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# 12<sup>th</sup> Euro Biotechnology Congress

November 07-09, 2016 Alicante, Spain

## Scientific Tracks & Abstracts (Day 1)



# 12<sup>th</sup> Euro Biotechnology Congress

November 07-09, 2016 Alicante, Spain

## Stabilization of industrial enzymes by coating of their surfaces with hydrophilic viscous polymers

Jose Manuel Guisan, Sonia Moreno-Perez, Alejandro Herrera, Maria Romero, Lara Trobo, Roberto Munilla and Gloria Fernandez-Lorente  
Spanish Research Council, Spain

The physicochemical coating of enzyme surfaces with viscous polymers greatly improves the stability of enzymes against T distorting agents (heat, organic solvents, lipids, etc.). Different coating approaches are discussed: (1) Utilization of dextran-aldehyde (chemically attached to the enzymes) as scaffolds to design highly viscous polymers: Dextran-PEG, dextran-glycine, dextran-PEG-glycine, dextran-PEG-polyethyleneimine, etc. (2) Direct coating with polyethyleneimine, additional adsorption of dextran sulfate and additional modification with PEG-aldehyde, etc. Enzymes are firstly stabilized by multipoint covalent attachment and lipases are stabilized by interfacial adsorption on different hydrophobic supports. Different lipases were tested as well as different endoxylanases. The highest stabilizing effects were observed at room temperature (higher viscosity of the coating polymers) with hydrophilic viscous polymers. The enzymes were highly stabilized in aqueous and anhydrous media. For example, lipase from *Rhizomucor miehii* was stabilized 1000 fold regarding the unmodified enzyme. The highly stabilized derivative was very useful to synthesize sn-2 docosahexaenyl monoacylglycerol, a very interesting food ingredient.

### Biography

Jose Manuel Guisan has completed his PhD in Biochemistry at University Autonoma of Madrid in 1979. Currently he is a full Professor at Spanish Research Council (CSIC) since 2001 and a Visiting Professor at St. Bartholomew's Hospital Medical School. His research activities include a total of 400 papers in books and journals (in more than 90% as corresponding author) and 25 patent applications.

jmguisan@icp.csic.es

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## Carboxytherapy and platelet rich plasma: New therapy for trigonitis, abacterial and interstitial cystitis

Fabrizio Muzi and Gaetano Tati  
University of Tor Vergata, Italy

Cystitis often appears even in absence of bacteria colonization. Trigonitis and interstitial inflammation are the most common morphological features of abacterial cystitis in young and post menopausal women. Arterial obstructive disease and bladder ischemia might play an important role in bladder dysfunction. Activated inflammatory cells produce radicals of Oxygen (ROS), NF-kB seems involved in ROS synthesis. Clinical studies have indicated that high CO<sub>2</sub> levels can impact upon peripheral tissue, reducing ischemia, responsible of recurrent inflammation and consequently reducing oxidative phenomena. Platelet-rich plasma (PRP) is a volume of fractionated plasma from the patient's own blood that contains platelet concentrate rich of alpha granules. PRP interacts with tissue repair mechanisms by placing supra-physiological concentrations of autologous platelets at the site of tissue damage. This study proposes a double PRP transvaginal injection followed by 15-20 weekly applications of carboxytherapy, using subcutaneous injections of sterile CO<sub>2</sub> gas. We have selected 10 women (50-70 years), affected by recurrent abacterial cystitis with pain and urge incontinence. All patients showed a subjective sensible reduction of symptoms. We especially noticed an improvement of urgency with positive impact with patient's quality of life. After 6 months all patients have neither inflammatory symptoms nor endoscopic evidence of trigonitis. No patients had side effects after the described procedure. Both carboxytherapy and PRP are safe procedures and show good know-how thanks for wide diffusion of aesthetic uses. Preliminary qualitative results could encourage the use of carboxytherapy and PRP in treatment of abacterial and interstitial cystitis.

### Biography

Fabrizio Muzi has completed his studies as General Surgeon from Tor Vergata University of Rome. He works in the Department of Oncologic Urology as an Assistant of the Director Prof. Gaetano Tati. He has completed his Master's degree in Andrology from Pisa University and in Surgical Andrology from Trieste University. He has published some papers and participated in national congresses related about the use of gas therapy in urology.

fabrizio.muzi@yahoo.it

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## Possible applications of zinc oxide nanoparticles as promoters of seed germination and growth of Solanaceae plants

Ricardo Hugo Lira-Saldivar<sup>1</sup>, I Vera-Reyes<sup>2</sup>, B Mendez-Arguello<sup>2</sup>, R Ponce-Zambrano<sup>1</sup>, N A Ruiz-Torres<sup>1</sup>, E Mendoza-Mendoza<sup>2</sup>, L A Garcia-Cerda<sup>2</sup> and R H Lira-Saldivar<sup>1</sup>

<sup>1</sup>Universidad Autonoma Agraria Antonio Narro, Mexico

<sup>2</sup>Centro del Investigación en Química Aplicada, Mexico

We examined the influence of ZnO nanoparticles (NPs) with and without silver added on germination of *Solanum lycopersicum* (tomato) seeds and on growth of *Capsicum annuum* (pepper) seedlings. The *S. lycopersicum* seeds were treated with 0, 5, 10, 15 and 20 mgL<sup>-1</sup> of pure ZnO NPs. According to results, the 5 mg L<sup>-1</sup> dose promoted better germination (93%), greater root and shoot length (13.35 cm and 3.25 cm respectively), as well seed vigor index, which was increased three times (1546.28±100.30) regarding to control (509.60±51.10). Our findings indicate that ZnO NPs promoted better seed germination by enhancing the antioxidative defense system, which finally resulted in increased seedling growth. The *C. Annuum* assays indicate that compared to control plants, treatments exposed to foliar application of 50 mgL<sup>-1</sup> of ZnO NPs+Ag (2.5%), were those that had a significant higher shoot and root growth, as well greater biomass production with higher values of height (16.8%), leaf area (30.3%), total biomass production (59.5%), root dry biomass (112.5%), stem dry biomass (76%) and root length (24.4%). Regarding to control plants, those treated with ZnO NPs+Ag (2.5%), reported a quantitative increase of the chlorophyll index (8%) and leaves number (32.6%). The biological effect of the NPs applied, could be related to the zinc activity as a precursor in the production of auxins, which in turn promote cell division and elongation, as well by its influence on the reactivity of indol acetic acid, that acts as hormonal phytoestimulant.

