EuroSciCon

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Theme: Exploring the recent advancements & its applications in Agriculture & Food Chemistry

Abstract

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Ion-Chromatography-High Resolution Mass Spectrometry (IC-HRMS) for the detection of glyphosate and its metabolites in food of animal origin

Sara Pensari
Italy, U K

Glyphosate and glufosinate are broad spectrum herbicides, widely used in agriculture and in inhabited or industrialised areas, whereas aminomethylphosphonic acid is a degradation product of glyphosate. In 2015, the International Agency for Research on Cancer reported that glyphosate is a probable carcinogenic. In 2017, however, a scientific opinion of the European Chemicals Agency concluded that glyphosate is not proven to be carcinogenic, mutagenic or to have negative effects on reproduction. Nevertheless, aminomethylphosphonic acid was not considered. Due to their chemical-physical characteristics these molecules present difficulties that have not yet allowed routine monitoring to be carried out. For these reasons, we developed and validated a simple and versatile liquid extraction before the IC-HRMS analysis of three different complex matrices: honey, bass fish and bovine muscle. Among the satisfactory validation parameters, the LOQs in the range of 4.30-9.26 ng g-1 demonstrated high method sensitivity, compared to the few works present in literature.

- **Antiproliferative and antioxidant effect of polar hemp (Cannabis sativa L.)**

Volpe MG
Italy, U K

The health benefits and nutritional values of hemp products are attributed to its unique fatty acid composition and bioactive minor components, including polyphenols. Polyphenolic compounds from a large variety of plant foods, spices and beverages have been shown to inhibit or attenuate the initiation, progression and spread of cancers both in cells *in vitro* and in animals *in vivo*. In the present investigation, we aimed at extracting and characterizing the phenolic compounds from seed, flour and oil obtained from a single hemp *cultivar*, Fedora, which is a monoicous EU registered hemp genotype. Furthermore, we assessed their potential effects on modulating cell death and cell growth in Caco-2 cell line, deriving from a human adenocarcinoma and largely used as a model resembling the intestinal epithelium.

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Abstract

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Gelation of UHT milk: An applicative study

Paolo D' Incecco
Italy, U K

Stability of UHT milk during storage is a crucial aspect for both consumers and manufacturers, and gelation represents the main cause of product recall from the market. Factors causing milk gelation are not fully understood yet but a primary responsibility is attributed to bacterial peptidases remaining active in milk after thermal treatment. These peptidases are encoded by aprX gene that is mostly harboured by psychrotrophic bacteria. Thus, storage of raw milk at low temperature causes an increase in this population and, ultimately, in the enzyme density. In gelled UHT milk, these peptidases showed a specific proteolytic activity on k-casein, with the release of soluble peptides here proposed as early indicators of milk gelation onset. An applicative study was carried out to validate this approach and a Capillary Zone Electrophoretic method was developed to evaluate the presence of these markers in milk. Three bacterial strains (Pseudomonas poae, Pseudomonas fluorescens and Chryseobacterium joostei), isolated from raw bulk milk collected at an industrial plant, were inoculated (103-104 CFU/mL) in microfiltered milk and incubated at 4 °C for up to 6 days.

Design thermal comfort in greenhouses environment

Abdeen Omar
Italy, U K

The move towards a de-carbonised world, driven partly by climate science and partly by the business opportunities it offers, will need the promotion of environmentally friendly alternatives, if an acceptable stabilisation level of atmospheric carbon dioxide is to be achieved. This requires the harnessing and use of natural resources that produce no air pollution or greenhouse gases and provides comfortable coexistence of human, livestock, and plants. This study reviews the energy-using technologies. This device helped to reduce the energy consumption of the greenhouse whilst providing a pleasant environment for the plants inside the greenhouse. The system was designed taking into account the meteorological conditions, which affect the environment inside the greenhouse. The performance of the system was monitored over a period of time by measuring the temperature and relative humidity of the greenhouse. Results of the monitoring have shown that the system was able to provide comfortable conditions (temperatures of 16-26oC and relative humidity of 65%) suitable for the plants grown in the experimental greenhouse.

