



# 2<sup>nd</sup> International Conference and Expo on Food & Nutrition

*"Revolutionary Developments in Food, Dairy Technology and Agro Technology in Order to Strengthen Global Food Security"*

**Holiday Inn Express, Kuala Lumpur, Malaysia**

**07<sup>th</sup>-08<sup>th</sup> November, 2019**

Organized by:

**BioLEAGUES Worldwide**

In Association with



**Institute of Food Security & Sustainable Agriculture  
(IFSSA), Universiti Malaysia Kelantan**



## Preface

This book reports the Proceedings of the “*2<sup>nd</sup> International Conference and Expo on Food and Nutrition*” held at *Holiday Inn Express, Kuala Lumpur, Malaysia* on the 7<sup>th</sup> & 8<sup>th</sup> of November – 2019, organized by *BioLEAGUES Worldwide, India*.

The publishing department has received more than 120 abstracts. After an initial review of the submitted abstracts, 50 papers were presented at the conference and were accepted for publication in the Conference Proceedings. The topics that are covered in the conference include food science and nutrition, nutrigenomics, food adulteration and toxicology, agriculture technology, dairy technology, etc... We would like to thank all the participants for their contributions to the conference and the proceedings.

Reviewing papers of *2<sup>nd</sup> ICEFN-2019* was a challenging process that relies on the goodwill of those people involved in the field. We invited more than 15 researchers from related fields to review papers for the presentation and the publication in the *2<sup>nd</sup> ICEFN-2019* Proceeding. We would like to thank all the reviewers for their time and effort in reviewing the documents.

Finally, we would like to thank all the proceeding team members who with much dedication have given their constant support and priceless time to bring out the proceedings in a grand and successful manner. I am sure this proceeding will be a credit to a large group of people, and each one of us should be proud of its successful outcome...

**2nd ICEFN-2019**



## From BioLEAGUES Director's Desk...

On behalf of **BioLEAGUES Worldwide, India**, I am delighted to welcome all the delegates and participants around the globe to the 2<sup>nd</sup> *International conference and Expo on Food and Nutrition* which is going to be held at *Holiday Inn Express, Kuala Lumpur, Malaysia* on **November 7<sup>th</sup> & 8<sup>th</sup>, 2019**. This conference will revolve around the theme "*Revolutionary Developments in Food, Agriculture and Dairy Technology to Strengthen Global Food Security*".



It will be a great pleasure to join with Doctorates, Research Scholars and Academicians all around the globe. You are invited to be stimulated and enriched by the latest innovations in all the aspects of food safety and prevention techniques, while delving into presentations surrounding transformative advances provided by a variety of disciplines.

I congratulate the Chair person, Organizing Secretary, Committee Members, coordinator BioLEAGUES and all the people involved for their efforts in organizing the 2<sup>nd</sup> **ICEFN-2019** and successfully conducting the International Conference and wish all the delegates and participants a very pleasant stay at Kuala Lumpur.

A handwritten signature in blue ink, appearing to read 'A. Siddh Kumar Chhajer'.

**A. Siddh Kumar Chhajer**  
Director  
BioLEAGUES Worldwide, India



## Message from the Conference Chair ...

Dear Colleagues and Friends,

“Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life (1996 World Food Summit)”. Country’s food security is complex variables, but can be evaluated based on several existing frameworks. However, the two major frameworks are provided by the Food and Agriculture Organization (FAO) and The Economist Intelligence Unit (EIU). The FOA food security frameworks have four dimensions- Availability, Access, Stability and Utilization; in contrast, the EIU has three dimensions including Affordability, Availability and Quality & Safety. The food security indicators uses by FOA and EIU are 31 and 28, respectively. In 2012, the EIU started publishing the Global Food Security Index (GFSI) for ranked the 109 countries, and in 2018, altogether 113 countries were participating. The GFSI become a driven tool for authority to enhance food security in their country. Here, I believe, all of the conference presenters that will present their research finding is focused on food security frameworks either from FOA or EIU and the finding might be useful for mankind. Welcome to Malaysia and “SELAMAT DATANG”.



**Dr. Shamsul Muhamad**

Director, Institute for Food Security and  
Sustainable Agriculture (IFSSA),  
Universiti Malaysia Kelantan







**Indian Institute of Food Processing Technology**  
(Ministry of Food Processing Industries, Government of India)

**Dr. R. Jagan Mohan**

Professor & Head

Department of Food Product Development & i/c Centre of Excellence in Grain Sciences



**Dr. Jagan Mohan**

Professor and Head

Department of Product development & Officer In charge

Indian Institute of Crop Processing Technology, Regional Center,

Guwahati, India.

Dear Organisers, Academic professionals, Researchers and Students

It gives me immense pleasure to deliver the key note address to this significant scientific program **2<sup>nd</sup> International Conference and Expo on Food and Nutrition** for the Knowledge sharing and welfare of the human wellbeing. The delegates from varied field of food science and technology with one common motivation to address a **ZERO HUNGER AND HEALTHY DIET**, a very high thought process of the committee has well organised and mobilised the likeminded academician and scientists and young budding research scholars.

The scientific program has covered from the basic of Nutrition and its administration to overcome the double disease burden and many burning issues of nutrition. Not only the nutritional and health aspects but also the nutraceutical and functional properties of development and health proclaimed traditional and modern food patterns. Not leaving behind the technology and its influence in preparing such highly significant food product with accessible, affordable and available technology to address the entrepreneur opportunities. Lots of avenues are open for the young researcher, technologist, academician and entrepreneurs to learn and experience from the experts in the field of food science and nutrition and technology.

I once again welcome and thank the delegate for spending their valuable time and energy to come over here to share the opportunity and enrich us with knowledge. Thanks for the organisers for arranging such a wonderful event of this international standard.

Thank you, one and all, I wish you all a wonderful time at KUALA LUMPUR, MALAYASIA

**(Dr. Jagan Mohan)**

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## From Bioleagues CEO's Desk...

On behalf of **BioLEAGUES Worldwide, India**. I am delighted to welcome all the delegates and participants around the globe to the *2<sup>nd</sup> International Conference and Expo on Food and Nutrition* which is going to be held at *Holiday Inn Express, Kuala Lumpur, Malaysia* on 7<sup>th</sup> and 8<sup>th</sup> November 2019.

“Revelutionary Development in Food, Dairy and Agriculture Technology to Strengthen Global Food Security is the main theme of this “2<sup>nd</sup> ICEFN-2019”



It will be a great pleasure to join with Scientists, Academicians, Research Scholars, Students, Industrialists and other association people all around the globe. You are invited to be stimulated and enriched by the latest in “2<sup>nd</sup> ICEFN-2019”, while delving into presentations surrounding transformative advances provided by a variety of disciplines.