### Biography

Ricardo Hugo Lira-Saldivar has completed his PhD from University of California, USA. He is a Senior Researcher at the Centro de Investigacion en Quimica Aplicada (CIQA) belonging to the Federal Government, located in Saltillo, Coahuila, Mexico. He has published more than 35 papers in reputed journals and has been serving as an Editorial Board Member of several journals.

hugo.lira@ciqa.edu.mx

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## Role of Algae in reclamation of soil in cyanide dumps of KGF, Kolar district, Karnataka state

A Karthikeyan<sup>2</sup> and Venugopal N<sup>1</sup>

<sup>1</sup>Sri Jagadguru Renukacharya College of Science, Arts and Commerce, India

<sup>2</sup>KGF First Grade College, India

India has great biodiversity of blue green algae in general which has contributed to fertility of the soils and in relatively well documented. Efforts have been made to study the algal flora in the tailings or cyanide dumps of the Kolar gold fields and an attempt has been made to draw the knowledge about heterocyst and non-heterocyst nitrogen fixing organisms like blue green algae, which are ubiquitous in distribution and contribute to the world wide nitrogen status. It has been widely studied in the paddy field soils addition of Cyanobacteria to enhance the crop yield. Algalisation is best where nearby species are utilized to get ready inoculums. It is therefore important to have detailed information of indigenous algal population particularly the nitrogen fixating species. Several investigative reports on the abundance of soil algae in different geographical areas of India are available. Many areas of region still remain unexplored. In this context the present investigation was taken up in the tailings or cyanide dumps and recorded 60 algal species in which, 37 species of Cyanophyceae, 12 species of Chlorophyceae, 09 species of Bacillariophyceae and 2 species of Euglenophyceae. The most abundance genera of algae present in the area are as follows *Microcystis elongata*, *Anabaena circinalis*, *Aphanocapsa koordaei*, *Calothrix castelli*, *Chroococcus giganteus*, *Gloeocapsa gelatinosa*, *Crinalium magnum*, *Nostoc commune*, *Oscillatoria obscura*, *Phormidium parpureuscens*, *Synechococcus pevalikii*, *Chlorella vulgaris*, *Chlorococcum croccum*, *Cymbella ventucosa*, *Navicula rhomboids*, *Euglena elongata* etc.

### Biography

A Karthikeyan is a Professor and Head of Department of Botany/Microbiology and he is working in KGF First Grade College, Kolar, India. He has published 8 research papers in various national and international journals and completed 10 student research projects. He was conferred with an international award at Dubai- "Indo Dubai Pacific Achievers Award on 20/11/2015.

kgfcatgreen@gmail.com

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## Carboxytherapy: New approach in conservative treatment of Peyronie's disease

Fabrizio Muzi and Tati G

University of Tor Vergata, Italy

Peyronie's disease (PD) is an acquired disorder of tunica albuginea characterized by the formation of plaques of fibrous tissue often associated to symptoms like erectile dysfunction (ED) and coital pain. The inflammatory process is unknown, even if it is known that activated inflammatory cells produce many radicals of Oxygen (ROS), leading to fibroblast proliferation and collagen synthesis. Endothelial dysfunction is the responsible of inflammatory chain reaction in which an inflammatory protein, NF-kB seems involved in ROS synthesis. Conservative treatments (laser, ultrasound, iono/iontophoresis) seem to have poor therapeutic effects in PD. Clinical studies have indicated that altered CO<sub>2</sub> levels can impact upon disease progression. CO<sub>2</sub> levels can be sensed by cells resulting in the initiation of pathophysiologic responses with a sensible reduction of oxidative phenomena (Bohr/Haldane effects). We have tried carboxytherapy by using sovrapubic subcutaneous injection of sterile CO<sub>2</sub> gas in 25 patients aged from 40 to 65, affected by PD. After the cycle of treatment of 15 weekly applications, we have observed in all patients a subjective reduction of penile deviation, an improvement of quality of erections and a sensible reduction of plaque's dimensions, documented by ultrasound controls and IIEF questionnaire before and after the end of cycle. We should consider CO<sub>2</sub> as a powerful antioxidant against endothelial dysfunction and oxidative stress. NF-kB is a target of CO<sub>2</sub> antioxidant power. Preliminary qualitative results could encourage an extended use of carboxytherapy in PD treatment.