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Abstract

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Stirred yoghurts fortified with colostrum – influence of colostrum addition on its acidification process and rheological properties

Adraina Bomba
Poland

Colostrum, appriciated for its antymicrobial and immunostymulatory properties, was investigated as an additive for production of functional yoghurts. Firstly, acidification process and microbial quality were tested in order to check if the colostrum interferes with acidification process during yoghurt manufacturing or if it inhibits growth of St. thermophilus variants.tumor progression and treatments of human malignancies. A pharmacologic agent for treating and/or preventing cancer, among other diseases and conditions, and particularly breast, prostate, and pancreatic cancer, in humans and animals. The novel pharmacologic agent is an isoflavonoid or isoflavonoid mimetic covalently attached to a cytotoxic pharmacophore that, preferably has the ability to conjugate with a metal salt to form a more potent metal complex, particularly a Au (III) complex and other complexes of Platinum, Palladium, Ruthenium, Copper etc.

Therapeutic ketosis and the broad field of applications for the, ketogenic diet: Ketone ester applications & clinical updates

Raffaele Pilla
Italy, U K

It has been recently shown that nutritional ketosis is effective against seizure disorders and various acute/chronic neurological disorders. Physiologically, glucose is the primary metabolic fuel for cells. However, many neurodegenerative disorders have been associated with impaired glucose transport/metabolism and with mitochondrial dysfunction, such as Alzheimer's/Parkinson's disease, general seizure disorders, and traumatic brain injury. Ketone bodies and tricarboxylic acid cycle intermediates represent alternative fuels for the brain and can bypass the ratelimiting steps associated with impaired neuronal glucose metabolism or lack of carbohydrate ingestion. Therapeutic ketosis leads to metabolic adaptations that may improve brain metabolism, restore mitochondrial ATP production, decrease reactive oxygen species production, reduce inflammation, and increase neurotrophic factors' function. It has been shown that KD mimics the effects of fasting and the lack of glucose/insulin signaling, promoting a metabolic shift towards fatty acid utilization. In this work, the author reports a number of successful case reports treated through metabolic ketosis.

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Abstract

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The Seasonal, Rainfall and temperature variations changing the flavor, growth as well as potentional medicinal values in teas as they produce

Albert Robbat
Boston

Many tea farmers are already adapting their practices to the changing climate. One approach that Ahmed has found to be promising is agroforestry, in which tea is grown in a forest-like ecosystem with trees and shrubs instead of as a monoculture in a terraced garden. Agroforestry provides tea plants with more shade, which helps to protect them from the heat of the Sun, and also reduces the amount of moisture that tea plants lose by transpiration, protects them from frost, and helps to prevent soil erosion. If legumes are incorporated into the forest, soil can be enriched through the actions of nitrogen-fixing microorganisms that live in the roots of such plants. Ahmed has shown that agroforestry seems to improve the quality of the resulting tea, by affecting the level of phenolic compounds it contains. “For tea agroforest, there’s less of a drop in the level of epigallocatechin gallate and other catechins, compared to the terraced gardens,” she says. Farmers can also grow tea plants from seed, rather than cuttings. Such plants have a deeper, more resilient root system, which helps them to survive drought and prevent soil erosion.

Watery saliva secreted by the grain aphid sitobion avenae stimulates aphid resistance in wheat

Yong Zhang
Julian Chen
China

Wheat is very important cereal grains in world food supply. The grain aphid, Sitobion avenae, is one of the most dominant and destructive pests of wheat. Aphid causes damage by sucking phloem sap and also as vector of barley yellow dwarf virus, causing huge negative impact on quality and quantity of wheat production. Application of herbivory induced plant defense is a sustainable and promising approach to control pests. In our study, the role of S. avenae watery saliva in resistance induction was examined by infiltrating aphid saliva into wheat leaves. Gene expression studies showed that watery saliva infiltration in wheat leaves induced a strong salicylic acid-responsive defense but moderate jasmonic acid-dependent defense. Feeding on treated wheat leaves, compared with untreated leaves, aphid was decreased significantly by the number of nymphs daily reproduced and the intrinsic rate of increase of the population of S. avenae (rm). In a choice test, saliva-infiltrated leave had a repelling effect on aphid. Additionally, electrical penetration graph results showed that saliva-treated wheat leaves had negatively affected aphid’s feeding behavior. These data provided direct evidences that salivary components of S. avenae are involved in the induction of wheat resistance against aphids.