I congratulate the committee, coordinator BioLEAGUES and all the people involved for their efforts in organizing the event and successfully conducting this International Conference and wish all the delegates and participants a very pleasant stay at Kuala Lumpur, Malaysia.

A handwritten signature in black ink, appearing to read 'R. B Satapathy'.

**Mr. R. B Satapathy**  
Chief Executive Officer  
BioLEAGUES Worldwide, India



Keynote Speaker





## **Identification and Sustainable Value Chain Management in Jack Fruit**

### **Dr R Jagan Mohan**

Professor and Head, Department of Food Product development, Indian Institute of Food Processing Technology, Ministry of Food Processing Industry, Thanjavur-613005 Tamil Nadu

### **Abstract**

Jackfruit is a fairly large sized tree and bears the largest fruit among the edible fruits. Widely cultivated in north east and western ghat of India. Jackfruit peeling is one of the main problems because it contains milk and is sticky when the fruit is cut. Hence the study was focused on developing a Jackfruit peeling machine. The system consisted of penetrating shaft, handle, blade and table. The efficiency was found out for both coring and peeling and it was found that the coring efficiency was much better than the peeling efficiency of about 90%. Moreover, the peeling efficiency varied with the type of blade used.

Identification of nutraceuticals components from seed and fruit by-product was done. Some of the important compounds identified in composite mix but absent in Wheat sample (highly bioactive compounds). Lanosterol: Cancer preventive effects, Betulin: antitumor, anti-inflammatory, Squalene: antitumor, cancer preventive, antibacterial. Polar components present in the Jackfruit have high antioxidant activity. It was observed that the methanolic extract of all the parts of Jackfruit generally exhibited high antibacterial activity against *E. coli*, similar results were observed when tested for inactivation of *S. aureus*. Antifungal activity against *A. niger*, the affect was not that high compared to the standard though the polar extracts in general had significant affects.

The study focused on analysing the chemical composition of all the parts of Jackfruit i.e. bulb, strand, seed, rind and core and an approach was made to incorporate different parts of Jackfruit rich in dietary fibre to Indian flat bread, pasta, tart and cookies. Proximate analysis of different parts of Jackfruit in the present study showed that Jackfruit is rich in fibre content (highest in core part, 32%) and a good source of protein (highest in seed part, 15%). The results suggest that the substitution of the Jackfruit flour for flat bread preparation is acceptable and highly nutritious and a prospective health benefit for people suffering from diabetes and obesity

Jackfruit jam and squash prepared by using pulp. It is filled in polyethylene bottles and kept under refrigeration condition. Ice cream prepared by the addition of 25% pulp with milk and cream. Jackfruit Cone was developed using bulb, seed and stand flour at different proportion with addition of Maida,

sugar and butter. It was noticed that cone prepared by adding up to 75% of Jackfruit bulb flour have better acceptability in terms of texture, quality and storage stability.

Jackfruit edible plates is developed by using Jackfruit bulb, strand and seed flour. The Jackfruit plates have good mechanical strength to hold ice cream, hot chocolate and salads etc. and rich in fiber (12.93%) and protein (6.71%). Development of Jackfruit based edible plate is new innovation in food packaging system, research is still needed to improve its barrier properties. The main advantage of these plates is edible in nature, can be consumed along with food, low in cost, no environmental pollution, strategy to effective utilization of Jackfruit and its byproducts generates extra additional income to farmer and processors.

## Biography

Dr. Jagan Mohan has 30 years of Research and Teaching experience in grain processing with Food Science as a background. Currently he is working as Professor and Head Department of Product development and Officer In charge for the IICPT Regional center, Guwahati.

To his credit he has published more than 75 research articles in various National and International journals and written a book chapter in Pulse food – quality and nutraceutical properties. His research and teaching interest are in areas related to food science, food biochemistry, food product development-extruded products, low Glycemic foods and ingredient quality analysis, cereals and pulse processing. He has been one of the members in "Team research award given by Indian Council of Agricultural Research award for the year 2002. He was an active member in setting up of NABL accredited Food Analysis Laboratory at IICPT and Food Processing business Incubation center at IICPT Regional center, Guwahati.

He is a member of American Association of Cereal Chemists, American Society for Agricultural and Biological engineering, American Dietetic Association – International, Indian Dietetics Association, Life member of Nutrition Society of India, Member of Association of Food scientists and Technologists of India, Mysore and Life member of Indian society for Technical Education and member of board of studies for Food Science in Pondicherry University and for Food Technology, Anna university, Chennai severed as a member of many syllabus forming committees for Food Science in various institution like PSG College of Arts and Science. Coimbatore and Thaseem Beevi College for Woman, Keelakarai and others. He has visited USA for Research program in extrusion cooking and worked at University of Nebraska, Lincoln, US. He initiated the MOU with Kansas State university, Manhattan, US and was a team member visiting Asian Institute of Technology and Kaserstart University, Bangkok, Thailand for the MOU and collaborative research.



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# ABSTRACTS







## **Histopathological Evaluation of Curcuma Longa and Trigonella Foenum Graecum in Alloxan Induced Diabetes Rat Liver**

### **Mannur Ismail Shaik**

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Division of Animal Biotechnology, Dept. of Zoology, S.V. University, Tirupati. India.

### **Abstract**

**D**iabetes mellitus is a chronic, metabolic disorder characterized by elevated blood glucose levels, which leads to a major cause of blindness, kidney failure, heart attacks, and stroke. According to WHO, the number of people with diabetes has been raised from 108 million in 1980 to 422 million in 2014. An estimated stated that, in the year 2016, 1.6 million deaths were directly caused by diabetes. Diabetes prevalence has been rising more rapidly in middle and low-income countries. In Indian traditional medical system Ayurveda, several herbal formulations used for treatment of diabetes. In the current study, Curcuma longa (CL) and Trigonella foenum graecum (TFG) plants used to treat the alloxan induced diabetic rats. The rats divided into six groups and named as group-I (Normal), group-II (Diabetes), group-III (Diabetes + CL), group-IV (Diabetes + TFG), group-V (Diabetes + CL + TFG) and Group-VI (Glibenclamide). CL and TFG extracts individually and in combination were administrated orally at a concentration of 250mg/kg BW to group-III, group-IV and group-V for 30 days. After experimental period rats sacrificed and liver tissue of all the groups were isolated for histopathological studies and hematoxylin and eosin stain used. The histopathological observations of group-I shows the normal cyto-architecture, whereas, several degenerative changes observed in group-II and it shows, periportal necrosis of hepatocytes and congested portal vessels as well as areas of inflammatory cell infiltration. This condition was also reversed in rats treated with CL, TFG and CL+TFG plant extracts

and glibenclamide treated rats. These histopathological results confirm the anti-diabetic potential of CL and TFG.