### Biography

Fabrizio Muzi has completed his studies as General Surgeon from Tor Vergata University of Rome. He works in the Department of Oncologic Urology as an Assistant of the Director Prof. Gaetano Tati. He has completed his Master's degree in Andrology from Pisa University and in Surgical Andrology from Trieste University. He has published some papers and participated in national congresses related about the use of gas therapy in urology.

fabrizio.muzi@yahoo.it

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## Biodiversity conservation of ethnoveterinary plants used by Yadava tribes in Karnataka, India

Venugopal N<sup>1</sup> and A Karthikeyan<sup>2</sup>

<sup>1</sup>Sri Jagadguru Renukacharya College of Science, Arts and Commerce, India

<sup>2</sup>KGF First Grade College, India

Nature has provided a complete storehouse of remedies to cure ailment of mankind. Medicinal plants have been used for centuries as remedies for diseases because they contain component of therapeutic values. Ethno-veterinary medicine is the holistic interdisciplinary study of the local knowledge and the socio-cultural structures and environment associated with animal healthcare and husbandry. Herbal medicines are used as the major remedy in traditional medical system. Herbal medicines are being used by nearly about 80% of the world population, primarily in developing countries for primary health care. Western Ghats is veritable niche of growing healing herbs, which are being used in Indian system of medicine like Ayurveda, Siddha and Unani Traditional healing system play an important role in maintaining the physical and psychological well being of the vast majority of tribal people in India. The present study was initiated with an aim to identify knowledgeable resource persons and document their knowledge of on the utilization of medicinal plants. The present documentation of traditional knowledge from an area where novel information has been generated will not only provide recognition to this knowledge but will also help in its conservation vis-a-vis providing pharmacological leads for the betterment of animals in human society. The practice of using herbal medicines is widely spread in this region with higher percentage of tribal as well as non tribal population relying on it is because of lack of awareness; shyness and lack of modern medical facilities available in their region and the high cost of modern medical system for treatment are unaffordable by tribal.

### Biography

Venugopal N is a Professor and Head of Department of Botany/Microbiology and he is working in Sri Jagadguru Renukacharya College of Science, Arts and Commerce, India. He has published 21 research papers in various national and international journals and completed 20 student research projects. He was conferred with an award 'Talented Scientist Award' for outstanding contribution to the medicinal plant research during the 4<sup>th</sup> international conference on medicinal plants and herbal products held at John Hopkins University, USA in 2012 and Award of Excellence in microbial biotechnology in 2015 at Pondicherry.

drvenu57@gmail.com

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## Isolation and screening of actinomycetes from Algerian soil for their enzymatic and antimicrobial activities

Akli Ouelhadj

Mouloud Mammeri University, Algeria

The constant evolution of bacterial resistance to antibiotics and the emergence of new infectious diseases is a major public health problem; hence the urgent need for new antimicrobial molecules. Actinomycetes, slow growing Gram-positive bacteria are known as an organism that is useful in the search for bioactive compounds. In this study, 27 isolates of actinomycetes were isolated from soil samples collected in the area of Tizi Ouzou region (northern Algeria). A significant difference in the number of colonies was observed between the different culture media (Bennett, GLM and Sabouraud). After purification, the antibacterial activity of the 27 actinomycetes strains was tested against three bacterial strains from the ATCC collection (*Escherichia coli* ATCC 25922, *Pseudomonas aeruginosa* ATCC 27853 and *Staphylococcus aureus* ATCC 25923) by two agar diffusion methods: the perpendicular streak method and the agar cylinder method. Among 27 isolated strains, 13 showed antibacterial activity toward at least one bacterium in the primary screening. Of the 13 strains showing an antibacterial activity, 5 of them were found to be highly active against *Staphylococcus aureus* with inhibition diameters ranging from 20 to 26 mm. The 27 isolates were then subjected for enzymatic activities. From the test, only 3 strains of isolates have the ability to degrade cellulose; 4 showed amylase and 3 protease activities. The isolates showed positive results were then selected for identification.

### Biography

Akli Ouelhadj has completed his PhD at Martin Luther University, Germany and Postdoctoral studies from Pen State University, USA. Since 2009, he is an Assistant Professor at the Department of Biochemistry and Microbiology, University of Mouloud Mammeri, Algeria. His main interests focuses on microbial and plant biotechnology, genetics, bioactives compounds and abiotic stress.

ouelhadj\_akli@hotmail.com

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## Young Researchers Forum (Day 1)



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## Released-active antibodies: Breakthrough concept of antibodies-based therapeutics

Elena Don, Elena Kardash, Alexandra Emelyanova, Nataliia Petrova and Oleg Epstein

Institute of General Pathology and Pathophysiology, Russia

Transformation of the antibodies (Abs) substances to final dosage form is a difficult task. The antibodies-based drugs have some limitations while manufacturing and using like stability, toxicity, administration. I am pleased to acquaint you with the drugs based on released-active Abs which have overcome the mentioned disadvantages. Phenomenon of released-activity was explored and represented to the scientific community by Russian Professor Oleg Epstein. He suggested combining multiple circles of consecutive decrease in the substance's initial concentration and physical treatment up to the desired dilution with the use as a substance such biotechnological product as Abs. This forward-looking manufacturing technique allows us to receive reproducible product with unique features. Although the final dilution is too high to content any molecule of initial substance these technologically treated product has an ability not to neutralize the targets but modify the interaction between the target and corresponding molecule-regulator. High efficacy and lack of toxicity of release-active Abs-based drugs were confirmed in plenty of preclinical studies and in top-quality clinical trials. Another astonishing effect of released-activity is observed during conjoin use of the released-active substance with the initial one. Such application helps to increase the effectiveness simultaneously with decreasing toxicity (against the initial substance in the same dose plus placebo) and could be used for production of beneficial and advantaged biosimilars. Drugs based on released-active Abs is turning to be unique medicines which combine the high efficacy and safety and several of them are already presented on the market of 16 countries.