Sequencing and analysis of transcriptome in *Gleditsia sinensis*

Zen Feng
China

Gleditsia sinensis Lam. is one of the alleged “50 fundamental herbs” used in traditional Chinese medicine. G. sinensis has been used as a medicinal herb in China and Korea and have antitumor properties. The thorns of G. sinensis (Leguminosae) have been used in traditional medicine for the treatment of inflammatory diseases including swelling, suppuration, carbuncle and skin diseases. However, the basic biology on Gleditsia sinensis Lam. is relatively weak, especially the molecular mechanism of the formation of the thorns has not been reported, which seriously restricts the exploration of key gene resources, the metabolic mechanism of secondary metabolites and the genetic improvement of G.sinensis. With the increasing perfection and maturity of high-throughput sequencing technology and the cross-application of bioinformatics and molecular biology, high-throughput sequencing technology has become the mainstream means of transcriptome sequencing and gene expression research. In this study, the shoots of aspecific plant without thorns and the shoots &tender thorns of a normal tree were used as the experimental materials. The transcriptome sequencing of G.sinensis was done by high-throughput sequencing technology, and the results were systematically analyzed for the biological information, laying a genetic foundation for digging out the genes related to the thorn formation of G.sinensis. Comparing all-unigene with KOG database, 25 different functional annotations were obtained.

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Food-grade Pickering emulsion stabilized by protein-based particles obtained from a lupin variety (AluProt-CGNA®) as a system for encapsulating astaxanthin

Cezar Burgos-Diaz
Chile

Numerous studies have shown that astaxanthin has a number of benefits for human health. Unfortunately, the use of astaxanthin oleoresin as food ingredient is limited owing to its poor water solubility in aqueous matrices and susceptibility to degradation through the development of oxidation reactions, which may be promoted during thermal treatment or storage. Encapsulation technology may be a way of solving these problems. Among encapsulation methods Pickering emulsion (O/W) could be an alternative for protecting this appreciate molecule. Therefore, the aim of this study was to investigate the encapsulation of astaxanthin using a food-grade Pickering emulsion system to enhance its stability during spray-drying. Astaxanthin was microencapsulated in a Pickering emulsion and then subjected to a spray-drying process. The emulsions were stabilized by protein-based particles obtained from the protein-rich lupin variety AluProt-CGNA® (LPIA). The Pickering emulsion stability, microstructure, physicochemical properties and astaxanthin concentration after spray-drying process were investigated.

Changes in quality and microbial succession of lightly salted and sugar-salted blunt snout, bream (megalobrama amblycephala) fillets stored at 4 C

Yan Li
China

The effect of a low concentration of salt and sugar on the quality and microbial succession in blunt snout bream (Megalobrama amblycephala) fillets was assessed by sensory analysis, total volatile basic nitrogen, biogenic amines, K value, total viable counts (TVC), 16S rRNA gene analysis, and Illumina MiSeq PE300 high-throughput sequencing. Fish samples were left untreated (control), treated with 1.8% salt (T1), or treated with 1.8% salt plus 0.9% sugar (T2). Consequently, salted and sugar salted treatments extended the shelf life of bream fillets by 2 days, which retarded the increase of total volatile basic nitrogen, putrescine, cadaverine, and total viable counts. The putrescine and cadaverine concentrations of T2 were significantly ($P < 0.05$) higher than T1 after day 10. Brachybacterium spp. was the major initial microbiota of bream fillets. As storage time progressed, shifts in the microbial community and lower diversity of microbiota were observed. Pseudomonas spp. and Shewanella spp. were major genera in the spoiled control group. Pseudomonas spp., Shewanella spp., and Pseudoalteromonas spp. became the main spoilers in the T1 and T2 groups. The top three dominant species Pseudomonas versuta (16/84), Shewanella putrefaciens (12/84) and Aeromonas sobria (11/84) were used and inocluated in sterile flesh blocks.

Effective detection and removal of tetracycline residues from contaminated food samples by CNS/Zr-absorbents

QingFeng Yang
China

CNS/Zr, a novel adsorbent, is applied to determination and removal of Tetracycline residues (TC) from the contaminated food samples. The CNS/Zr adsorbent was successfully fabricated via solvothermal synthesis and characterized by Scanning electron microscope (SEM), Transmission electron microscope (TEM), Powder X-ray diffraction patterns (PXRD), Fourier-transform infrared spectra (FTIR), and the X-ray photoelectron spectroscopy analysis (XPS). The obtained adsorbent of CNS/Zr was used to adsorption and removal of TC, and the influence of pH, adsorption time, and temperature was also investigated, and the results indicate that the adsorption capacity of CNS/Zr for TC at pH 2-3 under room temperature is higher than that at the other pH. What's more, adsorption behavior of CNS/Zr exhibits a good fitting to Freundlich isotherm model and Temkin isotherm model, indicating the adsorption process of TC on CNS/Zr is a multi-step process. The maximum adsorption capacities of TC are higher than that of the most reported adsorbents. Moreover, due to it's chemiluminescence characteristics, the CNS/Zr adsorbent is used as a novel sensor for detection of TC