## **Biography**

Dr. Mannur Ismail Shaik, currently working as Lecturer in Universiti Malaysia Terengganu. He received PhD degree from Acharya Nagarjuna University, India in 2017. Expertise in the field of medicinal plant, hematological studies, food technology, histopathology and molecular biology. From 2013 to 2018 worked as Contract lecturer and Project fellow during 2009-2012 in S.V. University, India. Published 18 research articles and 2 book chapters, attended for 40 National and International conferences, 23 workshops and received 7 awards. Delivered several talks as keynote speaker, invited speaker and guest lecturer. Member for several scientific organizations and committees.



## **Physicochemical Characterisation, Oxidative Stability and Thermal Properties of Tuna Liver Oils**

### **Tengku Rozaina Tengku Mohamad**

Faculty of Fisheries and Food Science, Universiti Malaysia Terengganu, 21030 Kuala Nerus, Terengganu, Malaysia

### **Siti Salmi Mohd Azm**

Faculty of Fisheries and Food Science, Universiti Malaysia Terengganu, 21030 Kuala Nerus, Terengganu, Malaysia

### **Abstract**

**T**una is a global commercial fish and has been marketed as food products. The production of food products from tuna yield a large amount of by-products such as head, bones and liver that can be processed into fish oil production. Fish oil has been applied as food ingredient in the functional food products. However, these products are more prone to oxidation due to the high polyunsaturated fatty acids content in the fish oil. Physicochemical characterisation, oxidative stability and thermal properties of liver oils extracted from two tuna species, namely Longtail tuna (*Thunnus tonggol*) and Kawakawa tuna (*Ethynnus affinis*) were investigated in this study. The major fatty acid in both Longtail tuna liver oil (LLO) and Kawakawa liver oil (KLO) was saturated fatty acid (40.67-41.01%), followed by polyunsaturated fatty acids (37.00-38.91%) and monounsaturated fatty acids (20.00-20.07%). Docosahexaenoic acid (DHA) was the highest fatty acid found in both tuna liver oils (29.41-28.73%). The KLO was more lightness in colour compared to LLO. The peroxide value and p-anisidine value of LLO were 9.20 meq/kg and 5.88, respectively and were not significantly different from KLO (8.13 meq/kg and 4.49, respectively). Melting and crystallisation profiles of the LLO were similar to KLO, which was related to their fatty acid content.

## **Biography**

Dr. Tengku Rozaina is a lecturer at Universiti Malaysia Terengganu, Malaysia. She obtained her BSc. (Hon.) in Food Science and Nutrition from National University of Malaysia, Malaysia, MSc. in Nutrition and Food Science from University of Reading, United Kingdom and PhD in Food Science from University of Otago, New Zealand. Her research interests are in lipid chemistry and nutritional sciences. She is a member of AOCS since 2010.



## **Effect of antinutrients and processing methods towards cooking quality of 6 selected genotypes of Bambara groundnuts.**

### **Ding Wern Nee**

School of Science, Monash University Malaysia, Jalan Lagoon Selatan, Bandar Sunway, 47500 Subang Jaya, Selangor

### **Ho Wai Kuan**

Crops For the Future, Jalan Broga, 43500 Semenyih Selangor and School of Biosciences, University of Nottingham Malaysia, Jalan Broga, 43500 Semenyih, Selangor

### **Sean Mayes**

Crops For the Future, Jalan Broga, 43500 Semenyih Selangor and School of Biosciences, University of Nottingham, Sutton Bonington Campus, Loughborough, Leicestershire LE12 5RD, UK

### **Siow Lee Fong**

Practitioner, Ken Ware Neuro Physics Therapy, Australia

### **Abstract**

**B**ambara groundnuts are highly nutritious yet underutilized due to its hard-to-cook (HTC) properties. Antinutrients are one of the causes in inducing HTC that prolongs cooking time. The aim of this study is to determine the effect of antinutrients, soaking and cooking on the cooking quality of 6 genotypes of Bambara groundnuts. Bambara groundnuts were grounded, sieved through 40 mesh size and assessed for antinutrients tannin and phytate. Bambara groundnuts were cooked after 16 hours of soaking and cooking quality was determined by recording the time required for the beans to achieve hardness of 27N at 75% compression. It was found that only tannin contribute to the hardness of beans. There are significant difference ( $P < 0.05$ ) between cooking time ranging from 2.24-2.74 hours with tannin content ranging from 2.05-6.03mg/ml but not phytate. However, antinutrients significantly ( $P < 0.05$ ) reduced up to 99.85% for tannin and 99.25% for phytate after cooking and soaking. Soaking reduced cooking time significantly. In summary, tannin contributes significantly to the difference in cooking time for Bambara groundnuts unlike phytate. Soaking is more effective than cooking in reducing cooking time.

## **Biography:**

Ding Wern Nee is currently working as a research assistant for a collaboration project between Crop for the Future and School of Science, Monash University Malaysia. She completed a bachelor's degree in Food Science and Technology from Monash University Malaysia in 2018. Her current research focus is to understand the effect of antinutrients and processing methods on Bambara groundnuts cultivated in Malaysia.



## **Effects of Light-Emitting Diodes (LED) Irradiation Treatment on the Postharvest Preservation and Microbiological Quality of Strawberry**

**Wan Nur Hidayah Wan Mohd Noor**

Faculty of Fishery and Food Sciences, Universiti Malaysia Terengganu, 21030 Kuala Nerus, Terengganu, Malaysia.

**Wan Zaliha Wan Sembok**

Faculty of Fishery and Food Sciences, Universiti Malaysia Terengganu, 21030 Kuala Nerus, Terengganu, Malaysia.

**Wan Zawiah Wan Abdullah**

Faculty of Fishery and Food Sciences, Universiti Malaysia Terengganu, 21030 Kuala Nerus, Terengganu, Malaysia.

### **Abstract**

Strawberry (*Fragaria Ananassa* sp.) is non-climacteric, aggregate fruit that has rich source of Anthocyanin and vitamin C. However strawberry has short storage life and very susceptible to decay and physiological deterioration process. Therefore, emitting the post-harvest LED light to strawberry during cold storage has been studied. The aims of this work were to evaluate the effect of different LED light treatment to retain post-harvest quality and microbial quality of the strawberry. The post-harvest parameters that have been used are weight loss, colour, firmness, total soluble solid, titratable acidity and pH. The microbial parameter such as E.Coli count, Salmonella count, total plate count and mold count also being assessed. Strawberries were irradiated under three different types of LED light (white, blue and red) LED light. Blue and red LED light have different wavelength which are 470 nm and 660 nm respectively. The strawberry fruits were stored in 5°C in cold room and this parameter were assessed in 10 days. There were statistically significant different ( $p < 0.05$ ) between treatment of weight loss, firmness, pH, and total soluble solid. The best treatment for this experiment is blue light exposure as it showed the lowest weight loss, retain the colour and delay firmness loss of the strawberry. This study also proved that blue LED can reduce the growth of E.coli, Salmonella and mold. In conclusion, LED light produce minimal heat which improves food safety and preserve postharvest quality of strawberry.