### Biography

Elena Don was graduated with a Master degree in Molecular and Cellular Biotechnology from Moscow State University of Fine Chemical Technologies, Russia. Presently she is a PhD student focusing on pharmacology and immunoassays development at Institute of General Pathology and Pathophysiology, Russia. She underwent a study course in immunoassay techniques at AB Biotechnology (Edinburgh, UK). She has published a number of manuscripts in reputed journals in English and Russian and successfully participated in international conferences and congresses.

[gavrilovaes@materiamedica.ru](mailto:gavrilovaes@materiamedica.ru)

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## Callus induction and secondary metabolites production in *Piper cf. cumanense* Kunth (Piperaceae)

Laura Katherine Rodriguez Sanchez<sup>1</sup>, Xavier Marquinez<sup>1</sup>, Jorge E Perez Luis E Cuca<sup>1</sup>, Juliet A Prieto<sup>2</sup> and Oscar J Patino<sup>1</sup>

<sup>1</sup>Universidad Nacional de Colombia, Colombia

<sup>2</sup>Pontificia Universidad Javeriana, Colombia

*Piper cf. cumanense* is a species of which have been isolated some compounds with promissory bioactivity, particularly to pest control in economically important crops and with potential use in parasitic diseases. However, these compounds have been obtained in low concentrations being important to use biotechnology strategies in order to obtain more quantities of bioactive substances. This study contributes to the investigations on this species in the development of strategies that improve the production of these compounds. Mature seeds were placed in MS medium supplemented with 3% (w/v) sucrose and 0.02 mg/L of gibberellic acid (AG3) for germination. Laminas and petioles were excised from young plants obtained *in vitro* and were cultured in MS medium supplemented with benzylaminopurine (BAP) and 2,4-dichlorophenoxyacetic acid (2,4-D) in combination at different concentrations for organogenesis and callogenesis establishment. Excised young plants and callus were freeze-dried, powdered and extracted with ethyl acetate and analyzed by HPLC. The major production of friable callus was obtained using petiole as explant on MS medium supplemented with 2,4-D (1.0 mg/L) and BAP (0.5 mg/L). Callus presented oxidation and to overcome it, some strategies were used being frequent subcultures the most effective. HPLC chromatograms exhibited different patterns in major metabolites of the organs evaluated highlighting differences between *in vitro* and *ex vitro* leaves. This research provides basis for applying different strategies to increase metabolites production on *in vitro* cultures and for the development of biosynthetic studies.

### Biography

Laura Katherine Rodriguez Sanchez is a Biologist, currently pursuing MSc in Biotechnology as a Member of the research group 'Estudio químico y de actividad biológica de Rutaceae y Myristicaceae colombianas' of the Universidad Nacional de Colombia on the lines of plant biotechnology, phytochemistry and chemoprospecting. Her areas of interest on research are plant biotechnology, phytochemistry and plant physiology.

lkrodriguez@unal.edu.co

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## Methods and applications concerning spore inoculum quality and spore germination in filamentous bioprocesses

**Daniela Ehgartner**

Vienna University of Technology, Austria

Spore inoculum quality in filamentous bioprocesses is a critical parameter associated with viable spore concentration and spore germination. It influences pellet morphology and consequently, process performance. The state-of-the-art method to investigate this quality attribute is colony forming unit (CFU), being tedious, associated with significant inherent bias and not applicable in real time. The approach presented here is based on combining viability staining and large-particle flow cytometry enabling measurements in real-time. It is compatible with complex medium background and allows the quantification of metabolically active spores and monitoring of spore germination. In an industrial bioprocess with filamentous fungi, a good correlation to CFU was found. Spore swelling and spore germination were followed over the initial process phase with close temporal resolution. The validation of the method showed an error of spore classification of less than 5%. In this contribution bioprocesses with various spore inoculum qualities were monitored at-line. Thereby, critical parameters concerning the amount of germinating spores in spore inoculum were found. Related to these critical parameters, differences of spore germination on agar plates vs. liquid environment were observed. These findings challenge the CFU as appropriate method for spore inoculum quality determination. Two applications of the method are proposed: First, the determination of spore inoculum quality before starting the cultivation to guarantee a common starting point for the batches. Secondly, monitoring of spore swelling to adjust the process in real-time to prevent batch failure. These common starting points ensure homogeneity of morphology between cultivations and consequently, better process performance.

### Biography

Daniela Ehgartner is currently pursuing PhD at the University of Technology in Vienna, Austria. She has completed her undergraduate studies in Nutritional Science and her Masters in Biotechnology and Bioanalytics.

daniela.ehgartner@tuwien.ac.at

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## Immunosuppressive and anti cancer activity of a novel Sri Lanka marine sponge, *Haliclona (Soestella)* species

V K Gunathilake, E D de Silva and P V Udagama  
University of Colombo, Sri Lanka

Marine sponge extracts are increasingly utilized as immunosuppressive and anticancer therapeutic agents. This study aimed to investigate the immunosuppressive activity and cytotoxicity of presumably a novel Sri Lankan sponge species, *Haliclona (Soestella)* sp., the crude sponge extract (HSCE) and its purified fractions were tested for these activities by the MTT dye reduction assay on Wistar rat bone marrow cells (BMCs) and on the Hep-2 human larynx carcinoma cell line, respectively. Sponge samples were harvested from Unawatuna, Galle, Sri Lanka by scuba diving and refluxed thoroughly with methanol/dichloromethane, followed by filtration and rota evaporation. The resultant HSCE was subjected to solvent-solvent partitioning with chloroform, ethyl acetate, hexane and water. The HSCE and its fractions (10, 100, 1000, 2000 and 5000 µg/mL) were tested ex vivo on BMC proliferation by the MTT assay. Cytotoxicity of the HSCE and its chloroform fraction (CF) were tested at 6.25, 12.5, 25, 50 and 100 µg/mL on the Hep-2 cell line. BMC proliferation evidenced dose dependant percentage inhibition by the HSCE with significant proliferation inhibition observed in 1000 and 2000 µg/mL concentrations ( $P < 0.05$ ;  $IC_{50} = 0.719$  µg/mL for 2000 µg/mL dose). Highest (100%) inhibition was exhibited by the CF followed by the ethyl acetate fraction (60-70% inhibition) with no inhibition by water and hexane fractions. Cytotoxicity of HSCE and CF on Hep-2 cells reported  $EC_{50}$  values of 19.7 and 29.7 µg per mL, respectively. In conclusion, the HSCE and its fractions were immunosuppressive with respect to BMC proliferation, while HSCE and CF showed cytotoxicity against human larynx carcinoma cells.