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Abstract

Phosphorylated peptides from antarctic krill (euphausia superba) ameliorated osteoporosis by activation of osteogenesis-related mapk and pi3k/akt/gsk-3β pathways in dexamethasone-treated mice

Lihua Han
China

Glucocorticoid is widely used as an effective therapy for alleviating chronic inflammatory and autoimmune diseases. However, long-term use of glucocorticoids is accompanied by severe side effects, including increased incidence of osteoporosis. In the current study, the effects of phosphorylated peptides from Antarctic krill (PP-AKP) on osteoporosis induced by dexamethasone were investigated in vivo. Results showed that PP-AKP significantly improved bone turnover status, reduced bone loss and degeneration of microarchitecture, in addition to accelerated bone formation. Further mechanism investigation revealed that PP-AKP suppressed the mRNA expression of MKP-1 and CB1, which activated the downstream osteogenesis-related MAPK and PI3K/AKT/GSK-3β signaling pathways through elevation of the expression of the key factors p38, ERK, PI3K, AKT and β-catenin, in addition to osteogenic nuclear transcription factors Runx2 and OSX. Additionally, reduction in number of adipocytes and an increase in trabeculae in the bone marrow cavity, in addition to a decrease in abdominal adipose further verified that PP-AKP augmented bone formation with a comparable reduction in the accumulation of fat. Our results suggested that PP-AKP might serve as a potential functional ingredient against osteoporosis.

Antarctic krill oil improves articular cartilage degeneration via activating chondrocyte autophagy and inhibiting apoptosis in osteoarthritis mice

Kai Wang
China

Osteoarthritis (OA) is a major debilitating disease characterized by cartilage degeneration. In the current study, the in vivo effects of Antarctic krill oil (AKO) on cartilage degeneration in destabilization of the medial meniscus (DMM) model mouse were investigated. Results showed that AKO clearly improved the cartilage structure as evidenced by increased cartilage thickness and cartilage area and decreased histological OARSI scores. Safranin O/Fast Green staining showed that AKO remarkably inhibited the loss of cartilage matrix in mice with OA. Chondrocytes play important roles in regulation of cartilage homeostasis. AKO maintained the normal chondrocyte phenotype by downregulating hypertrophy markers such as Ihh, Col10α1, Runx2, and MMP-13 and restoring the expression of chondrocyte-specific genes, including Acan, Col2α1, and Sox9. In addition, expression of key genes related to autophagy, including LC-3B, Beclin-1, ATG-5, and BNIP-3 were significantly enhanced after treatment with AKO. The p53-dependent mitochondrial apoptotic pathway plays an important role in regulating chondrocyte apoptosis. We observed that AKO suppressed the expression of key genes expression in this pathway, such as p53, Bax, Bid, cytochrome c, caspase-9, and caspase-3. Furthermore, AKO enhanced the expression of anti-apoptotic genes, including Bcl-2 and Bcl-xl. These findings might provide a theoretical basis for the application of AKO as a potential chondroprotective bioactive compound or functional food.

LOSS of food nutrients associated with cooking pots

Onyeka E U
Nigeria

There is abundant evidence that cooking reduces the level of micronutrients in foods, but the reductions are influenced by among other factors the type of cooking pot used in cooking the food. We conducted a research to determine the influence of various cooking pots on micronutrients of cooked foods. Seven pots and five types of food stuffs were used for the experiments. Cooking pot forged from titanium offered best retention (protection) of micronutrients while aluminum pot offered the least retention irrespective of the food cooked. In the course of our investigations we also noticed that titanium and enamel cooking pots require less quantity of water in cooking. The use of less water to cook might have impacted better taste of food since the food will be nutrient-dense; having considerable lower moisture content. High food nutrient protection by titanium pot was also evidenced in high ash content of food cooked in it. Our research has evidenced that cooking pot can have a strong impact on people's morbidity since some can aggravate hidden hunger, that is, micronutrient malnutrition. Hidden hunger is a subtle enemy that drains away health and vitality unnoticed until it is too late to reverse.