## Biography

I am a senior lecturer at School of Fishery and Food Sciences, UMT. My current research interest is on bacterial biofilm, molecular study of virulence genes and microbiological food safety. My PhD research focused on the contribution of variable phenotypic properties to survival under mild and severe stress and how these are linked with genetic and functional of rpoS gene and RpoS status respectively in representative of *Salmonella enterica* associated with foodborne illness. I become a member of Society for Applied Microbiology, UK (2011-2015) and Malaysian Society for Microbiology (2015- present).





## **Surfactant TWEEN20 Provides Stabilisation Effect on Anthocyanins Extracted From Red Grape Pomace**

### **Nurmahani MohdMaidin**

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### **Maria Jose Oruna-Concha**

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### **Paula Jauregi**

Department of Food and Nutritional Sciences, Harry Nursten Building, University of Reading, RG6 6AP Reading, United Kingdom

## **Abstract**

**R**ed grape pomace, a wine-making by-product is rich in anthocyanins and has many applications in food and pharmaceutical industry. However, anthocyanins are unstable during processing and storage. This study aimed to investigate the stability of anthocyanins obtained by hydroalcoholic extraction (with and without sorbic acid)

and colloidal gas aphyrons (CGA) separation; a surfactant (TWEEN20) based separation. Anthocyanins in CGA samples showed higher stability (half-life = 55 d) than in the crude extract (half-life = 43 d) and their stability increased with the concentration of TWEEN20 in the CGA fraction (6.07–8.58 mM). The anthocyanins loss in the CGA sample (with the maximum content of surfactant, 8.58 mM) was 34.90%, comparable to that in the crude

ethanolic extract with sorbic acid (EE-SA) (31.53%) and lower than in the crude extract (44%). Colour stabilisation was also observed which correlated well with the stability of individual anthocyanins in the EE and CGA samples. Malvidin-3-o-glucoside was the most stable anthocyanin over time.

## **Biography**

The author is a lecturer in Universiti Malaysia Terengganu, under Food Technology Department. The author has her main interest in food waste valorization using different extraction techniques. Her work mainly focus on the extraction and application of polyphenols in food and cosmetic applications. The work presented in this conference is part of her PhD work, conducted at University of Reading, UK and has been published in the journal of Food Chemistry, this year.



## **Tropical Fruits Products in Malaysia; Issues, Challenges, and Potential As New Crop Economic**

**Seri Intan Mokhtar**

Universiti Malaysia Kelantan

### **Abstract**

Under the Agro Food Act (DAN 2011-2020), fruit is recognized as one of the key thrust area for economy by the Ministry of Agriculture (MOA) Malaysia. Several fruits namely Durian, Mango, Jackfruit, Pineapple and Starfruit are among the fruit in demand and has significant export quality. The success of Durian especially Musang King variety recently has significant effect on the fruit industry For Malaysia. It was perfectly choreographed from the farm, post- harvest and down-stream processing. Similarly with Harumanis variety of Mango but with a twist because the volume is still not permissible for down-stream processing. Several varieties of pineapple and starfruit have emerged giving new light for the fruits. Mangosteen being the queen of fruit has long being used in the beauty industry in Thailand and now given serious attention in Malaysia. However, the market and demand for Rambutan and Dokong is still slow and causing fruit dumping during the peak season. Federal Agricultural Marketing Authority (FAMA) has done the best to buffer the impact for the fruit growers but the task is very challenging for them as Rambutan and Dokong are very perishable and lack of demand for post-harvest and down-stream processing industries. Potential new product such as vinegar, canning and juices could be the answer for Rambutan and Dokong. With the palm oil price and rubber price on the decline, perhaps the attention could be turned into the tropical fruits as new crop economic.

### **Biography:**

Dr Seri Intan Mokhtar is currently an Associate Professor and The Dean of Faculty of Agro Based Industry, Universiti Malaysia Kelantan (UMK). Her field of expertise are Applied Microbiology, Phylogenetic studies, Bio-based Product Development and Intellectual Property Management. She had 18 years working experience in four different organizations such as being a Researcher in SIRIM Berhad, as Senior Manager Science & Technology in British Council Malaysia, as Deputy Director of Commercialization at Universiti Putra Malaysia (UPM). Her biggest research achievement is production of vinegar from local fruit such as Rambutan and Dokong via natural microbial fermentation which gaining interest from the industry and public in Malaysia. The product has

achieved several awards in Malaysia and Korea. Rambutan vinegar is being sold as MOTANTM brand while Dokong vinegar is under NefeliTM brand.



## **Development and Performance Evaluation of Hybrid Solar Tunnel Dryer for Production of Quality Raisins**

**Ambrish, G**

AICRP on Post Harvest Engineering & Technology, University of Agricultural Sciences, Raichur

**Udaykumar Nidoni**

AICRP on Post Harvest Engineering & Technology, University of Agricultural Sciences, Raichur

**P. F. Mathad**

AICRP on Post Harvest Engineering & Technology, University of Agricultural Sciences, Raichur

**Nagaraj Naik**

AICRP on Post Harvest Engineering & Technology, University of Agricultural Sciences, Raichur

### **Abstract**

In the present investigation, a hybrid solar tunnel dryer was developed realizing the demand for large capacity commercial units utilizing different energy sources for better moisture removal. A 5000 kg solar tunnel dryer was developed for dehydration of grapes by utilizing the solar energy (heat and photovoltaic) and fuel energy for improving the drying time. The dimensions of the developed large capacity dryer were 28.0 m length, 5.8 m width and 2.1 m height with four shelves having four layers in each shelf for loading 5000 kg of grapes. The dryer was provided with electric heating system (2.41 kWh) energy to supplement heat during night and cloudy days. The air flow rate of blower was calculated to be 1090 m<sup>3</sup>/min for removal of evaporated moisture from the dryer. The performance evaluation of the dryer at full load condition recorded the drying time of 124 hours (5 days) for drying the grapes from 329.18 to 25.63% moisture content (d.b.) at an average drying temperature of 40°C. The average drying rate was 0.03 kg/h/kg of dry matter. The quality characteristics viz., TSS, acidity, water activity and reducing sugars were recorded to be 55-58obrix, 1.9%, 0.51 and 63.8%, respectively. The colour values (L\*, a\* and b\*) of the dried grapes were 38.14, 15.56 and 28.60, respectively representing bright greenish colour and acceptable for export and commercial trade.