kvgunathilaka@yahoo.com

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## Virus before oligonucleotide-vent to apoptosis (VOVA) effect as a promising tool for more effective use of baculoviral preparations

Nyadar Palmah<sup>1</sup>, Oberemok V<sup>1</sup>, Laikova K<sup>1</sup>, Zaitsev A<sup>1</sup>, Adeyemi T<sup>1</sup>, Shumskykh M<sup>1</sup>, Temirova Z<sup>1</sup>, Kot F<sup>1</sup>, Kot T<sup>1</sup>, Meschryakova E<sup>1</sup>, Gerasimenko D<sup>1</sup>, Gal'chinsky N<sup>1</sup>, Kenol I M<sup>1</sup>, Reznik N G<sup>1</sup> and Skorokhod O A<sup>2</sup>

<sup>1</sup>V I Vernadsky Crimean Federal University, Crimea

<sup>2</sup>University of Torino, Italy

In our studies concerning the elaboration of DNA insecticides, we found that topically applied antisense oligoRING (5'-CGACGTGGTGGCACGGCG-3') from conservative region of IAP-3 (inhibitor of apoptosis) gene of *Lymantria dispar* multicapsid nuclear polyhedrosis virus (LdMNPV) causes significantly higher mortality of *Lymantria dispar* caterpillars and decrease of host *IAP-1* gene expression in LdMNPV-infected insect cells. Also using DNA ladder assay for apoptosis detection we found that oligoRING triggers stronger apoptotic processes in infected insect cells in comparison with water-treated control and groups with control oligonucleotides. Demonstrated insecticidal effect of the oligoRING on LdMNPV-infected *Lymantria dispar* has also been observed in our investigations with LdMNPV-infected *Lymantria monacha* and LdMNPV-infected *Cydalima perspectalis*. We decided to term this phenomenon described for 3 lepidopteran pests as VOVA (Virus before Oligonucleotide-Vent to Apoptosis) effect. Of note, we could not reach VOVA effect with LdMNPV and oligoRING on dipteran *Drosophila melanogaster* and coleopteran *Leptinotarsa decemlineata* what shows specificity of VOVA effect/many lepidopteran pests in horticulture and forestry are successfully controlled by application of baculoviruses. Baculoviral preparations have proven to be selective and expensive, acting effectively but slowly. The slow action of a baculovirus is associated with a latent period in the life cycle of the virus. Discovered insecticidal effect of the viral oligoRING on LdMNPV-infected *L. dispar*, *L. monacha*, *C. perspectalis* is a fundamental finding for a host-virus system that could be applied in biologically based insect pest management together with baculoviral preparations to provide more effective and faster action of the latter.

### Biography

Nyadar Palmah is currently a Postgraduate student under the supervision of Oberemok Volodymyr at the V.I. Vernadsky University, Simferopol, Crimea.

biopalmgene@gmail.com

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## Scientific Tracks & Abstracts (Day 2)



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## Chalcone synthase regulates flax metabolism and positively diversify linseed products

Magdalena Zuk and Jan Szopa  
Wroclaw University, Poland

The chalcone synthase (CHS) gene controls the first step in the flavonoid biosynthesis route, the metabolic pathway in which anthocyanins, phenolic acids, lignins, simply phenols were produced. The transgenic plants with overexpression of the heterological CHS gene were generated, leading to the increased synthesis of flavonoids, high antioxidant potential and improve the properties of products obtained such as flax fiber and oil. At the same time, repressing the endogenous CHS gene should verify the results of research on its overexpression and provide information on its potential role of CHS in the redistribution of substrates and diversification of metabolites within the phenylpropanoid pathway, especially in relation to lignins. In flax, CHS down-regulation resulted in tannin accumulation and reduction in lignin synthesis but plant growth was not affected. This suggests that lignin content and thus cell wall characteristics might be modulated through chalcone synthase gene activity. The important role of CHS gene is in regulation of cell wall sensing as well as polymer content and arrangement. CHS-reduced flax also showed significant changes in morphology and arrangement of the cell wall. The additional result of this work was indication of relationship between the expression of the CHS gene and the metabolism and stability of fatty acid in flax. Plant with reduction of CHS produced oil with ideal proportion of  $\omega 6/\omega 3$  fatty acids. Summing up CHS modification induces signal transduction cascade that leads to modification of flax metabolism in a wide range and positively diversify its products.