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Abstract

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Chemical investigation of algerian propolis and evaluation of its biological activities

Salah Akkal
Algeria

Propolis is a resinous material that bees collect from the buds and barks of some trees, especially coniferous trees. This natural mastic is rich in active principles, especially phenolic compounds that have major therapeutic properties the objective of this study is the isolation and identification of chemical constituents of Algerian propolis and the evaluation of its antioxidant and anticholinesterase activities. Propolis was collected from the north-east of Algeria (Constantine). Extraction was performed using maceration in solvents of varying polarities. Antioxidant activity was evaluated using four methods namely CUPRAC, β-carotene-linoleic acid, DPPH and ABTS radical scavenging assays. Anticholinesterase activity was determined against acetylcholinesterase (AChE) and butyrylcholinesterase (BChE) enzymes. Chemical investigation of ethyl acetate extract allowed the isolation of six compounds including caffeic acid derivatives, flavonoids and diterpenes. Structure elucidation was done using 1H-NMR, 13C-NMR and MS techniques and by comparison of obtained data with those reported by the literature. Among all tested extracts ethyl acetate extract exhibited the highest lipid peroxidation inhibitory activity. The DPPH, ABTS, and CUPRAC assays supported this finding. While, petroleum ether and chloroform extracts indicated good anticholinesterase activity. These results showed that the tested extracts can be considered as sources of food additives, as well as moderate anticholinesterase agents.

Functional properties of noodles with mango kernel flour

Remina S Sabado
Philippines

The utilization of mango kernels has become an interest for food scientists as they are commonly discarded as wastes. However, studies showed that mango kernelscontain beneficial bioactive components. Hence, theymay be used as a functional ingredient with common food products. In this study, mango kernels were utilized into flour that was used in the formulation of noodles as a source of dietary fiber and phytonutrients. The study attempted to investigate the functional properties of noodles with different amounts of mango kernel flour (MKF). Seeds from ripe carabao mangoes (Mangifera indica L.) were processed by drying, decortication, pulverization, and sieving to produced MKF that was incorporated in noodles with different amounts (0%, 5%, 10%, 15%). Proximate composition and total dietary fiber content of the MKF and noodle samples were analyzed following the AOAC methods. Physicochemical properties in terms of cooking quality, color, texture, and microstructure analysis were also determined. Phytonutrient content and antioxidant activity of the MKF and the noodles with the most acceptable formulation were also analyzed. Results showed that MKF is a good source of dietary fiber (5.0 g/100g), polyphenols (6888.69± 0.14 mg/100g), anthocyanidin (77.09 ± 1.61 mg/100g), and flavonoids (55.44±0.37 mg/100g). The total dietary fiber content significantly increased as the amount of MKF in the noodles increased, 1.72 to 3.13 g/100g. In terms of the cooking quality, cooking time and water absorption decreased while cooking loss increased as the substitution of MKF in noodles increased

SPEAKER SLOTS AVAILABLE

Developing of trilobatin dihydrochalcone as a new-style of phytochemical agent

Mwafaq Ibdah
Algeria

The increasing prevalence of several diseases, like Alzheimer's disease, obesity, cancer, and diabetes, in humans in recent decades worldwide, accompanied by rising concern regarding the safety of many synthetic chemistry-based pharmaceuticals, has raised public demand for phytochemical-based medicines. This in turn has led to increasing interest in metabolic engineering as an approach to produce such natural products on an industrial scale, which has the potential to decrease production costs of, e.g. desired dihydrochalcones. We note that fruits accumulating high level of phytochemicals including flavonoids and dihydrochalcones that may play a key role in reducing chronic disease risk. We have applied a set of molecular and biochemical tools to identified reactions and enzymes leading to the biosynthesis of dihydrochalcones. We recently cloned and biochemically characterized three key enzymes in the dihydrochalcone biosynthesis pathway; a p-coumaroyl-CoA double bond reductase that converts p-coumaroyl-CoA into p-dihydrocoumaroyl-CoA, chalcone synthase that accepted p-dihydrocoumaroyl-CoA, in the presence of malonyl-CoA, leading to production of phloretin, and a specialized phloretin-4'-O-glycosyltransferse which glycosylated phloretin in the presence of UDP-glucose into trilobatin The proof of our concept have open the possibility for developing new-style of natural phytochemical for a growing market of population suffering from "modern" diseases.