### **Key Words**

Solar drying, Large capacity solar dryer, Hybrid dryer, Grape drying

## **Biography**

Dr. Ambrish Ganachari working as Assistant Professor of Processing and Food Engineering working in the Dept. of Agricultural Engineering, College of Agriculture Kalaburagi, University of Agricultural Sciences, Raichur, Karnataka, India. Has 9 years of experience in teaching, research, writing competitive project proposals, handling of advanced instruments such as HPLC, LCMS, GCMS, FTIR, DSC, Rheometer, Texture analyser, SEM, etc. Published 18 research papers in reputed journals and 10 abstracts in International and National conferences. Undergone international training on Food Systems for Healthy and Sustainable Diets at Wageningen University and Research, Wageningen, Netherlands. Filed patent and product license for Ph D research work.



## **Effect of Dietary Flaxseed and Selenium Sources on the Selenium Enrichment of Eggs of Laying Hens**

**Bahman Navidshad**

Department of Animal Science, University of Mohaghegh Ardabili, Ardabil, Iran

**Hamidreza Moslehi**

Department of Animal Science, University of Mohaghegh Ardabili, Ardabil, Iran

### **Abstract**

This study aimed at assessing the effects of supplementing diet of laying hens with different Se sources (inorganic and organic), as antioxidant factor, and omega-3 fatty acids from flaxseed source, as oxidant factor on egg Se and omega-3 antioxidant status of yolk. In a completely randomized design, 384 "Hy-Line W36" hens were assigned to a 3×4 factorial arrangement comprising four replicates of eight, for ten weeks. Birds received three basal diets containing 0, 5% and 10% of flaxseed supplemented with no additional Se (SN), and Se from sodium selenite (SS), Se-enriched yeast(SY) and hydroxy seleno-methionine(SOH). Inclusion of flaxseed decreased egg weight and egg mass. Egg physical qualities were not mostly affected by flaxseed. Neither effect of Se sources nor interaction effect was observed on the egg physical qualities. Using any forms of Se improved GSH-Px activity and just organic forms improved TAC. Moreover, flaxseed in diets resulted in a lower level of oleic, linoleic and arachidonic acids level and higher ALA, DPA and DHA in yolk. Indices such as MUFA,  $\Sigma n-6$ , n-6:n-3 ratio, SFA:n-3 appeared to drop, while PUFA and  $\Sigma n-3$  rose. Organic Se sources especially SOH turned out to cause better deposition of Se in both yolk and albumen.

### **Biography:**

Dr. Bahman Navidshad , Associate Professor, having graduated from the University of Tehran with PhD in poultry Nutrition. Worked for University of Mohaghegh Ardabili, Iran for 15 years.





## **Revolutionary Developments in Food, Dairy and Agro Technology to Strengthen Global Food Security**

**P.Akhila**

VikramaSimhapuri University

### **Abstract**

The developments in Agricultural sector includes the application of technology systems, Earlier Agriculture sector has been solely dependent on human labour with limited application of mechanical equipment and machines. The advanced developments include technology such as embedded computing, robotics, wireless technology, GPS/GIS and DBMS, soil sampling methods, future research in robotic based harvesters, food processing and packaging technology such as traceability and status of RFID networking research and packaging developments include the increase in the shelf life of food product such as Active and Intelligent packaging systems to monitor the condition of packaged foods during transportation and storage

From past few years there has been a great expansion in the development of micro encapsulated food ingredients, it can suppress the volatility, flavor, odor and reactivity of food ingredients and these contents are protected from environmental conditions such as light, air and moisture. The techniques used for micro encapsulation include spray drying, spray chilling, extrusion, inclusion complexation and co crystallization

Developments of Nanotechnology in food includes the usage of silicate Nano particles in food packaging to provide a barrier to gases or moisture in a plastic film and in corporation of zinc oxide Nano particles into a plastic packaging to block UV rays and provide anti bacterial protection. Nano sensors are being developed to detect bacteria and other contaminates such as salmonella at the time of packaging

Developments in dairy include probiotics, prebiotics and synbiotics. These food supplements termed as functional foods have been demonstrated to alter, modify and reinstate the pre existing internal flora. Most commonly used probiotic stains are Bifido bacterium, lactobacilli, S.Boulardii, B.coagulans and prebiotics like Fos, Gos, Xos and inulin. Probiotics and prebiotics together are termed assynbiotics and are able to improve the viability of the probiotics

### **Biography**

Akhila is a faculty of Food Technology at VikramaSimhapuri University. She received her Engineering bachelor's and master's degree in Food Technology from Amity University, Noida ,India.





## **Underutilized Leafy Vegetables as Functional Foods**

### **Dr.S.Alamelu Mangai**

PG & Research Department of Home Science, Bharathidasan Government College for Women (Autonomous), Affiliated to Pondicherry University, Puducherry 605 003, INDIA

#### **Abstract**

##### **Aim:**

The advent of modern drug therapy has led to absolute explicitness the philosophy of “food as medicine”. Diet is the only comprehensive approach for health management. Functional foods hold promise for public health and there are growing concerns over these foods. Green leafy vegetables have remained underutilized due to lack of awareness and popularization of technologies for utilization. Nowadays, underutilized foods are gaining importance as a means to increase the per capita availability of foods. Radish leaves and cauliflower leaves are widely neglected GLV considered as waste. These nutritious GLV can be dried with a little time, effort and can be used in preparation of cost effective nutritious value added food in common recipes. Research was carried out to study the acceptability of dark chocolate with radish leaves and the functional characteristics of cauliflower leaves enriched popular cereal product. The blend 50 g dark chocolate incorporated with one g of oven dried radish powder was found to be extremely acceptable. The popular cereal product noodles developed with wheat flour, pearl millet flour and cauliflower leaves puree laid a promising substitute for refined wheat flour, with respective physical, chemical, sensory characteristics and textural analysis. High in iron and calcium content the cereal product may help to overcome individual deficiency and find its place as meal replacement for diabetes and for any other therapeutic condition. Hence a nutrient dense, cost effective cereal product normally considered as convenience foods could be prepared at household level by utilizing the leaves that has a high waste index. Further be taken widely for research in ready to cook and eat foods, popularized as a best first choice for enrichment among children and women of the modern era.

#### **Biography:**

Specialized in Nutrition, Food Service Management and Dietetics has 26 years of experience in research and teaching, currently working for Government of Puducherry. She has more than 60 articles published in Journals, Edited Books, Conference Proceedings including National and International. Organized 38 Conferences and Seminars presented 70 papers and received 15 Best Paper Awards. Has been a Chairperson, Invited Speaker in more than 40 technical academic sessions.

She is a regular speaker at All India Radios podcasts on Food and Nutrition. She is Member in various academic bodies. She has contributed for the Curriculum development as an E content writer in Post Graduate subjects, and as a Content Expert in Higher Secondary Grade Text book. She has a credit of several awards including BEST WOMEN EDUCATOR AWARD in HOME SCIENCE.