### Biography

Magdalena Zuk has completed her PhD from Wroclaw University in 2003 and worked on diversification of secondary metabolites in crop plants (flax, potato). She has published more than 35 papers in reputed journals and is a Member of Board of Linum Foundation, a non-profit organization promoting pro-health use of flax products.

mzuk@ibmb.uni.wroc.pl

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## Genome size in *Urginea* species (Hyacinthaceae)

M N Shiva Kameshwari  
Bangalore University, India

The species of *Urginea* such as *U. indica*, *U. wightii* and *U. polyphylla* are known for phenotypic and genotypic plasticity. The  $2C$  values of *Urginea indica* in 5 accessions include 3 diploids with  $2n=20$ , one tetraploid  $2n=40$  and a pentaploid  $2n=50$ . In *U. wightii* 3 accessions with  $2n=20$  diploid, one Aneuploid  $2n=36$  and one mixoploid with diploid and tetraploid  $2n=20$  and 40. In *U. polyphylla*  $2n=54$  have been detected. Intraspecific variations have been noticed in the genome size is significant. In diploids the highest C value ( $1C=45.78$  pg) being found in the accession-846 lowest ( $1C=27.7$  pg) in accession-843, an intermediate one ( $1C=38.45$  pg in accession-835. In Tetraploid ( $1C=51.53$  pg) accession-840 while in pentaploids ( $1C=38.91$  pg) accession-842. In *U. wightii* complex diploids with  $1C=49.24$  pg which is highest accession-839 and in myxoploid  $1C=38.49$  pg in accession-848 and aneuploid ( $1C=37.56$  pg) accession-825 were reported and the factors contributing to such variations in genome size are discussed.

### Biography

M N Shiva Kameshwari has consistently good academic record with PhD from University of Mysore, India. She has been actively investigating on medicinal plants, particularly on *Urginea* species found in India by employing the state of the art research methods to resolve the genetic diversity and its implications on conservation. She is the recipient of many awards for her research contributions and has over 50 research publications. She is a permanent Faculty Member in the Department of Botany, Bangalore University, India.

mn.shivakameshwari@gmail.com

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## Ethnomedicinal practices of Asclepiadaceae members in Chitradurga district, Karnataka State, India

Hiremath Visweswaraiah Thippaiah<sup>1</sup> and Taranath T C<sup>2</sup>

<sup>1</sup>SJM College, India

<sup>2</sup>Karnatak University, India

India has one of world's richest medicinal plant heritages. The wealth is not only in terms of the number of unique species documented but also in terms of the tremendous depth of traditional knowledge for the use of human & livestock health and also for agriculture. The medicinal plant species are used by various ethnic communalities for human and veterinary health care, across the various ecosystems from Ladakh in the trans-Himalayas to the southern coastal tip of Kanyakumari and from the deserts of Rajasthan and Kutch to the hills of the North-east. Chitradurga district of Karnataka state at its extreme limits is situated between longitudinal parallels of 76° 01' and 77° 01' east of Greenwich and latitudinal parallels of 13° 34' and 15° 02' north of equator in the leeward side of the Western Ghats. The topographical and climate diversity of the region has resulted in dry deciduous to thorn scrub forest. The plant diversity of the region is facing a severe depletion due to the continuous loss of forest land, uncontrolled grazing, forest fire, landslides and anthropogenic activities. At this juncture, conservation and protection of ethno medicinal plants of the region needs top priority. The present investigation is an attempt to survey of Asclepiadaceae members for their ethno-medicinal uses to cure various ailments by the ethnic groups of the region. The local health healers/tribes are routine use of 08 medicinal plants belonging to Asclepiadaceae for the treatment of diseases, which includes snake bite, diabetes mellitus, asthma, cough, urinary infection, jaundice, piles, rheumatism and venereal diseases. The study reveals that leaves and roots were most frequently used (07 spp), followed by stem (02 spp), Latex (02 spp), fruits/seeds, bark and flowers one species each. The plant species used in the treatment are *Calotropis procera*, *Hemidesmus indicus*, *Gymnema sylvestre*, *Leptodenia reticulate*, *Tylophora asthmatica*, *Sarcostemma secamone*, *Wattakaka volubilis* and *Pergularia daemia*. The study showed that many people of Chitradurga district still depend traditionally on medicinal plants for primary health care. Therefore, the present study is an attempt to explore and conserve ethno-medicinal plants of Asclepiadaceae in the said region.

### Biography

Hiremath Visweswaraiah Thippaiah is an Associate Professor of Botany. He has completed his PhD from Karnatak University, Dharwad, India. He has published more than 15 papers in reputed journals and presented research articles at various national and international conferences at Malaysia, Singapore, Sri Lanka and USA. He has been awarded 'Talented Scientist Award' through ICMPPH-2013. He is also serving as an Executive Editorial Member in *Life Sciences Feed of repute*.

hiremath2047@gmail.com

### Notes:

# 12<sup>th</sup> Euro Biotechnology Congress

November 07-09, 2016 Alicante, Spain

## Rapid clonal multiplication and conservation of *Origanum vulgare*: An aromatic and medicinal plant using apical buds and leaf by *in vitro* techniques

D Leelavathi  
MES College, India

*Origanum vulgare* L., a perennial herb belonging to the family Lamiaceae is cultivated for its leaves for extraction of essential oil. The oil of *Origanum*, obtained from all the aerial parts of the plant is used in high grade flavor preparations, perfumery, cosmetic and liquor industries. In order to meet the growing demand of its oil and herbage, *in vitro* techniques are being used as an alternative method for large scale multiplication and conservation. In the present investigation, *in vitro* apical buds were cultured on MS medium supplemented with BAP to induce multiple shoots. *In vitro* leaf explants were cultured on MS basal medium supplemented with BAP+2,4-D to induce callus which was sub cultured onto the same medium to obtain profuse callus. Callus was later cultured on shoot regenerating medium, MS+BAP+2,4-D to produce multiple shoots. Well developed multiple shoots developed roots on the same medium and the axenic plants were subjected to hardening. Regenerated plants were acclimatized which were transferred to soil with 80-90% of survival frequency. *In vitro* and *in vivo* leaves were subjected to phytochemical analysis for the determination of principle component. *In vivo* leaf and stem contains higher percentage of thymol and of methyl chavicol. The *in vitro* apical buds were used for synthetic seed production using sodium alginate and calcium chloride as matrix and complexing agent for encapsulation. Hardened multiple shoots obtained from apical bud, leaf callus and synthetic seeds serves as a source of ex situ conservation.