Agar-calcium pectinate beads as a covalent immobilization support

Marwa Wahba
Egypt

Enzymes play important roles in food industries. Enzymes suffer from their low stability. The separation of soluble enzymes from the reaction mixture is also tedious and expensive. Thus, industrial enzymes should be immobilized onto solid supports as being attached to such solid supports will facilitate the removal of these enzymes from the reaction mixture. Furthermore, the immobilization process is known to enhance the stability of the enzymes. Calcium pectinate (CP) was recently employed as a solid support to covalently immobilize enzymes. Nevertheless, CP suffers from instability in the presence of cations. Agar was added to pectin during the preparation of the calcium pectinate (CP) beads in order to overcome the CP's instability in the presence of cations. The significant positive effect imparted by the addition of agar was also confirmed from the ANOVA of the Box-Behnken Design (BBD). The BBD was employed to investigate the optimum agar concentration and also the optimum PEI concentration and pH that would allow for the attainment of the highest observed activity of the immobilized β-gal. The optimized agar-CP beads immobilized a whole of 7.96±0.18U β-gal/g beads. Moreover, these beads retained 86.84±0.37% of their initial activity after 13 reusability cycles which proved their operational stability

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Abstract

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Cadmium contamination in consuming foods and biological samples in Iran

Md. Hadi Dehghani

Iran

Cadmium is an important environmental contaminant. High consumption of chemical fertilizers and industrial activities in recent decades has caused people to be worried about exposure to cadmium. There is no policy for environmental and biological monitoring of exposure to cadmium in the general population in Iran. This study was aimed to review cadmium content in consuming foods and biological samples in Iran, systematically. We developed a comprehensive search strategy and used it to search on Web of Science, Scopus, Science Direct, and Scientific Information Database until 28 December 2016. The totals of 285 articles were identified and finally 31 original papers were selected. Cadmium contamination was found in Iranian food groups such as rice, cereal and legumes, canned tuna fish, vegetables, fruit juice, and egg. This study showed that cadmium amount in 75% of the consumed rice samples (domestic and imported) was higher than the maximum limits approved by institute of standards and industrial research of Iran. Lettuce samples in Yazd were recorded the highest concentration of cadmium compared to other studies. In addition, high amount of cadmium was observed in the blood of the general population. Regarding the cadmium contamination in food and blood samples in Iran, policies must be adopted to reduce exposure to cadmium through different matrices as much as possible

The self-assemble nanoparticles of ophiopogon japonicus extracts to reduce ROS and NO induced by LPS from the molecular level analysis

Yi Cheng Ho

Taiwan

Ophiopogon japonicas(OJP) is a kind of food ingredients for generally considered to improve immunity in Taiwan. The extract of OJP also has the effect of improving immunity and is used in the treatment of Chinese medicine. The nanoparticles (NPs) produced by chitosan (CS) and OJP water extracts after self- assembly have good cell affinity and have the ability to scavenge the oxidative nitrogen scavenging activity generated by LPS. And these NPs can promote cell proliferation. We used the reaction surface method (RSM) to analyze the optimum parameters of the most chitosan and OJP extracts,and found the optimal composition parameters through cell experiments. We performed cytotoxicity test, ROS assay, intracellular NO assay, and quantitative PCR to reduce the expression of MCP1, MIP2a, iNOS, COX2, TNF-α and other genes induced by LPS, further flow cytometry and antibody confirmation of expression at the protein level

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Abstract

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Electrification in Georgian agriculture sector as a factor of state regional competitiveness

Demur Chomakhidze
Georgia

The article provides a brief retrospective analysis of the level and dynamics of Georgia's electrification from the beginning of the process up to today. It is said that the production and consumption of electricity per inhabitant throughout the country reached its maximum in 1989. As for these indicators in agriculture, it is far worse. However, it is noteworthy that in the last years of the country's independence the situation has been improved. The research has been provided throughout the country as well as in agriculture. The article provides suggestions for improvement of the situation. Namely to increase the level of electric power