## **Growth of Agriculture Sector: A Key to realization of SDG2030**

### **Aprajita Srivastava**

World Development Foundation, Plot 5, Sector-3, Dwarka, New Delhi-110075, India

#### **Abstract**

The 2030 agenda comprising of 17 Sustainable Development Goals (SDGs) aims to end poverty and deprivation from the Globe, sustain the planet's resources and preserve the climate and environment. The agenda was adopted in 2015 and now after four years, three billion people in developing countries, who are the largest producer of food for world's consumption, suffer from mal-nutrient, climate changes, drought, floods, lack of resources such as fertilizers, seeds etc, and market shocks. The problem can be tackled by adopting Knowledge Agriculture™ for which a massive program of educating and upgrading the skills of farmers are required. We define Knowledge Agriculture™ as a process which uses technology and tools such as Greenhouse, IOT (Internet of Things), Robotics, AI (Artificial Intelligence), UAV (unmanned aerial vehicles) and specialized software for weather modelling, smart zone seeding, fertilizer modelling, UECS (Ubiquitous Environment Control System), SaaS (Cloud based monitoring and control system develop by Japan). Execution of technology assisted skill development projects in part of India and Ethiopia and their sustained monitoring for many years by us showed inspiring changes in rural behaviour and willingness of farmers to adopt the new technology.

#### **Biography:**

Aprajita Srivastava is the Director of World Development Foundation, New Delhi. She was associated with implementation of project for empowering poor and marginalized farmers by educating them in use of technology for enhanced yield of their produce, under the project, "Agriculture Knowledge Dissemination System". She executed MCIT, Govt. of Ethiopia sponsored project of establishing seven radio stations in different parts of Ethiopia in 2015 for socio-economic development. She is recipient of " BEST RESEARCHER '2018 Award. Recently she presented the Business Plan of Knowledge Agriculture in Oxford University before prospective investors and the same was highly appreciated.



## **The Effectiveness of Lactogenic Banana Flower (*Musa x paradisiaca*) Biscuits on Expressed Breast Milk among Lactating Working Women**

**Azizah Mahmood**

Faculty of Fisheries and Food Science, Universiti Malaysia Terengganu

### **Abstract**

Reduction of breast milk production facing by lactating working mothers cause many of them to choose galactagogue to enhance their milk supply once returning to work. The aim of this study is to measure galactogenic property of biscuit made with different ratio of banana flower flour (BFF) and wheat flour (WF) in the formulations. Proximate analysis and sensory evaluations were carried out in first phase followed by human trial by supplying the prototype of biscuits and placebo to the respondents in the second phase. A total of 58 mother-infant pairs were divided into two groups; placebo and experimental and consuming the biscuits daily for a month. Expressed breast milk (EBM) and anthropometric indices of mothers and infants were recorded before and after the consumption. The ash and fibre content in the biscuits increased with the percentage of banana flour used. Biscuit with 50% of BFF was most acceptable especially in their taste, crunchiness and overall acceptance. This study showed that EBM volume after consuming BFF contained biscuit significantly higher compared to placebo group. The usage of banana flower is useful in the production of lactogenic biscuit in which could help increasing maternal milk production among lactating working women.

### **Biography**

Azizah Mahmood was born in Terengganu, Malaysia in 1970. She received a diploma in Food Technology from UiTM, and a degree in Food Science from Michigan State University, USA. After completed her master degree from UTM, she worked as a lecturer in POLISAS under the Department of Food Technology. In 1914 she completed her PhD in Biotechnology from the International Islamic University Malaysia. She joined Universiti Malaysia Terengganu (UMT) in 1916 under the School of Food Science and Technology. Her current research interests is focused on the natural resources especially on phytochemical components for its potential as functional foods.



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## **Regeneration of Destroyed Pancreatic Beta-Cells**

**Lee Sam Goo**

239bio Inc., South Korea

### **Abstract**

This study was carried out by Non-Clinical Evaluation Center of Biomedical Research Institute, Chonbuk National University Hospital, South Korea to investigate the preventive efficacy of *Gryllus Bimaculatus* extracts "D&D" in Streptozotocin-induced T1DM rats. Among nine weeks male STZ-induced(65mg/kg) diabetic Sprague-Dawley rats, STZ-induced diabetic rats were randomly divided equally into six groups: Control, high-dose D&D and untreated diabetic rats, D&D (1.63, 3.25 and 6.5g/kg) and treated through oral gavage for 4 weeks. Diabetic related biomarkers were investigated using biochemical and immunohistochemical analysis. Treatment with D&D markedly improved the blood glucose level which was analyzed by intraperitoneal glucose tolerance test (IP GTT) and Insulin tolerance test (ITT). At the end of the experimental period, expression levels of phospho-mammalian target of rapamycin(mTOR), B-cell lymphoma 2(Bcl-2), Bcl-2 associated X protein (Bax) and phosphoserine and threonine kinase (p-Akt Ser473) were measured in pancreas by immunoblotting. The D&D treatment led to significant increase in p-Akt(Ser473), p-mTOR and Bcl-2 expression; decrease in Bax expression; and enhanced the production of intracellular insulin in pancreas. In addition, D&D treated diabetic rats were compensated for body weight loss and alleviated hyperglycemia. These results suggest that the supplementation of D&D improves diabetes by inhibiting oxidative stress and ameliorating STZ-induced pancreatic damage through AKT/mTOR mechanism. Accordingly, the results strongly support that the D&D is beneficial in the treatment of T1DM by regenerating beta-cells against pancreatic dysfunction.

### **Biography**

Dr Lee Sam Goo is the CEO of 239bio Inc., South Korea. He has successfully accomplished the research for "Regeneration of Pancreatic Beta-Cells" using 'D&D' in T1DM. Dr. Lee showed this revolutionary efficacy on Diabetes from 14 groups of 180 T1DM rats induced by Streptozotocin. Those scientific revolutionary regeneration of beta cells destroyed was conducted by AAALAC at ChonBuk National University in Republic of Korea and proven scientifically every biomarkers such as C-peptide, Insulin

secretion, Bax, Bcl-2, Cleaved caspase-3, HbA1c, no side effects in Liver and Kidney included, FBG, PP2, ITT andGTT etc.,. Dr. Lee's researches are not limited to non-clinical trials, but made a much better achievements in human trials. Even T1DM patients showed remarkable recoveries from the worst cases of DM and became normalized of their C-Peptide and Insulin levels less than 2 years of D&D trials.





## **Indian Initiatives to ensure Safe and Wholesome Food-Role of Professional bodies**

### **Dr. K. K. Abdul Rasheed**

Musaliar College of Engineering, Thiruvananthapuram, Kerala, India

#### **Abstract**

**D**ue to unsafe food and poor diets, people in India face numerous health challenges. Six of the ten risk factors for the burden of diseases are food related. While on one hand the problem of chronic hunger continues unabated and most people lack essential vitamins and minerals, overweight and obesity, continue to be on the rise on the other. Unsafe food and poor diets result in an increase in food-borne diseases, which calls for an urgent action.