### Biography

D Leelavathi is currently working as an Associate Professor in the Department of Botany at MES College, Bangalore. She has published 10 research papers, presented in various international and national journals/conferences and she is currently working on a minor research project funded by UGC. She has also presented a paper in 4<sup>th</sup> international conference on medicinal plants and herbal products held at John Hopkins University, USA, 2012.

leela28siga@gmail.com

### Notes:

# 12<sup>th</sup> Euro Biotechnology Congress

November 07-09, 2016 Alicante, Spain

## Influence of AM fungi and *Trichoderma viride* on growth and active principles in micropropagated *Bacopa monnieri* (L.) Pennell, a medicinal plant

R Sowmya<sup>1</sup> and D H Tejavathi<sup>2</sup>

<sup>1</sup>Mysore University, India

<sup>2</sup>Bangalore University, India

*Bacopa monnieri* (L.) Pennell is commonly known as “Brahmi” belongs to the family Scrophulariaceae. It is one of the most important medicinal plants, which has fascinated the fields of traditional and modern system of medicine as memory enhancer and nervine tonic. To understand the influence of AM fungi alone and with a phosphate solubilizing organism on micropropagated plant in comparison with normal plants, an attempt has been made in the present study. Micropropagated plants were raised on MS medium supplemented with Kin and BAP from leaf explants. Both normal and micropropagated plants were inoculated with *Glomus mosseae* and *G. fasciculatum* alone and in combination with *Trichoderma viride* in pots. Percent colonization and spore count were recorded in both normal and micropropagated treated and control plants. Micropropagated plants showed early and better colonization with AMF association compared to normal plants. Plant growth and biomass were recorded for treated and control of normal and micropropagated plants. AMF enhanced the growth of micropropagated plants considerably with *G. mosseae* in combination with *T. viride* compared to control plants. Micropropagated inoculated plants showed increased level of chlorophylls, total proteins and total phenolics but reducing sugars and total carbohydrates content showed decreased level compared to control plants. The increased level in the Bacoside A-content was recorded in plants treated with *G. mosseae* along with *T. viride*. The micropropagated *B. monnieri* plants responded excellently to the AMF inoculation with *T. viride* and showed better establishment in the pots by availing good growth and improved physiological condition.

### Biography

R Sowmya is currently an Assistant Professor, Department of Botany of Yuvaraja's College, University of Mysore, India. She has obtained her MSc from the Bangalore University in the year 1994 and MPhil in 1996. She has completed her PhD with the thesis entitled “Utilization of VAM fungi for improving the establishment of micropropagated plants” in 2002 under the guidance of Prof. D. H. Tejavathi. She continued her research as a Research Associate in the CSIR Project “Commercial exploitation of regenerates of Agave”. She has published research papers in national and international journals and presented her research work in national and international conferences.

sow.ramaiah@gmail.com

### Notes:

# 12<sup>th</sup> Euro Biotechnology Congress

November 07-09, 2016 Alicante, Spain

## Germplasm conservation of *Andrographis paniculata* through somatic embryogenesis and encapsulation

P Anitha<sup>1</sup> and D H Tejavathi<sup>2</sup>

<sup>1</sup>BMS College for Women, India

<sup>2</sup>Bangalore University, India

*Andrographis paniculata* Nees of the family Acanthaceae, one of the most potential medicinal herbs is used in many pharmacological properties. The main constituent of the herb is Andrographolide; in addition to this Andrographolide esters and lactones have been found to be cancerolytic, hepatoprotective, anti HIV etc., (under testing *in vitro*). The main objective is to conserve germplasm through somatic embryogenesis and encapsulation. The present investigations have revealed hypocotyls, cotyledons and embryo cultures of *Andrographis paniculata* were induced to produce somatic embryos on MS media supplemented with 2,4-D (4.56  $\mu$ m). Somatic embryos at different stages of development were transferred on to maturation and germination media. Somatic embryos were encapsulated and transferred to the recovery media and plantlets were developed. *In vitro* conservation through somatic embryogenesis and encapsulation may offer a better approach compared to organogenesis for developing scale-up technology by employing bioreactors.

### Biography

P Anitha is currently working as an Associate Professor in the Department of Botany at MES College, Bangalore (Deputed from BMS College for Women, Bangalore). She has published 10 research papers, presented research papers in various international and national journals/conferences and completed 2 research projects funded by UGC and VGST. She was conferred with "Talented Scientist Award" for her outstanding contribution to the medicinal plant research during the 4th international conference on medicinal plants and herbal products held at John Hopkins University, USA, 2012.