Development of low arsenic accumulating rice variety for safer human consumption

Debasis Chakrabarty
India

Arsenic (As) contamination of the environment has emerged as a serious problem. One of the findings was that partitioning of arsenic in rice grains showed major variation in diverse germplasm of rice. The molecular basis for phenotypic divergence in the different or contrasting genotypes is still unclear. Several QTLs for variations in the As accumulation in different rice tissues have been already mapped in rice genome. However, they are failed to elucidate the mechanism related to the variability in As accumulation among different rice genotypes and limiting molecular breeding program. Transgenic technology is being widely enforced for improving heavy metal tolerance in plants. We have also identified several candidate genes that are involved in arsenic metabolism in rice and generated several transgenic rice plants that accumulate less arsenic in their grains. Our study described the principal understanding on the molecular basis of arsenic toxicity and accumulation in plant parts. And also covered the transgenic and bioremediation approaches to minimize As accumulation in rice which further reduces food chain contamination. The data suffice to mitigate the effects of As toxicity as much as possible by reducing the As accumulation in rice grain. We described the measures to decrease As accumulation in rice, and to understand the mechanism and transport of As uptake, its transport from root to shoot to rice grain, its metabolism, detoxification as well as the mechanisms lying behind its accumulation in rice grain. We proposed various checkpoints which can be targeted to reduce As accumulation in rice grain.

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Implications of thermal processing on bitterness development in custard apple (Annona squamosa L) fruit pulp: Biochemical and Sensory characteristics

Revathy Baskaran
India

Custard apple has a sweet, granular pulp with pleasant flavour. Several constraints exist in industrial processing of custard apple, including enzymatic browning and development of bitterness on heating beyond 55˚C. Preserving the pulp using conventional method i.e., heat, is practically impossible. This presentation will define reasons for development of bitterness in the pulp on thermal processing and effect of enzymic clarification of fruit pulp on bitterness. Extraction and characterization of free, bound and esterified phenolics of both fresh and heated pulp were analyzed by UPLC-ESI-MSMS. There was an increase in both free and bound phenolics on heating. Particularly, the precursor ion at m/z 277, was found to increase ~ 6 folds and tentatively identified as p-decycloxybenzoic acid (PDBA). The contribution of this compound to sensory parameters is still unclear. Further, partially purified fresh and heated tannin fractions were subjected to High Resolution Mass Spectrometry (HRMS). In heated sample, a new precursor ion m/z 139 (M+H) was found at a very high intensity, with fragment ion at m/z 121, which was probably formed by the loss of a water molecule M+H-H2O [M+1-18]. Based on the mass to charge ratio and the fragmentation pattern, m/z 139 was tentatively identified as p-hydroxybenzoic acid (PHB), which is well known to have an acidic and bitter taste. Hence, the perceived bitterness in custard apple pulp on thermal processing is probably due to the synergistic effect of phenolic acids, flavanols and certain low molecular weight compounds formed by heat-induced chemical reactions.

Panelists' performance during the sensory analysis of black ripe table olives

A. López
Spain

Sensory properties of foods are becoming an aspect of progressive interest for the consumers' appreciation. In this context, the panel test is then becoming an essential tool for the evaluation of products, at the same level than any other instrumental equipment. However, its results are based on the differentiation capacity of panelists. Therefore, apart from the product characterization, panel/panelists' performance study is an important tool for assuring an adequate evaluation. In this research, the effect of panelist on the evaluation of the samples and their interaction with product or session were evaluated. Also, the profile of each panelist with respect to the whole panel compared, using the overall average scores and the eggshell plots. In addition, the contribution of each panelist to each descriptor for the discrimination of products was studied. Finally the correlation loadings were used to complement the information and discover the abilities of panelists with respect to each descriptor. The work allowed finding the individual performance of the panel members, the attributes which required further training and those that were correctly differentiated. Therefore, the work was a useful tool to improve the panel performance and the confidence in the panel results

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Abstract

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Plant-based edible coating with antioxidant properties to improve the postharvest in fruit.

López, M.D.

Chile

Application of coatings immediately after harvesting is a technique that has been successful for different reasons (decrease water loss, increase antimicrobial properties and delaying senescence). Among the different applications of coating, the edible coatings based on plant extracts are the latest trends proposed for conservation and improvement of production quality on horticultural.

Maqui plant (Aristotelia chilensis), is a native purple-black berry distributed in Chile and Argentina. The fruit contain a rich variety of anthocyanins and their leaves are rich in polyphenols as well.

The aim of this study was to development a coating based on maqui leaf extracts and its evaluation on fruit nutritional and quality responses during the postharvest. To carry out this work, two of the main fruit that are exported from Chile were chosen, sweet cherry and blueberry. Different coatings were developed with alginate and combining alginate with maqui leaves extracts, and also with ascorbic acid. Untreated fruit was set in the assay as control. The coated fruits were maintained at 2 ºC for 24 days. The firmness, total polyphenols, total anthocyanins and antioxidant activity was monitoring until the end of the assay. In the case of these fruits, the content of polyphenols, anthocyanins and firmness was always greater with the coating, standing out when the alginate contained extract of maqui leaves or ascorbic acid.