Aligned with a focus on preventive healthcare of the National Health Policy, 2017 and leveraging synergy with flagship programs like Ayushman Bharath, POSHAN Abhiyaan, Anemia Mukta Bharath and Swasth Bharath Mission, Food regulatory bodies in India, over the past couple of years invested time and effort to create a shared vision for ensuring safe food and healthy diet for all. Eat Right Movement is the drive to share this vision widely with people in a manner that they can relate with and mobilize them to act towards healthier diets to ensure happier lives.

The movement has the slogan of Eat healthy, Eat Safe and Eat Wisely. It is implemented through a network of professionals of food and nutrition. The members of the various professional bodies are committed to disseminate the messages of the movement to 130 crore Indians. The campaign is executed through well designed programs targeted at schools, colleges, workplaces, hospitals, houses etc. For each of the targeted segment, suitable protocols are designed.

#### **Biography**

Dr. K. K. Abdul Rasheed is currently working as Principal of Musaliar College of Engineering, Thiruvananthapuram and earlier he was Dean (PG Studies) and Head of the Mechanical Engineering, TKM College of Engineering, Kollam. He has more than 33 years of teaching experience. He has done his M.Tech in Industrial Refrigeration and Cryogenic Engineering and Doctorate from Indian Institute of Technology, Kharagpur in Cryogenic Engineering. Being an approved research guide of Kerala University, he has produced 5 doctorates in the area of cryogenics.

He has presented papers in many national and international conferences in India and abroad and published several papers in Journals of repute. He was National Vice President of association of Food Scientists and Technologists India (AFSTI) in 2013 and 2014. He is also the president of AFSTI Kollam Chapter. He is also member of various committees of AFSTI.

Dr. Abdul Rasheed is a member of national executive of NetProFaN, a network of six professional bodies of food and nutrition, formed by FSSAI for the implementation of EAT RIGHT MOVEMENT and the Coordinator of NetProFaN Kerala. Currently he is coordinating the activities in Kerala for the implementation.





## **Effect of Variety (Basmati and Non-Basmati) On Some Rheological (Bulk and Shear Properties) Properties of Rice Flour**

**Dharmesh Chandra Saxena**

Sant Longowal Institute of Engineering and Technology, Longowal (INDIA)

### **Abstract**

#### **Statement of the problem:**

The present study was conducted to compare the flowability property of basmati and non-basmati rice flour related to its particle size, shape and surface roughness as well as bulk and shear properties depending upon the processing conditions. The particle size (171.1-171.9  $\mu\text{m}$ ) of both the samples was not significantly different. But, the particle shape (circularity 0.487), surface roughness (124.23nm) and compressibility (25.32%) of the non-basmati rice flour affected the flowability significantly in comparison to basmati rice flour (circularity 0.653, surface roughness 113.59 nm and compressibility 21.09%) making it more cohesive than basmati rice flour. The non-basmati flour had significantly higher basic flow energy requiring more energy (147.54mJ) to flow than basmati rice flour (130.15mJ). The non-basmati rice flour was found less flowable (flow function coefficient, FFC 2.33 at 9kPa) in comparison to basmati (FFC 3.35 at 9kPa) creating bulk handling difficult when the flowability was analysed at three different pressures (3, 6 and 9kPa). This study could be useful in designing processing equipments, hoppers and silos for rice flour handling.

### **Biography**

Dr.D.C. Saxena is dedicated to the continuing development and practice of creative teaching, innovative research and high impact public service programs that have improved food safety, food quality and processing. He was a visiting Faculty of Asian Institute of Technology, Bangkok. He is invited to many countries to present research work and won national and international awards viz., AP Prize 2014 by FOOMA JAPAN and Student Fellow of IUFOST. He is a life member of various associations. His areas of research include starches for food and non-food applications from non-conventional sources, rheology, grain quality, design of food processing equipments as evident from his technical publications (over 100) in reputed journals.



## **Residue, Dissipation and Decontamination of Neonicotinoide Insecticide in Okra and Food Safety Evaluation**

### **Harischandra Naik R**

Pesticide residue and Food Quality analysis Laboratory, University of Agricultural Sciences, Raichur, India.

### **Ratnamma**

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### **Pallavi M S**

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### **Bheemanna M**

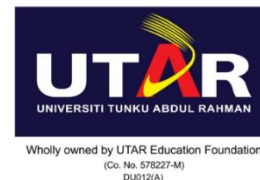
Pesticide residue and Food Quality analysis Laboratory, University of Agricultural Sciences, Raichur, India.

### **Abstract**

**O**okra is one of the important vegetables with high export potential and valued for its green fruits, rich in proteins, calcium, phosphorus, iron, carotene and vitamins. Analytical method was developed to know the residues of acetamiprid, imidacloprid, thiamethoxam in okra using LC-MS/MS. The LOD ranges from 0.002-0.008  $\mu\text{g g}^{-1}$  for acetamiprid and thiamethoxam, imidacloprid. Field trial on residue and dissipation kinetics of neonicotinoide in okra at single and double dose revealed the initial deposits of acetamiprid, imidacloprid and thiamethoxam were 2.03, 1.13 and 1.54  $\text{mg kg}^{-1}$  with half-life of 3.06, 2.38 and 3.38 days at single dose and the initial deposition of 4.04, 2.26 and 3.16  $\text{mg kg}^{-1}$  with half-life of 3.09, 3.36 and 4.05 days at double dose, respectively. Dipping of okra fruits in salt solution and boiling (T10) reduce 89.82 and 73.66 per cent of acetamiprid and imidacloprid. Similarly dipping in 4 % acetic acid (T5) reduces 66.63 per cent of thiamethoxam in okra. The safety evaluation recorded that the, hazard index value were less than 1 for children and adult upon consumption of okra fruits harvested from the residue and dissipation experiment at 5 days after application.

## **Biography:**

Dr. Harischandra Naik, R is presently been working as Assistant Professor of Entomology at Pesticide Residue and Food Quality Analysis Laboratory, University of Agricultural Sciences, Raichur, Inida. He has graduated from UAS, Bangalore, post graduated from UAS, Dharwad and obtained the Ph. D from TNAU, Coimbatore. He has specialized in the Insecticide Toxicology, Pesticide Residue, Formulations and Insect Pheromone and different food contaminant analysis. He has expertise in the analytical techniques viz., GC-MS/MS, LC-MS/MS, ICP-MS, UHPLC and GC-ECD & GC-FID etc. He has published more than 25 research articles in the peer reviewed national and international journals.