anitha4959@yahoo.in

### Notes:

# 12<sup>th</sup> Euro Biotechnology Congress

November 07-09, 2016 Alicante, Spain

## Utilization and conservation of *Morus indica* by using *in vitro* technology and bioinoculants

B Pushpavathi and D H Tejavathi  
Bangalore University, India

*Morus indica* commonly known as Mulberry is of paramount importance in sericulture industries. *Morus indica*, member of the family Moraceae is a multipurpose tree. Though mulberry foliage constitute the chief food for silkworms, extract from flowers fruits, bark, leaves are of great medicinal value. The most active ingredients are Rutoside and DNJ (1-deoxynojirimycin HCl). Leaf extract is rich in amino acids, vitamin C and antioxidants. DNJ and rutoside are very effective in the treatment of curing diabetes mellitus in addition to regulating blood fat levels balancing blood pressure and boosting metabolism. DNJ has been proved to inhibit the activities of  $\alpha$ -glucosidase which lowers blood sugar levels. Hence to meet the demand and supply an attempt has been made to conserve by *in vitro* techniques (mass multiplication) and by utilization of biofertilizers. Arbuscular mycorrhizal fungi (AMF) can form a symbiosis with a wide variety of plant hosts. Beneficial interactions between AMF and commercial plants have been well documented. In the present investigations both normal and micropropagated plants of *Morus indica* were inoculated with two species of *Glomus mosseae* and *Glomus fasciculatum*. The percent of root colonization and morphological parameters were investigated in the field conditions. Alpha glucosidase enzyme inhibition assay in leaf samples of field grown control and micropropagated plants with or without AMF inoculation was conducted to estimate IC50 value. The inoculated plants showed better colonization and better growth performance. Thus AMF influenced the whole physiological status of the host plants as biofertilizers.

### Biography

B Pushpavathi has completed her PhD degree in the 2010 under the guidance of Dr. D.H. Tejavathi on utilization of AM fungi in *ex situ* cultivation of micropropagated mulberry plants for better establishment and yield. She has published papers in national and international journals and has made presentations at many international and national conferences. She was conferred with "Young Scientist" award at 4<sup>th</sup> international conference on medicinal plants and herbal products held at Johns Hopkins University, USA in 2012.

drpushpaamarnath@gmail.com

### Notes:

# 12<sup>th</sup> Euro Biotechnology Congress

November 07-09, 2016 Alicante, Spain

## Phytochemical and anti-bacterial action of the wild, ancient medicinal herb *Urginea indica* (Roxb.) Kunth, Hyacinthaceae

Hemalata S K and Shiva Kameshwari M N  
Bangalore University, India

One of the members of the family Hyacinthaceae *Urginea indica* found in all parts of India on rocky and hilly areas. The plant is known to contain phytochemicals which are useful for a number of purposes. The objective of this study is to investigate the types of phytochemicals and examining the relevance of their phytochemicals to plant protection. The use of phytochemicals as natural antimicrobial agents, commonly called "biocides" is gaining popularity. The most essential of these bioactive constituents of plants are alkaloids, tannins, flavonoids and phenolic compounds. The plant *Urginea indica* is popular in the medicinal plant trade to treat respiratory and urinary problems, flatulence, stomach ache, fevers, syphilis and to facilitate childbirth. The present investigation was focused on the preliminary phytochemical and antimicrobial studies of solvents extracts of *Urginea indica* (Roxb.) Kunth (Hyacinthaceae). Already the message "green medicine" is safe and more dependable than the costly synthetic drugs many of which have adverse side effects have passed on to many parts of the world. *Urginea indica* (Roxb.) Kunth (Hyacinthaceae) results were clearly revealed that the plant contained different bioactive compounds such as of alkaloids, anthoquinones, steriods and flavonoids compounds were rich in the alcoholic extracts.

### Biography

Hemalata S K has completed her PhD from Bangalore University in 2016. She has also successfully completed MPhil and published seven research articles in international journals. She has teaching experience in Botany and Biology to all undergraduates and graduates for more than 20 years in Bangalore. She has also worked as a Coordinator for Practical allotment in Department of Pre University for more than 10 years.

drpushpaamarnath@gmail.com

### Notes:

# 12<sup>th</sup> Euro Biotechnology Congress

November 07-09, 2016 Alicante, Spain

## Role of plant tissue culture in conservation and reintroduction of *Sauropus androgynous* (L.) Merr

S Padma and D H Tejavathi  
Bangalore University, India

In order to bring about sustainable resource conservation, management and improvement of useful medicinal plants, it is essential to adopt different economical approaches. One such basic approach includes plant tissue culture which forms an integral part of any plant biotechnological activity. In this regard one of the most important Southeast Asian plant *Sauropus androgynous* was subjected to few tissue culture procedures in order to conserve and reintroduce its improved version. Recent advances in the development of protocols for *in vitro* culture and genetic manipulation have provided new avenues for the development of novel varieties of *Sauropus androgynous*. *S. androgynous* is a member of Euphorbiaceae, popularized as multivitamin plant and consumed as green leafy vegetable due to its rich nutritional profile including proteins, vitamins, minerals, essential amino acids, etc. The plant is cautioned for excessive consumption due to the presence of Papaverine alkaloid which at higher concentration leads to Bronchiolitis obliterans. Optimized techniques of nodal cultures on Murashige and Skoog's and Phillips and Collins media with various growth regulators has supplemented the conventional propagation methods in commercial production resulting in availability of improved *Sauropus* through both organogenesis and somatic embryogenesis. The development of regeneration systems for *S. androgynous* has opened possibilities for developing genotypes with novel characters including low quantity Papaverine content which has facilitated conventional improvement programs thereby providing a valuable resource to the food a pharmaceutical industry. Based on this research, plant tissue culture techniques show promise for economical and convenient application in *Sauropus androgynous* breeding.

### Biography

S Padma has completed her PhD degree in the year 2013 under the guidance of Dr. D. H. Tejavathi on *In vitro* regeneration and phytochemical studies in *Sauropus androgynous* (L.) Merr. She was awarded with a Research Fellowship in Science for meritorious students under UGC NON-SAP program. She has published three papers in national and international journals and has made presentations on her research work at many international and national conferences. She was conferred with "Young Scientist Award" at 4<sup>th</sup> international conference on medicinal plants and herbal products held at Johns Hopkins University, USA. 2012.

padmaseenappa@gmail.com

### Notes: