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Scientific Tracks & Abstracts

Day 1

Henrique M Baudel, J Biotechnol Biomater 2018, Volume: 8
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Novel saccharification of lignocellulosic biomasses using "whole broth" enzymes: Towards on-site manufacturing (osm) of enzymes for production of 2nd generation ethanol from *eucalyptus* wastes in biorefinery configurations

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Saccharification of lignocellulosic biomasses using enzymatic hydrolysis has been proven to be an attractive route for the production of second generation (2G) ethanol from abundant low-cost renewable feedstocks such as eucalyptus wastes. Nevertheless, approximately 30-40% of the overall production cost of ethanol from biomasses might be attributed to the price of outsourced enzymes, which incorporates significant cost parameters related to the need for purification, stabilization, packing, transportation, storage and conservation, among others. In this scenario, the use of crude non-purified "whole broth" enzyme cocktails produced on-site (OSM, onsite manufacturing) emerges as a promising option to significantly reduce the impact of the cost of the enzymes on the overall production cost of the cellulosic ethanol. As result, economically feasible biorefineries for the production of ethanol from eucalyptus wastes might become a commercial reality in countries such as Brazil and Portugal, for example. In this study, cellulosic sugars were produced from Eucalyptus grandis wastes using "whole broth" cellulases produced from *Penicillium echinulatum*. Fed-batch enzymatic hydrolyzes of steam-only pretreated and steam treated/organosolv delignified chips were performed at 15% WIS at 50°C and pH 4.8-5.2 for 48h runtime. "Whole broth" cellulase cocktails of 6mgP/g product (Bradford method) were employed to achieve an enzyme load of 6 mgP/g DM. A commercial enzyme cocktail (160mgP/g product) was used as control at similar protein load. Cellulose conversions of 62% and 76% and glucose (monomer) yields of 292kg/ton DM and 358kg/ton DM were achieved from the enzymatic hydrolyzes of the steam-only pretreated and steam treated/organosolv delignified eucalyptus chips, respectively, using "whole broth" enzymes. Conversely, cellulose conversions of 77% and 84% and glucose (monomer) yields of 363kg/ton DM and 396kg/ton DM were obtained from the enzymatic hydrolyzes of the respective pretreated eucalyptus chips using commercial enzyme cocktails.

Biography

Henrique Baudel has completed his PhD in Environmental Sciences from University of Concepción (Chile), Chemical Engineering from Federal University of Pernambuco (Brazil) and Postdoctoral studies from Lund University (Sweden). He works as P&D and Technology Director of America Biomass Technologies, a premier chem and biotech company. His publications reach more than 50 works including papers in journals and proceedings, patents and specialized technical reports. He has been working as a Supervisor of research works at both academia and industry, as well as serving as Reviewer and Editorial Board Member of repute.

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Mutation breeding in Malaysia

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In Malaysia, the development of mutation induction technology has progressed well, from the phases of capacity building and infrastructure upgrading to research applications in many crops including ornamental plants, which ultimately lead to the generation of new and beneficial mutant lines and varieties. Currently, most of the mutation breeding projects are funded by grants from the Ministry of Science, Technology and Innovation (MOSTI) viz. ScienceFund, TechnoFund, Community Innovation Fund (CIF), MOSTI Social Innovation (MSI), Fundamental Research Grant Scheme (FRGS) from Ministry of Higher Education (MoHE) and International Atomic Energy Agency (IAEA). These projects are mainly collaborative efforts involving various government departments and agencies, research institutes and institutions of higher learning. In agriculture and life sciences, Malaysian Nuclear Agency (Nuclear Malaysia) conducts research and development (R&D) using nuclear technology for the improvement of food and industrial crops and ornamental plants, management of agro-ecosystems for productivity enhancement as well as the development of radiation based bioproducts and bioprocesses. Rice industry has always been a priority based on the strategic importance of rice as a staple food commodity. Although the production of rice is increasing towards population increase, Malaysia still depends on imported rice to fulfill consumer's demand. Malaysia managed to achieve 72% self-sufficiency level in rice with the current average rice yield of 4.1t/ha/season. In this situation, about 28% of the local demand will have to depend on rice imports. In Peninsula Malaysia, rice production depends largely on the irrigated lowland production system. Through ten years of R&D, Nuclear Malaysia succeeded in generating five potential rice mutant lines through ion beam (irradiated at TARRI, formerly known as AVF-Cyclotron, Japan Atomic Energy Research Institute) and gamma rays radiation. Of these, 3 mutant lines (ML3, ML10 & ML30) were produced through ion beam radiation while another 2 mutant lines (NMR151 and NM152) were derived from gamma radiation.

Biography

Sobri Bin Hussein has a wide experience in the area of mutation breeding and advanced air-lift bioreactor system for plant propagation. During the past few years, he and his research team managed to produce many potential mutant lines that can benefit many farmers in his country. Apart from he also manages to publish many research papers in the area of plant biotechnology and plant breeding.

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Notes:

Jose Linares et al., J Biotechnol Biomater 2018, Volume: 8
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Analysis of the expression of the SlMYB gene during the reproductive development of tomato (*Solanum lycopersicum*)

Jose Linares, Concha Gomez Mena, Jose Pio Beltran Porter and **S Chem**
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Statement of the Problem: In tomato, the development of the fruit is a highly regulated process at the genetic level that can be negatively affected by changes in environmental conditions, mainly humidity and temperature. The knowledge of the molecular mechanisms that control the setting and development of the fruit is very important to identify improvement targets for this crop. Plant development processes are often controlled by networks of regulatory genes that encode transcription factors. In a previous work of the laboratory, a transcription factor type MYB (SlMYB) was identified whose expression is induced in androsterile tomato plants whose ovaries develop in the absence of pollination, giving rise to fruits without seeds (parthenocarpic). By expression analysis, it was determined that this gene is expressed only in developing flowers.

Methodology & Theoretical Orientation: The *in situ* hybridization technique is very suitable to obtain information about the expression patterns of genes in plants, also, express promotor of SlMYB with GUS gene in *Arabidopsis* could reveal the potential of these genes as a biotechnological tool.

Findings: Involved primary research with the expression pattern of a gene on the floral structure of *Solanum lycopersicum* and *Arabidopsis thaliana* in the laboratory of Dr Concha Gómez-Mena. Our results show that the messenger of this gene is located in the sporogenic tissue of the anther, in the developing titles and in the transmission tissue of the pistil. On the other hand, transgenic *Arabidopsis* pSlMYB::GUS lines have been obtained that show a 2kb sequence of the SlMYB gene promoter capable of directing the expression of the GUS reporter gene to anther and style tissues.

Conclusion & Significance: One important conclusion of this research is this gene could regulate male and female meiosis.

Biography

Jose Linares Master Degree in Molecular and Cell Plant Biotechnology at the Polytechnic University of Valencia. A biologist at National University of San Marcos (UNMSM), specialized in genetics and plant biotechnology. Experience in Scientific Research and Intellectual Property (patents and plant varieties); development of research projects related to the characterization of plant genetic diversity at the cellular, biochemical and genetic level; Knowledge of laboratory techniques (cytogenetic, biochemical and molecular biology, microbiology, genetic engineering). Working about four years as a Consultant of Intellectual Property related to plant biology.

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Kimiko Yabe et al., J Biotechnol Biomater 2018, Volume: 8
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The dichlorvos-ammonia method for visible detection of aflatoxigenic fungi from environments

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Aflatoxins are the most potent carcinogenic and toxic substances among mycotoxins and its contamination in food and feed crops has serious effects on the health of humans and animals. To monitor and to regulate the aflatoxin contamination in crops, the simple and precise detection method for aflatoxigenic fungi is necessary. We recently developed a visual detection method, the dichlorvos-ammonia (DV-AM) method, in which DV inhibits the esterase in aflatoxin biosynthesis causing the accumulation of anthraquinone precursors (versiconal hemiacetal acetate and versiconol acetate) of AFs in mycelia on the agar plate, followed by a change of the color of the colonies from light yellow to brilliant purple-red by the AM vapor treatment. This method enabled the direct isolation of aflatoxigenic fungi as well as non-aflatoxigenic fungi from environmental samples such as soils. However, when this method was applied to the soils containing many and various kinds of microorganisms, we found that they drastically inhibited the growth of fungi. Therefore, we further search for a semi-selection medium for aflatoxigenic fungi which is useful for the DV-AM method. We finally establish the medium and we succeeded in the detection of aflatoxigenic fungi from various soils in Japan. The DV-AM method using the semi-selection medium will be useful for clarification of the distribution as well as the dynamic movements of aflatoxigenic fungi in environments.

Biography

Kimiko Yabe has her expertise in biochemistry and molecular biology of toxic fungi. She has investigated the biosynthetic pathway of aflatoxins in collaboration with Dr. Hiromitsu Nakajima, Tottori University, Japan for more than 30 years. They have clarified most of all enzymatic reactions in aflatoxin biosynthesis by co-work with many great researchers inside and outside of Japan. Recently, she developed the DV-AM method, a simple method to detect aflatoxigenic fungi, in collaboration with Dr Masayo Kushiro, NARO, Japan. They have a dream that this method will be widely used and will be useful for people to develop an effective preventing method for aflatoxin contamination in crops all over the world.

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Antioxidant enzyme characterization in the liver of Mediterranean barbel (*Barbus merdionalis*) from Osor river (Catalonia)

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Antioxidant system parameters have still gained considerable importance due to their pivotal role in detoxification mechanisms. Optimization assays were carried out for antioxidant enzymes (Superoxide dismutase (SOD); Catalase (CAT); Glutathione peroxidase (GPX); Glutathione reductase (GR) and Glutathione S-transferase (GST) in the liver of Mediterranean barbel *(Barbus meridionalis)*. The characterization of the antioxidant enzymes was carried out for several incubation media parameters. For the pH optimization, the range of 6.0-8.0 was assayed and the maximal enzyme activities were found at pH 7.0 for SOD and GPX and pH 7.5 for the CAT, GST and GR. Phosphate buffer concentrations in the range of 50-150mM were examined and generally, all enzymes showed their highest activities at 100mM phosphate buffer except SOD activity which was maximally at 150mM. Specific enzyme activity (Vmax) and Km values were also determined. Optimal values of other incubation media for each antioxidant enzyme were mostly found in similar ranges when compared to several fish species in the literature. Characterization assays of these parameters in native fish based on its physiological and ecological importance may be useful for biomonitoring of aquatic ecosystems health and also present fundamental data for utilization in further studies in the area of ecotoxicology.

Biography

Guluzar Atli has her expertise in the research area of molecular ecotoxicology and ecophysiology. She is an Academician in Cukurova University Biotechnology Center both as a Lecturer and Researcher. The response of significant and sensitive biomarkers both enzymatic and non-enzymatic parameters in the antioxidant and osmoregulatory system in several bio-indicator organisms against toxicants are investigated in her articles. In this sense, ATPase activities, antioxidant enzymes and non-enzymatic antioxidants such as metallothioneins related to exposures of metals and also environmental factors such as salinity are, particularly in her research area.

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Lingual space of maximum size as an electromagnetic field of the human body: Health and disease-biotechnological factors

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The importance of functional lingual space for human health and quality of life was first emphasized by Willem Balters (German doctor MD, in 1962) when he concluded that the reduction of the buccal space and glossoptosis (tongue drop down) can compromise the individual's physiological, physical, biochemical and emotional balance. This correlation has been highlighted by several journals (articles, books, etc.) in Europe, South America, North America and especially in Brazil. According to the latest advances in biotechnology, it is now possible to evaluate and quantify, in human saliva, several inflammatory markers and the main hormones that control all metabolism. This work has provided dentists, doctors (MD) and other related professionals with better possibilities for the diagnosis and treatment of a number of chronic diseases that also present an important oral component, which is still forgotten. Therefore, this work aims to highlight the importance of maximum size buccal space and the functional influence of this powerful electromagnetic field, acting as a box of physiological hormonal resonance for the individual's cellular metabolism according to the concepts of quantum and energetic medicine.

Biography

Helio Gomes da Silva, Doctor in Dentistry (PhD, MSD, DDS), author of 3 books and numerous scientific articles which correlates the deformation of the shape and volume of functional lingual space with different physical, chemical and emotional changes of human beings, who participating in a context of chronic disease; developed and HGS-RA system (intra-oral devices for the treatment of snoring and sleep apnea); Researcher since 1990 on the symptoms of TMJ, dysfunction, relating to the occlusal disharmony with repercussions in the spine, CTA Research Center of the Brazilian Air Force in São José dos Campos, Brazil; Researcher UNITAU- (University of Taubaté-Sao Paulo State, where he completed a survey of the daily performance and psychosocial conditions of young adults undergoing orthodontic treatment; currently, teacher graduate program coordinator in dentistry in orthodontics Faculty IMED (RS-Brazil) and College IPENO (SC-Brazil).

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The effect of growth conditions on the active compounds found in medicinal plants

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Statement of the Problem: In spite of the world-renowned Brazilian biodiversity and the therapeutic potential of its medicinal plants, lack of information regarding the correct identification and quality control of these species is an obstacle to their use. The use of medicinal plants in Brazilian health policy has been increasingly promoted by governmental guidelines and syrup using two species of Guaco is currently supplied by the Health System (SUS) as a cough medicine. Although the commercialization of herbal medicines in Brazil is governed by several laws, the quality of raw material interferes with the safety, quality and expected efficacy of herbal medicines. Different conditions of cultivation of medicinal plants result in variations in the concentrations of active principles and may affect these parameters.

Methodology and Theoretical Orientation: The variation of secondary metabolites of these two species was influenced by the variations in the cultivation conditions of: temperature, luminosity, soil, mechanical damages and water supply, as well as field monitoring of fluctuations due to the period of collection or seasonality. Extracts were made from the leaves and their composition was evaluated by liquid chromatography with mass spectrometry, following the content of its marker (coumarin) as well as the profile of the other components.

Conclusion and Significance: The highest variation among the secondary metabolites was found between the two guaco species, *M. glomerata and M.laevigata*, so they cannot be used interchangeably. In seasonality, M. laevigata seems to suffer mainly from air temperature in the production of secondary metabolites; already for *M. glomerata* it was possible to notice the influences of the flowering in the decrease of chlorogenic acid. No significant variations were observed in relation to collection time (morning, noon or afternoon). Regarding the treatments, a single condition was not found to increase all the metabolites of therapeutic interest of these species.

Biography

Alexandra C H F Sawaya holds a Bachelor's degree in Pharmacy and Biochemistry from the faculty of Pharmaceutical Sciences of the University of Sao Paulo, a Master's degree in Pharmaceutical Sciences from Sao Francisco University, a PhD in Chemistry from the State University of Campinas and postdoctoral studies in the Department of Plant Biology (UNICAMP) between 2008-2013. She worked as a Lecturer at UNIBAN in the Pharmacy and Biomedicine Courses (2006-8) and in the Professional Master's Degree in Pharmacy. She is currently Assistant Professor at the Pharmacy Course at UNICAMP and active in the programs of Biosciences and Technology of Bioactive Products and Plant Biology of IB, UNICAMP. Her area of expertise is of mass spectrometry and chromatography in studies of bee products, food, herbs and herbal products.

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Production and evaluation of the starch and fiber from young bamboo culm for food and biotechnological applications

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University of Campinas, Brazil

Bamboo is a perennial crop that grows rapidly, without the need of replanting, does not require pesticides, is a high-yield renewable resource, cheap and abundant across the globe. In our staff, we verify that the starch and fibers present in the young bamboo culms can bring benefits to the food and biotechnological industries, which is in growing demand of eco-friendly ingredients obtained from renewable sources. Besides, increasing fiber consumption is widely reported in the current literature as a beneficial effect for the population. Thus, the purpose of this lecture is to demonstrate the state of the art in research and development of flour, starch and fiber of young bamboo culm. We will show our results about the potential production and commercialization capacity of bamboo for industries, specify its physical-chemical and technological characteristics for many applications, and, in the end, explain the scientific challenges which we already overcame and the future perspectives for young bamboo culm.

Biography

Maria Teresa Pedrosa Silva Clerici graduate in Biochemistry Pharmacy from the Federal University of Ouro Preto (1988), Master in Science and Technology of the Food from the Federal University of Lavras (1991) and a Doctorate in Science and Technology of the Food from the University of Campinas (1997). Nowadays, is an MS-3.1 Professor at the University of Campinas (UNICAMP- Brazil). Has to experience in Science and Technology of Food, focusing on Science and Technology of cereals, roots and tubers and acting on the subjects of baking, pasta, roots, tubers, thermoplastic extrusion, starches, fibers and researching new ingredients.

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Mannosylerythritol lipids production by *Pseudozyma aphidis* UFMG-Y3468: A process optimization approach

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[1]University of Campinas, Brazil
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Statement of the Problem: Yeasts from Ustilaginaceae family have been highlighted in the last years as a promising source of industrial interesting compounds, including enzymes, sugars, lipids, organic acids and glycolipids biosurfactants. Among the biosurfactants produced by these yeasts, the mannosylerythritol lipids (MELs) have been attracted the attention of the scientific community in recent years due to its potential applications in several fields including medical, cosmetics and food. Considering the high costs associated with the production of biosurfactants, this work focused on the use of response surface methodology (RSM) to optimize the carbon and nitrogen sources in the medium for the production of MELs by a *Pseudozyma aphidis* strain isolated from Brazilian water sample.

Methodology & Theoretical Orientation: After a screening study, one strain of yeast belonging to the *Pseudozyma* genus showed able to produce MEL in mineral medium with glucose. A central composite design (24), 28 experiments, was used for optimization of glucose, soybean oil, yeast extract and sodium nitrate concentrations in mineral medium applied for production of MELs by *P. aphidis* UFMG-Y3468. The process was carried in a controlled incubator at 30°C and 200rpm for 10 days.

Findings: The production of crude MEL extract ranged of 5,87g/L to 27,25g/L and the mathematical model obtained with significative parameters (soybean oil, glucose and yeast extract) showed good results after analysis of variance. In addition, after the chemical characterization using high-resolution mass spectrometry and nuclear magnetic resonance was observed the presence of MEL-A, MEL-B, MEL-C.

Conclusion & Significance: The use of RSM for optimization of MEL production can be considered an important tool to reduce of costs of medium composition applied in the biotechnological processes. This approach can be considered promising since it allowed to find the optimum concentration levels of the substrates used for MEL production.

Biography

Glaucia M Pastore, Full Professor, Department of Food Science, Faculty of Food Engineering, Campinas University, UNICA Bachelor of Biological Science, Catholic University of Campinas (1976) MS in Food Science, Campinas University-Unicamp (1982), Enzyme Technology Course Osaka Technical Institute Japan (1985), PhD in Food Biochemistry, Campinas State University-Unicamp (1991), Post-doctorate: Ohio State University USA, 1993. Responsible for graduate and undergraduate courses in Food Biochemistry and Principes of Food Biotechnology, Biotransformation of Agriculture wastes. Author of several chapters in international and national books, more than 100 research papers in international journals.

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Nuretin Heybeli, J Biotechnol Biomater 2018, Volume: 8
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Intra-articular use of a unique combination of a medical device composed of Glucosamine and Chondroitin sulfate with Hyaluronic acid

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Knee osteoarthritis (KOA) is a major health problem. Injections have long been associated with the use of Hyaluronic acid under the general definition of "viscosupplementation". However, with the recent improvements in biotechnology, we can move further. Glucosamine and chondroitin sulfate, are promising therapeutic approaches, both showing efficiency with oral formulas. Glucosamine is the basic precursor of the structure of glycosaminoglycans and subsequently of aggrecan and other proteoglycans present in the cartilage. Chondroitin sulfate (CS) is a natural glycosaminoglycan found in the structure of the aggrecan molecule of the cartilage. It has many beneficial biological properties for cartilage including anti-inflammatory activity, wound healing, the ability to inhibit the enzymes responsible for cartilage degradation and a biological activity at the cellular level that helps restore arthritic joint functions. Among other properties, CS is responsible for the water retention of cartilage, due to the negative charge ensured by its structure. It is considered a possible candidate for the treatment of a joint defect. The safety of chondroitin sulfate sodium is supported by multiple well designed human clinical trials and animal studies. "Genvisc" is the medical device that combines these three essential molecules. In this study, We aimed to assess the feasibility and safety of repeated intra-articular knee injection of this unique combination to treat KOA as well as efficacy. The study protocol was approved in April 2016 by the Ethics Committee of Trakya University. After the approval of the local ethics committee, patients suffering from KOA with Kellgren-Lawrence grade II and III, aged between 35 to 80 years were included. Patients were prospectively evaluated at baseline and then at 2, 6 and 12 months of follow-up using the International Knee Documentation Committee (IKDC) subjective score (main outcome), Knee injury and Osteoarthritis Outcome Score, EuroQol visual analog scale and Tegner score. The range of motion, transpatellar circumference, patient satisfaction and adverse events were also recorded. A significant improvement was found in the study group with acceptable side effects.

Biography

Nuretin Heybeli serves as a Professor at the Trakya University School of Medicine, Department of Orthopedics and Traumatology in Edirne, Turkey. Besides his career on orthopedic surgery since 1992, he has also completed his Masters' Degree on Biomedical Engineering at Boğaziçi University in 2010. His main areas of expertise include foot and ankle reconstruction, arthroscopy, sports injuries and adult reconstruction. His special interests include cartilage, ankle arthritis and total ankle arthroplasty, an area he personally pioneered in Turkey. He was named the "Physician of the Year" in 2014 by Istanbul Directorate of Health and has won the "Crystal Seagull" award in 2015, given by the Alumni Association of KALID for personal achievement. He was a traveling fellow for The European Federation of National Associations of Orthopaedics and Traumatology (EFORT) in 1997 and for European Foot and Ankle Society (EFAS) in 2004. Some of his awards are the following: Best Study at the First Turkish Shoulder and Elbow Surgery Congress, 2000; Second Place at the XVII.

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Freeze-dried wafers for anti-inflammatory topical delivery

Laura de Oliveira and **Juliana Souza Ribeiro Costa**
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Statement of the Problem: Damage to the skin, like wounds, triggers the cascade of events that generally culminate in tissue repair. In some severe conditions, the complete repair of skin is prolonged or impaired due to excessive inflammation. These cases requires wound dressings, generally carrying drugs to prevent contamination and other properties. Curcumin, a major component of the rhizomes of Curcuma longa, has anti-inflammatory and antimicrobial properties known for centuries in Indian medicine, but is undervalued as a dressing active. Concerning the dressing matrix, natural biopolymers are biocompatible, biodegradable and allows sustained active release. Although they are extensively studied, freeze-dried formulations are practically inexistent. Therefore, the objective of this study was to develop and characterize physicochemical aspects of a bio-polymeric topical wafer for sustained release of curcumin.

Methodology & Theoretical Orientation: The wafers were obtained by freeze-drying alginate and gelatin gels in micro-well plates under a product temperature driven process (Lyostar 3 pilot freeze-drier). Characterization consisted on evaluation of critical quality attributes pre and post freeze-drying. Pre evaluation considered pH, zeta potential and gel rheology. Post evaluation included visual appearance, residual moisture and drug release profile.

Findings: Gels presented pH of 6.4, adequate to topical application, zeta potential of -30.2 mV (± 2.7 mV) and a rheological profile showed in figure 1. Wafers showed a uniform yellowish color, adequate residual moisture and easy detachment of the well. Preliminary drug dissolution studies over a 2-hour period showed 37.8 % (± 4.2 %) cumulative drug release for the wafers obtained from gels containing curcumin.

Conclusion & Significance: These results show the physicochemical feasibility of developing a sustained delivery system for curcumin by combining gelatin and sodium alginate, which allows further in vitro/in vivo studies of wound repair.

Biography

Laura de Oliveira Nascimento is a pharmacist (USP, Brazil -2007), with PhD in Pharmaceutical Sciences (USP, Brazil - 2011) and doctorate Sandwich at Boston University, MA, USA (2009). She is currently Professor of Pharmaceutical Technology of the University of Campinas (Unicamp, Brazil). Her research focus is the delivery of pharmaceutical active ingredients by nanostructured and lyophilized systems.

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Feasible technical and economic solutions for EPA production by *Pythium irregulare* using vinasse, wastewater, as main raw material

Bruna S Fernandes[1], Bruno C Klein[2], Joao Paulo Fernandes Vieira[3], Reinaldo Ferreira[4], Marcelo Zaiat[5], Rubens Maciel Filho[1], José GC Pradella[5]

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Vinasse is a rich carbon source and low-cost feedstock produced in huge amounts from the process of ethanol production. In 2019, the Brazilian Ministry of Agriculture, Livestock and Food Supply estimate growth of ethanol domestic consumption of 58.8 billion liters, more than double the amount recorded in 2008. This represents the annual production of more than 58.8 billion liters of vinasse, which is currently used as fertilizer in the sugarcane crop, due to its high concentration of minerals, mainly potassium. However, studies indicate some disadvantages such as the generation of Greenhouse Gas emission during vinasse distribution in the crop, as well as the possibility of contaminating the groundwater and soil. Therefore, the development of programs for sustainable use of vinasse is a priority. One profitable process is the bioconversion of vinasse into biocompounds such as lipids, by microorganisms. Promising high value-added lipids, for instance, polyunsaturated fatty acids (PUFAS), with a predicted market of millions of US$, can be produced using vinasse as a carbon source, to guide an innovative e feasible concept for sustainable production. In this context, Omega 3 Eicosapentaenoic acid (EPA), a PUFA, not synthesized by humans but an important dietary supplement with a promising market, was produced by *Pythium irregulare*, an oleaginous Oomycete, able to accumulate large amounts of lipids and the production was evaluated according to several technical and economic solutions and scenarios. The results of this study showed a great alternative for EPA production applied to human consumption, considering different microbial bioreactors configuration, alternative extraction and refinement processes.

Biography

Bruna Soares Fernandes graduated from University Federal of São Carlos (Brazil) on chemical engineering. She did Master and Doctoral degree at University of São Paulo (Brazil) on Hydraulic and Sanitation engineering. She worked at Dedini/Paques BV as new technologies leader focused on wastewater treatment. During the four last years, she got a position as Technical Coordinator of R&D project of Ergostech, Sapporo Brewery and Petrobras. She and her team developed a process, in which it was patented. Since 2015, she is in a Postdoctoral position at the Brazilian Centre of Research in Energy and Materials and University of Campinas. Her main interests are waste treatment and bio-products obtainment from biological processes.

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Valeria M Cardoso, J Biotechnol Biomater 2018, Volume: 8
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The influence of seasons and ripening time on yeast communities of a traditional Brazilian cheese

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Traditional Minas cheese is an artisanal cheese manufactured by farmers on a small scale, utilizing raw bovine milk. The occurrence and effects of the dry and rainy seasons on yeast populations in traditional Serro Minas cheese, one of the most popular cheeses produced in Brazil, were studied over the course of 60 days of ripening. A total of 19 yeast species were identified via sequence analysis of the D1/D2 domains of the large subunit of the rRNA gene. Fourteen yeast species were obtained from cheese produced during the dry season and fifteen species were obtained from cheese produced during the rainy season. High diversity indices for the yeast species were determined for cheese manufactured during both seasons (average H'D=1.7 and H'R=1.5, respectively). The predominant species in Serro Minas cheese included *Debaryomyces hansenii, Kodamaea ohmeri and Kluyveromyces marxianus. Debaryomyces hansenii* 28.12 showed low lipolytic and high proteolytic activity. *Kluyveromyces marxianus* 83F and 60P demonstrated lipolytic and β-galactosidase activity, respectively. *Kodamaea ohmeri* 88A displayed low lipolytic and β-galactosidase activity. Maximal lipase, β-galactosidase and protease activity were observed at 20°C and pH 6.0, 30°C and pH 7.0 and 50°C and pH 6.0, respectively. Considering that D. *hansenii* 28.12, K. *ohmeri* 88A and K *marxianus* 60P together showed protease, lipase and β-galactosidase activity in this study, further research on the possibility of including these yeasts as part of a starter culture and research on their effects on the sensory properties of Serro Minas cheese merit more study.

Biography

Valeria Macedo Cardoso is a Pharmaceutical, with Master in Pharmaceutical Science and PhD in Food Microbiology (2011) from the Universidade Federal de Minas Gerais, Belo Horizonte, Minas Gerais, Brazil. She is a permanent Professor in the Pharmacy Department, Universidade Federal dos Vales do Jequitinhonha e Mucuri (UFVJM), Diamantina, Minas Gerais, Brazil. Her research focuses on the area of food microbiology and food quality issues.

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3RD WORLD BIOTECHNOLOGY CONGRESS

December 03-04, 2018 Sao Paulo, Brazil

Virus-like particles and oncogenic virus (HPV-HCV) applications in biotechnology

Rachel Siqueira de Queiroz Simoes
Oswaldo Cruz Institute, Brazil

Human papillomavirus (HPV) is the most common sexually transmitted disease and have been described in the *Alphapapillomavirus* genus. Clinical samples (n=100) were collected with a cervical cytobrush immersed in 10Mm Tris and stored at -20□. The participants, who spontaneously accessed gynecology ambulatory, were randomly selected and interviewed about demographic and socio-economic characteristics. Women were considered eligible for enrolment if they were sexually active regardless of age, were not pregnant, had not been vaccinated against HPV and had no previous history of cervical lesions. Women with an immune suppressive disease were excluded from this study. Cervical samples were analyzed by PCR amplification of L1 ORF (450bp). HPV-DNA samples were detected by consensus (MY09/MY11), Nested PCR (GP5+/GP6+) and specific primers (HPV16/18/31/45). Swab samples DNA quality was amplified by β-globin PCR primers (PC04/GH20). Restriction fragment length polymorphism (RFLP) assay patterns for mucosal HPVs were used to genotyping of high-risk HPV types. The ultrastructural cell morphology in SiHa (HPV-16) and HeLa (HPV-18) cell lines (3x106 cells) detected by electron microscopy were also investigated. Papillomavirus can also be used as viral vectors in the gene therapy and new therapeutic targets. In addition, our project analyzed nucleotide sequence similarity of animal papillomavirus types to their closest related PV types and HPV sequences deposited in the Gen Bank, molecular and epidemiology study as support for the development of HPV recombinant vaccines and virus-like particles (VLP). Therefore, another virus studied was Hepatitis C Virus (HCV) that affects more than 70% of the estimated 170 million people inducing chronic lesions hepatitis leads to severe fibrosis and cirrhosis, hepatic failure, or hepatocellular carcinoma. New biotechnologies in molecular biology as chimeric vaccine bivalent production using conserved peptide are possible candidate peptide vaccine against HCV infection.

Biography

Rachel Siqueira de Queiroz Simoes has completed her PhD in Tropical Medicine at Oswaldo Cruz Foundation. During her Postdoctoral studies, she worked with chimeric vaccines at Molecular Virology Laboratory and Human papillomavirus at Laboratory of Morphology and Viral Morphogenesis, Oswaldo Cruz Institute. As expertise in Biotechnology, her abilities in the field of biomedicine approaches a great experience at the Papillomavirus area. Her dedication to research resulted in a high productivity with publications in impact journals, courses and post-graduate activities. Recently, in 2017, she received honorable mention of best work during Advanced Symposium of Virology. And two consecutive times, she also received honorable mention at the HPV Congress in Rio de Janeiro 2015 and 2016. She is very requested an ad hoc reviewer of projects from funding agencies and journals. Currently, she is a Scientific Advisor and Organizer of the book of human and veterinary virology written two chapters.

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Scientific Tracks & Abstracts

Day 2

Jorge L Betancurt et al., J Biotechnol Biomater 2018, Volume: 8
DOI: 10.4172/2155-952X-C7-106

Evaluating the feasibility of the direct L-Ascorbic acid synthesis using a one-stage process and a single strain of *Pleurotus ostreatus*

Jorge L Betancurt, Juan M Parra, Diego A Montoya, Héctor J Osorio and **Susana Hernández**
National University of Colombia, Colombia

L-ascorbic acid (L-AA) also known as vitamin C is currently produced on a commercial scale by a complex and costly two-stage process which involves two chemical catalysis steps and two aerobic fermentation procedures. To simplify the industrial production of L-AA by a one-stage, single-strain process has been a major research goal for nearly three decades, but this has not yet been accomplished. In this study, the direct L-AA synthesis using a one-stage process and a *Pleurotus ostreatus* strain was evaluated on a laboratory scale. Inoculation of the strain for induction of mycelial growth was done on sucrose-asparagine (SA) and yeast malt extract (YM) media to determine the more suitable nutrient conditions. The vegetative cultures were grown in the dark at 25 oC for 10 days. Fungal mycelia were harvested from YM agar plates and the L-AA content was extracted with 5% metaphosphoric acid and analyzed using high performance liquid chromatography (HPLC). Our results show that invasive mycelial growth occurred only on YM medium. On a fresh weight (fw) basis, the *P. ostreatus* mycelia contain 97.17 mg/100 g of L-AA. Our findings indicate that the direct L-AA synthesis using a one-stage process and a single strain of *P. ostreatus* is feasible.

Biography

Jorge L. Betancurt is an undergraduate student at Universidad Nacional de Colombia Manizales Campus, Colombia, South America. I am expected to receive my Chemical Engineer degree in September 2020. I joined the Bioproducts Research Group of Susana Hernandez at the same University in February 2017 to work on the cultivation of Pleurotus mushrooms and quantification of vitamin C and provitamin A in *Passiflora species* cultivated in Colombia using HPLC. The purpose of the Bioproducts Research Groups is to provide information that can be applied in biotechnology to simplify industrial processes and solve health and nutrition problems..

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Wilker Ribeiro Filho, J Biotechnol Biomater 2018, Volume: 8
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The future of the biopharmaceutical and biotechnology market and research in Brazil with the next president (2019-2023) – getting ready

Wilker Ribeiro Filho
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Brazil has now about 208 million inhabitants and the country's constitution says that "every citizen has the right to access the public healthcare" and this make a permanent opportunity for pharmaceutical companies. According to SINDUSFARMA in its website's documents, in 2017 the Brazilian market was about US$ 18 billion being the #1 in Latin America, around the 8th in the world with 241 companies registered (144 national e 97 from abroad). Just the public investments and purchases though the national's Ministry of Health was about US$ 3.6 billion. Yet, the government's investment's depend on considerable volatile public policy's that may change depending on the government, which is not that different from other countries. From the year 2019 to the year 2023, a new president will rule the country when the pharma companies shall be aware of its intentions regarding the public healthcare system, public acquisition of drugs etc, so companies can get ready for new and bigger partnerships with the government or also new challenges. The public expenditure with healthcare has increased considerably in some aspects, specially to supply the patients with high cost medicines such as biopharmaceuticals and changes also may occur with public policies for funding science and technology projects, innovation programs' support and investments in education. As these activities are mainly performed in public institutions, with very low percentage of private investments, they are in the campaign's programs of the stronger candidates. Biotechnology is still considered a "technology of the future" in the country so the government still gives considerable attention to the matter, but less than it used to give up to 3 years ago. In this brief presentation I shall discuss possibilities for the next president term in Brazil, regarding public policies to come, how it can impact the biopharmaceutical healthcare support with the billionaire market of the public purchases, as much as the bioscience and technology public funding. By the time this presentation takes place, the new president will already be elected and interesting scenarios shall be possible to discuss.

Biography

Wilker Ribeiro is a biologist, PhD in Medical Science, specialist in pharmaceutical technology and MBA in Business Management. Experienced in public policies for industrial development of the biotech industry, businesses evaluation and management, innovation, building and managing triple helix teams with technical and C level participants, project's management and international strategic win-win relations. With the experience from lab tests to higher level management, has interest in relearning things from bottom and up, manage interesting and challenging businesses and/or science projects. Innovative, brings and forms new views and ideas when gathering "old" information with new ones, some yet to come, to improve competitiveness and results for partners, companies and other stake holders.

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Attenuated *Salmonella* strains have showed great potential as live vectors with broad applications in veterinary medicine

Luciana Helena Antoniassi da Silva
University of Campinas, Brazil

Salmonella belong to the Enterobacteriaceae family are enteric Gram-negative and facultatively anaerobic bacteria that comprises pathogens of worldwide economic and health importance. The symptoms range from gastroenteritis to severe systemic fevers they cause disease in several animals such as mammals, birds and reptiles. Attenuated *Salmonella* strains have been developed as live vaccines for humans and animals to prevent disease caused by *Salmonella* infections. By introduction of mutations in the genes or deletions of genes that are essential for metabolism, virulence or survival in the host organism. Live vaccine vehicles offer a powerful approach for inducing protective immunity against pathogenic microorganisms. Genetically engineered and attenuated agents provide a method for delivering heterologous antigens derived from other pathogens. Main objective was: characterization the *ihfA* and *ihfAB* mutants constructed from *S. enterica* Typhimurium strains marked with luminescence by introducing the *luxCDABE* operon using bioluminescence imaging technique, in which we assessed the dynamics of colonization of these mutants compared to the wild-type strain, confirming the attenuation profile our mutants. Methodology: One-day-old chicks and mice were orally immunized through crop of 0.1 mL with *Salmonella* Typhimurium wild-type group, single mutant *ihfA* group and double mutant *ihfAB* group. The control group was kept as nomimmunized control and was given 0.1 mL sterile PBS group. We compare the attenuation of serotype Typhimurium IHF mutants in two different animal models. Ours results show the attenuation after oral infection in these two animal models chickens and murine. Our findings suggest that future studies of both the chick and murine are needed to determine the role of this important microbial community in the differential development of gastrointestinal disease caused by *Salmonella* and on containing systemic spread of these organisms in different host species.

Biography

Luciana Helena Antoniassi da Silva has her PhD in Genetics and Molecular Biology. She has her expertise in molecular biology and strong experience in microbiology with emphasis on Virology working mainly with human and animal respiratory viruses. She has knowledge in biotechnology and genetic modification of microorganism like *Salmonella*.

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Calcium carbonate from bacteria isolated from soils

Sandra Patricia Chaparro Acuna
Pedagogical and Technological University of Colombia, Colombia

Ureolytic bacteria are microorganisms found in soils and in presence of urea and calcium they can produce calcium carbonate, a process known as microbiologically induced calcium precipitation (MICP). Twenty-five bacterial strains with urease activity were isolated from the garden, agricultural and stables soils. The three best strains were evaluated (8H, 9H and 13H) and of these 9H was selected due to the higher urease activity and calcium carbonate production. Molecular characterization showed that the chosen bacteria corresponded to *Sporosarcina pasteurii* with a similarity of 99%. Bacteria growth conditions were optimized. Culture media, other carbon sources addition, calcium chloride and urea concentration. The nutrient broth was the best media, followed by yeast extract and finally the tryptone, with $CaCO_3$ yields of 99.7%, 85.5% and 76.2%, respectively. The cost of the media at the laboratory level was established, verifying that the most economical media was nutrient broth. Of the additional carbon sources, sucrose, then glycerol and finally glucose stood out, with yields of 99.5%, 96.9% and 95.8%, respectively. When comparing these yields with those provided only with the nutritive broth, it was concluded that there are no significant differences and the addition of one of these would imply an increase in the costs of the media. Urea and calcium chloride optimum concentration was 5g/L. XDR results showed calcite (12.5%) and vaterite (87.5%).

Biography

Sandra Patricia Chaparro Acuna is in third year of her PhD studies in Chemistry Sciences. She has published more than 15 papers in some journals. She is currently working at Pedagogical and Technological University of Colombia at Colombia..

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Alkaline hydrogen pretreatment lignocellulosic biomass: Status, perspectives and energy policy

Alexandre Libanio Silva Reis
Federal University of Pernambuco, Brazil

Lignocellulosic biomass is a renewable and abundant resource suitable for the production of bio-based products such as biofuels and chemicals. However, because of its complex chemical composition, requires a process that enhances the release of sugars. Pre-treatment is an essential step to increase the efficiency of enzymatic hydrolysis of lignocellulosic biomass. The most widely used pre-treatment methods operate at high temperatures (160-290°C) and pressures (0.69 to 4.9MPa) and generate biological growth inhibitors such as furfural and hydroxymethylfurfural (HMF). Thus, the search for new approaches to an effective pre-treatment that operates in ambient temperature and pressure and minimize the generation of inhibitors was intensified. Among these methods, the alkaline hydrogen peroxide (AHP) has gained space because is effective for a wide range of lignocellulosic biomass, enabling high enzymatic hydrolysis efficiency. However, little is discussed in major literature reviews. Therefore, the aim of this study was to investigate the use of alkaline hydrogen peroxide (H_2O_2) as oxidative pre-treatment agent to improve the efficiency of enzymatic hydrolysis for different types of biomass and discuss the key points of the pre-treatment. Finally, the main challenges of this method for large-scale application are discussed. Also, for this talk, will be discussed the historical evolution of regional Brazil and state energy policy support for and the currently attractive social and economics of the production and use of ethanol from biomass.

Biography

Alexandre Libanio Silva Reis is a Bachelor's degree in Biological Sciences from the Federal Rural University of Pernambuco (2000), a Master's Degree in Biochemistry from the Federal University of Pernambuco (2004) and a PhD in Biology from the University of Pernambuco (2014). He is currently Administrative and Scientific Director of Fungi Nordeste Biotecnologia, working in the area of inovative and development of new nutraceutical products from the cultivation of filamentous fungi. He has experience in the field of biochemistry and biomass conversion, with emphasis on enzymology, purification, characterization, immobilization of proteins and genetics of fungi for alcoholic fermentation.

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Paper spray tandem mass spectrometry: Applications to drugs determination in body fluids

Heloa Santos, Ricardo A Bernardo, Boniek G Vaz and **Andrea R Chaves**
University of Goias, Brazil

Forensic science aims to identify the origin cause of a death or a crime, or evaluate the human behavior, generally applied to traffic safety and the operation of a motor vehicle, as well as to doping in sport, or to demonstrate an analysis of body fluids such as urine, blood and oral fluid (OF). Forensic toxicology has been applied in the elucidation of issues that occur in legal proceedings related to intoxications. It is important to choose the appropriate matrix for the purpose in cases where drugs of abuse are investigated. The OF and urine matrix including easy and non-invasiveness collection. OF is an indicator of recent drug intake and closer relationship to plasma free-drug concentrations than urine and the collection procedures can be done on-site under close supervision. The drug analysis in non-conventional biological fluids, such as OF and urine, is attracting interest due to recent legislation changes in Brazil and a greater police surveillance. However, complex matrix samples have a large amount of endogenous, exogenous and other interfering compounds. In this way, sample preparation is an important tool for rapid and sensitive analytical methods. Paper spray ionization (PSI) has emerged as an ambient ionization method for analysis in mass spectrometry (MS). This source has an easy operation, rapid analysis, low cost and it has demonstrated great potential in forensic science, but PS performance is dependent on the surface properties of the substrate (paper). Paper modified with graphene oxide (GO-paper) was applied for creatinine analysis in urine samples. The PSI-GO/MS method showed acceptable linearity (0.1-100.0 ppm) with R^2 values greater than 0.991. Precision values were between 1.1 to 6.8% and accuracy above 96.8%. Restricted access materials (RAM) are able to exclusion of endogenous compounds and extraction of analytes in just one step. So, another methodology was applied with internal surface reversed phase (ISRP-RAM) on the paper for proteins exclusion in complex samples by MS analysis. Catecholamines and antidepressants were identified by ISRP-RAM/MS with 98.9% of protein exclusion, linear range in 10.0-1000.0 ppb, precision values lower 15%, accuracy and recoveries between 85.6 and 101.9%. Another way to apply PSI-MS was with molecularly imprinted polymers (MIP) synthesized directly on the paper surface (cellulose membrane) for cocaine analysis. The membrane containing MIP was selective and had a greater signal intensity than chromatographic paper and non-imprinted polymers (NIP) by PSI-MS. MIP-PSI method was acceptable linearity (1-100 ppb) with R^2 values greater than 0.998. The methods showed accuracy and precision values below 15%, recoveries above 80%. The use of conductive polymers (CP) as a substrate in PSI-MS has applied some pharmaceuticals, abuse drugs and adulterants, metabolites and CP-paper showed higher absolute intensity signal compared to the conventional filter paper. The linearity and performance of CP-coated papers were demonstrated for a range of analytes, proving that CP-coated papers are alternative for use in the qualitative and quantitative analysis. In addition, the results were promising and analysis time by classical methods, such as liquid chromatography (LC-MS). All techniques were standardized and validated according to ANVISA's normative.

Biography

Heloa Santos has completed his Ph.D. in Chemistry at the age of 29 years from University of Espírito Santo (UFES, Brazil) and she had a split Ph.D. for one year at the department of forensic and investigative science in West Virginia University (WVU, US). She is postdoctoral research in Dr. Chaves´s group from the University of Goiás (UFG, Brazil). She worked with ambient ionization sources, such as paper spray ionization mass spectrometry (PSI-MS) and direct analysis in real time mass spectrometry (DART-MS). She has experience in body fluids analysis and method validation in forensic science. She has published 10 papers in reputed journals.

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Rayssa A Garcia, J Biotechnol Biomater 2018, Volume: 8
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Nanoparticles mediate dsRNA delivery to control the crop insect pest cotton boll weevil, *Anthonomus grandis*

Rayssa A Garcia
EMBRAPA, Brazil

Statement of the Problem: In past decades chemical pesticides are gradually losing effectiveness against crop insect pests, as well as Bt crops. RNA interference (RNAi) came as an alternative to overcome this problem. This control method works well in some insects through dsRNA oral administration but is not very effective against others. Despite great efforts, however, some insects, such as cotton boll weevil (CBW), *Anthonomus grandis*, have gut nucleases that degrade dsRNAs, hampering dsRNA cell internalization and RNAi response. This study offers a strategy to increase dsRNA stability and enhance dsRNA cellular uptake using chitosan nanoparticles coated with a surfactant.

Methodology & Theoretical Orientation: The optimal proportion of dsRNA:chitosan:surfactant to form a self-assembling nanoparticle was established by dynamic light scattering (DLS), which also provides the nanoparticle size and cargo. It was verified the nanoparticle resistance to CBW´s gut nucleases and then it was administered through oral delivery to CBW. The gene silencing was assessed by RT-qPCR. Nanoparticles were also dispersed on cotton leaves in order to analyze its wettability.

Findings: The dsRNA:chitosan:surfactant nanoparticle size is approximately 300nm with a positive charge of 25mV. The dsRNA coated with chitosan and surfactant is resistant to CBW´s gut nuclease degradation, which improves gene silencing through dsRNA oral delivery. Also, the nanoparticle coated with surfactant spreads in a uniform way in cotton leaves, when compared to non-surfactant-coated nanoparticles.

Conclusion & Significance: There is a necessity for an environmentally friendly strategy to control crop insect pests and the use of dsRNA coupled with chitosan in order to form self-assembling nanoparticles came as a green approach. This method of control is very effective against CBW and can be exploited to greenhouses and possibly cotton fields, making the control of this insect sustainable and less expensive. This strategy can also be applied to other crop insect pests.

Biography

Rayssa Garcia is a PhD student at the University of Brasilia, Brazil, in the program of Molecular Biology. She is under the orientation of Dr Maria Fátima Grossi-de-Sá at the Plant-Plague Molecular Interaction at Embrapa Genetic Resources and Biotechnology. Her master was focused on characterization and gene silencing of nucleases present in the gut of cotton boll weevil, *Anthonomus grandis*, an important crop insect pest. She also works with viroid-like dsRNAs that are known to improve gene silencing in different organisms. Now her studies focus on improving dsRNA stability and cellular uptake through the development of self-assembling nanoparticles, which are an environmentally friendly strategy to control crop insect pests and overcome dsRNA degradation by gut nucleases.

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Juan Pablo Pava Lozano, J Biotechnol Biomater 2018, Volume: 8
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New trends in the treatment of grade II furcation defects using second generation platelet concentrates

Juan Pablo Pava Lozano
National University, Colombia

The furcation defect is defined as the pathological reabsorption of interradicular bone that occurs in multi-rooted teeth in advanced stages of periodontal disease. Some surgical strategies to cover furcation defects and exposed roots include free gingival grafts, pedicle flaps, subepithelial connective tissue grafts and application of different biomaterial-based grafts. The Platelet Rich Fibrin (PRF) has different characteristics like a high concentration of platelet and leukocytes, as well as fibrin/fibronectin and a low concentration of thrombin that makes flexible its structure, facilitating the uptake of cytokines and migration of other cells involved in the regenerative process. Two furcation defects on 47 and 46 teeth grade I/II (n=2) respectively were evaluated from a healthy male patient 46 years-old who was receiving dental treatment on dentistry Faculty of Antonio Nariño university. He was treated with coronally displaced flap (CDF) and PRF. A mucoperiosteal partial superficial thickness flap was lifted up from affected teeth and PRF was obtained from a patient blood sample (10mL) in a glass tube without anticoagulant, which was immediately processed. The flap was repositioned to coronal level beyond the cementoenamel line with 2 PRF membranes placed on the root surfaces and sutured. Morphometric and clinical measurement was performed 6 months after the procedure to analyze the interradicular molar zones. RESULTS The CDF with PRF performed showed presence of hard and soft tissues evaluated clinically and tomographically with a significant coverage of $p < 0.05$ in the fornix zones of the molars. On the interradicular area morphometric values shows that tooth 46 there was a decrease (0.0005) of -1.127 (2.104 ± 0.06 vs 0.977 ± 0.07) of defect and tooth 47 (0.0047) of -0.850 (1.891 ± 0.04) vs 1.041 ± 0.05) CONCLUSION Use of CDF together with PRF can be considered as a treatment option because it achieves a ostensibly osteoconductive, biocompatible function and reduces patient recovery time improving the prognosis of established defects.

Biography

Dr. Juan Pablo Pava Lozano is currently working as Periodontist at the University Antonio Nariño, member of Bucal Innovation group endorsed by COLCIENCIAS. Dr Pava completed his specialization studies in Periodontics at the National University of Colombia. He then worked as Invited professor at the University of Valle. Author "Clinical description of the tissue response to intraoral tattoos (new forms of body art): Pilot study". Dr Pava has presented as academic speaker in some international conferences as XXII International congress of dental iberolatinamerican federation (Puerto Vallarta Mexico may 24-27/2017), IX Metropolitan dental congress (Caracas Venezuela may 28-31 2015) and his investigation lines reflect his research interests in tissue engineer.

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Utilization of Tissue culture and laser Capture (LCM) as Acquire innovative biotech strategies for Nematode control in cotton

Sanaa Haroon
Fayoum University, Egypt

Root-knot nematode (*Meloidogyne spp*.) is one of the major pests all over the world, causing yield losses to many economic crops. Application of biotechnology to nematode control tactics influence applied nematology in diverse ways, from nematode identification to the development of resistant cultivars that improve effectiveness and increase the number of management strategies and allow refinement of old technique. The new advanced LCM and tissue culture techniques was used in cotton as economically important crop that heavily infected with the root-knot nematode, M. incognita race 3 exhibited histological responses. Microscopic examination of the infected cotton roots detected the second stage juveniles (J2) that penetrate the cotton roots at their tips, migrated in the root cortex and had orientated parallel with the longitudinal root axis towards the vascular region, J4 were observed very close to the stellar region. The young females were noticed within the cortical layers, inserting their anterior parts inside a cluster of giant cells, while mature females were found with their egg-masses embedded within the root tissues, causing a great pressure on the cortical layer, endodermis, per cycle and stellar region. The crushing effect of the exhaustive giant cells and the developing nematodes resulted in malformation and destroying of the vascular tissues and their neighboring cells. Such abnormalities in the anatomical structure of the roots interfere greatly with the function of the root system. Giant Cell morphology and biochemistry shown large number of nucleus also the measurement of adult female body was different in resistant and susceptible varieties of cotton plant. Several genes expressed in giant cells of susceptible plants that didn't expressed in resistant cultivars, Promoters of some of these genes will allow targeting of agents to block giant cell so the nematode will dying from starving.

Biography

Sanaa Haroon, Molecular Nematologist MS. PhD Florida University, USA. Director of Nematology and Biotechnology lab, Fayoum University, Egypt. the Egyptian Representative in the International Federation of Nematology till now. Published 72 papers. She has Awarded by the Prime Minister in the Global Environmental (Biocontrol), the Excellence prize 2007 in Molecular nematology area and National Promotion for Science from the academy of science. Participated in 18 international conferences. Grant coordinator of 16 projects through her scientific life (USA, Germany, Holland, Sweden, European Union). Member in 9 scientific organizations. Has international link to (Germany, Holland, USA, Sweden, Australia, Italy and South Africa).

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