectively. For Cyt b region, haplotype and nucleotide diversities were 0.91±0.003 and 0.051±0.016. Positive selection was more on mtDNA D-loop of tilapia sampled from SS than those from the SW as well as Cyt-b region of tilapia fish from SS. 28 haplotypes were identified among the tilapia from SS and SW with no shared haplotypes while 9 haplotypes were identified from the Cyt-b region with haplotypes 4, 5, 6 and 7 shared between species. Median joining network analysis revealed population-based clustering pattern. Demographic expansion was not significant using Tajima's D and Fu's F statistics.

Conclusion: Higher SNPs were revealed in mtDNA D-loop when compared with mtDNA Cyt-b region of tilapia fish.

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BACTEC MGIT 960 system and classic Lowenstein-Jensen culture in the diagnosis and drug susceptibility of *Mycobacterium tuberculosis* from pulmonary specimens, at the Pasteur Institute of Algeria

Ferhat Djoudi[1], Dalila Benremila[1], Rym Touati[2], Sabrina Kassa[1], Massilva Messaoudi[1], Randa Yahi[2] and **Djamal Yala[2]**
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Tuberculosis is an old infectious disease and the causative agent is *Mycobacterium tuberculosis* complex. The direct diagnosis stills long and fastidious since bacilloscopy, even if is fast, lacks sensitivity. The culture on Lowenstein-Jensen (L-J), which remains the reference method with a good sensitivity, sometimes takes up to ten weeks to obtain the result. In order to compensate the slow growth of cultures on solid media, new automated methods have been developed, including BACTEC MGIT 960, Versa TREK, MBRedox, BACTEC 460, which allow early diagnosis and more suitable for antibiotic therapy, in addition to their good sensitivity and specificity. The aim of this study is to verify the contribution of BACTEC MGIT 960 in the diagnosis of pulmonary tuberculosis, compared to basciloscopy and classic culture on L-J medium, at the Tuberculosis and Mycobacteria unit in Pasteur Institute of Algeria. Nine hundred and fourteen (914) specimens were collected between January 2016 and April 2017. One hundred and seventy nine (179) cases were reported positive by L-J classical culture and/or BACTEC MGIT 960. Among the 179 cases, 155 were detected by the BACTEC MGIT 960 system, and confirmed by Ziehl control, L-J subculture and MPT64 immuno-chromatographic assay. On classic L-J culture and bacilloscopy, nevertheless, only 123 and 95 specimens respectively were positive. These results confirm the height susceptibility of BACTEC MGIT 960 in improving the diagnosis of tuberculosis in bacilli-poor specimens, compared to classic culture ($p=0.037$) and direct examination ($p=0.014$). Furthermore, the contamination rate was higher in L-J culture: 81/914 (8.86%), including 7 bacilloscopy positive specimens, whereas, with BACTEC MGIT 960, only 29/914 (3.17%) specimens were contaminated, with no positive bacilloscopy cases. This result was statistically confirmed ($p<0.0001$). However, on the 95 bacilloscopy positive specimens, 6 did not give positive cultures neither on BACTEC MGIT 960 nor on L-J. The main advantage of BACTEC MGIT 960 is its ability to shorten the time of mycobacterial growth to an average of 7 days, compared to the solid medium. Nevertheless, the bacilloscopy and culture on L-J remains complementary to this automat, for a reliable diagnosis. Despite the good laboratory practices, there is an incompressible risk of contamination.

Biography

Ferhat Djoudi has completed his PhD on Epidemiology and molecular characterization of MRSA in 2015 at Abderrahmane Mira University of Bejaia, Algeria. And he started Postdoctoral studies at the same university, on MDR and XDR tuberculosis in Algeria. He is the Head of Microbiology Department and Teacher-Researcher at the same university. He has published many papers in reputed journals.

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