Agriculture and food chemistry is the most powerful industry for the development of health, basic need and daily use of life, reduce financial crises, global poverty and hunger in the developing countries of the world like south Asia particularly in Pakistan

Md Usman

Pakistan

The aim of presentation consist of Agriculture, Food Chemistry, health, life, financial crises, global poverty and hunger were studied and reported that Agriculture and Food Chemistry is the most powerful industry for the development of health, basic need and daily use of life, reduce financial crises, global poverty and hunger in the developing countries of the world like South Asia particularly in Pakistan. The study reported that agriculture is the science, art and occupation of cultivating the soil, producing crops, raising livestock etc. It is the food we eat, the clothing we wear, the materials of our homes, the garden around us etc. It is not only the basic need of food but also fulfills all the basic requirements of human beings in the form of the following integrated agricultural products/industries including Livestock and Dairy Development, Poultry, Aquaculture, Apiculture, Crop production. The major food nutrients are carbohydrate, lipids and protein which are found in plants and animal cells. It is also called as the food science. In other worlds, food science is the study of the physical, biological and chemical makeup of food, the causes of food deterioration and the concepts underlying food processing. Food scientists and technologists apply scientific disciplines including chemistry, engineering, microbiology and nutrition to the study of food to improve the safety, nutrition, wholesomeness and availability of food. Latest food technology is the application of food science to the selection, preservation, processing, packing, distribution and use of safe food. Food carbohydrates include sugar, starches and fibers, lipids include fats, oil, waxes, consist of 49 developed countries, 149 developing countries, 4 observers states, 8 state with partial recognition and 14 unrecognized states but the South Asia comprises the countries of Pakistan, Bangladesh, India, Bhutan, Maldives, Nepal and Sri-Lanka South Aisa is about one fifth of the world's population, which is considered as the most densely populated region in the world. In the light of the above study, the industry of Agricultural and Food Chemistry should be commercialized for the development of health, basic need and daily use of life, absorbing millions of technical and non-technical people, like engineers, doctors, agriculturist etc,

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Abstract

EuroSciCon

The most important branch of chemistry is the organic chemistry which are the major industry for the reduction of global poverty and hunger in the developing countries of the world like South Asia particularly in Pakistan.

Muhammad Usman
Pakistan

The aim of presentation consist of chemistry, organic chemistry, industry, global poverty and hunger were studied and reported that The most important branch of chemistry is the organic chemistry which are the major industry for the reduction of global poverty and hunger in the developing countries of the world like South Asia particularly in Pakistan. The study reported that chemistry is the science of composition, structure, properties and reaction of mater, especially of atomic and molecules systems. In a very simple words, it is the composition, properties and reaction of esbstance. The different branches of chemistry each of which has the different area of study consist of i. analytical chemistry ii. Physical chemistry iii. Organic chemistry iv. Inorganic chemistry v. biochemistry vi. Food chemistry vii. environmental chemistry viii. Agricultural chemistry ix. Chemical engineering x. geo chemistry xi. Nuclear chemistry and xii. Clinical chemistry the most important branch of chemistry are organic and inorganic chemistry which are the major industry. The study reported that organic chemistry specifically studies

purification of rare earth solutions using a new phosphonium-based ionic liquid

Mahdi Haghani,
University of Tehran,
Iran

In this study, after a comprehensive research on choosing the best IL, eventually, "Trihexyltetradecylphosphonium Decanoat" was introduced as the best ionic liquid for extraction of Lanthanum from aqueous solution. The influence of four parameters on the separation process such as pH, temperature, IL concentration in organic solution and Lanthanum concentration in aqueous solution was investigated. A software based experimental designed was applied in this study. Results expressed high effect of pH, concentration of ionic liquid in the organic phase, and the interaction of this concentration with pH as well. Optimum condition for extraction was obtained in pH 6, 40°C temperature, IL concentration in organic solution 150 g/L and Lanthanum concentration in aqueous solution 1000 mg/L. Under these conditions, the percentage of extraction was 99.12%. The FTIR analysis was performed to detect the extraction mechanism; Results showed that the Lanthanum was extracted by bidentate mechanism. Mc Cabe-Thiele diagram was used to determine the stages of separation in which it was determined that two stages is necessary for stripping of organic solution.

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