## **Physicochemical, organoleptic and antioxidant activity of fruit juice made with different compositions of *Citrus suhuiensis* cultivars**

**Mei Kying Ong**

Department of Agricultural and Food Science, Faculty of Science, Universiti Tunku Abdul Rahman, Jalan Universiti, Bandar Barat, 31900 Kampar, Perak, Malaysia.

**Hwei Xian Choo Eunice**

Department of Agricultural and Food Science, Faculty of Science, Universiti Tunku Abdul Rahman, Jalan Universiti, Bandar Barat, 31900 Kampar, Perak, Malaysia.

### **Abstract**

**C**itrus suhuiensis cv. limau langkat (L) and Citrus suhuiensis cv. limau madu (M) are both important cultivars that have been cultivated widely in Malaysia. In this study, both cultivars were mixed into 5 different formulations and undergone heat treatment using water bath at 90°C for 30 s. The objectives of this study were to compare the physicochemical and organoleptic properties as well as antioxidant activities of fruit juice before and after heat treatment. Physicochemical analysis such as color measurement, pH determination, total soluble solid and titratable acidity were determined. Phytochemical analysis involving ascorbic acid content, total phenolic content and DPPH free radical scavenging activity were also assessed. No significant difference were found on the physicochemical parameters and ascorbic acid content in general after heat treatment was subjected to the fruit juice. The heat treatment applied had increased the antioxidant activity of sample made with 100% L significantly ( $p < 0.05$ ) with 8.68% inhibition using DPPH assay as well as significantly increasing ( $p < 0.05$ ) total phenolic content of sample 10% L + 90% M (19.05 mg GAE/ mL). Sensory evaluation had shown that sample 10% L + 90% M was the most preferred in terms of color, aroma, sweetness, sourness and having an overall acceptability of 5.83.

### **Biography**

Dr. Ong Mei Kying graduated from the Universiti Putra Malaysia with bachelor's degree in food science and Technology in year 2002 and further obtained her Masters of Science in Plant Biotechnology from the same university in 2008. She obtained her doctorate degree in Postharvest Biotechnology from the University Nottingham Malaysia Campus in 2014. At present, Dr. Ong is

working as the Assistant Professor and Head of the Department of Agricultural and Food Science at Universiti Tunku Abdul Rahman, Malaysia. She has 10 years of working experience in food and agriculture technology. She has been teaching in the areas of Functional Foods, Food Sensory Science, Postharvest Technology and Food Preservation.



## **Nutraceuticals: Adding Health to Your Life Naturally**

**Silpa Somavarapu**

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**Venkatrayulu Ch**

Department of Marine Biology, Vikrama Simhapuri University, SPSR. Nellore-Andhra Pradesh, India

### **Abstract**

**T** Nutraceutical is the hybrid of ‘nutrition’ and ‘pharmaceutical’. It can be defined as a food with specific medical or physiological benefit, other than purely nutritional benefit. Nutraceuticals can be categorized as dietary fibre, prebiotics, probiotics, polyunsaturated fatty acids, antioxidants, natural foods like “bio” yoghurts, fortified breakfast cereals, herbal remedies, genetically modified foods and supplements. The food industry says nutraceuticals are the key to transforming our health. They can be considered non-specific biological therapies in combating some of the major health problems of the century such as obesity, cardiovascular diseases, cancer, osteoporosis, arthritis, diabetes etc. Nutraceutical antioxidants such as curcumin, lutein, lycopene, turmerin and  $\beta$ -carotene may exert positive effects on specific diseases by combating oxidative stress. Polyphenols alter cellular metabolism and signaling which is believed to reduce arterial disease. Lycopene in vegetables and fruits exert cancer-protective effect via a decrease in oxidative stress and damage to DNA. Omega-3 fatty acids have been suggested to reduce glucose tolerance in patients predisposed to diabetes. These miracle foods memorize us of the famous saying “Let food be thy medicine and medicine be thy food,” by father of modern medicine Hippocrates. In whole, ‘nutraceutical’ has lead to the new era of medicine and health. Nowadays, nutraceuticals have received considerable interest due to potential nutritional, safety and therapeutic effects. Reasearch on such safe pharmaceutical alternatives should be emphasized.

### **Key words :**

Nutraceuticals; Polyphenols; Flavonoids; Probiotics ; Pharmaceutical alternatives

## Biography

S.Silpa, M.Sc., Ph.D., is presently working as lecturer at Vikrama Simhapuri University, Nellore, Andhra Pradesh. She has more than 16 years of teaching experience and has taught undergraduates, postgraduates, nursing and DMLT students. She has won gold Medal in M.Sc Biochemistry from Andhra university, Visakhapatnam. She won prof.T.M.Radhakrishnan prize and Biochemistry Silver Jubilee Celebrations XXIII Annual Conference of Indian Immunology Society 1996 Prize for securing highest marks in post graduation. She has her doctorate from Gitam University, Visakhapatnam, Andhra Pradesh. She has good academic background with rich exposure in various subjects of biochemistry, biotechnology and food technology. She has actively participated in and presented papers at national and international workshops and conferences. Besides she has extended resourceful expertise in the Guest lectures she has offered at various institutes, colleges and learning centres regularly. In addition she is focusing on bringing out much inspiring and comprehensive textbooks. She has about 20 publications in national and international journals. She also wrote two books titled 'Differential response of cajanus varieties to *Implanta* transformation' and 'macromolecules'.





## **Medical Nutrition Therapy in Gestational Diabetes Mellitus**

### **Dr. P. Savitha**

Assistant Professor, School of Food Science, MOP Vaishnav College for Women, Chennai, Tamil Nadu, India

#### **Abstract**

**G**DM has emerged as a public health problem globally and marks beginning of a vicious cycle in which diabetes begets more diabetes, leaving a legacy for both affected mother and her offspring to face impending long-term consequences. For effective continuum of care in GDM, early diagnosis and adequate management is very essential and nutrition intervention through MNT has been recognized as the cornerstone of therapy. MNT is a self-management therapy and the clinical goals of MNT in GDM are to achieve normoglycemia, prevent ketosis, provide adequate weight gain and add to the foetal wellbeing. Education, support and follow-up are required to assist the woman to make lifestyle changes essential to successful nutrition therapy. The management of GDM entails calorie and nutrient restrictions and the challenge for MNT in GDM is to balance the needs of a healthy pregnancy with the need to control glucose level. The food plan should be individualized and culturally appropriate to consider the patient's body habitus, weight gain and physical activity and be modified as needed throughout pregnancy to achieve treatment goals. Nutrition intervention should emphasize overall healthy food choices, portion control and cooking practices that can be continued postpartum and may help prevent later diabetes. It is utmost important to seek nutrition intervention for adequate maternal nutrient intake for growth of foetus without draining on mother's own tissue to maintain pregnancy. MNT remains front and foremost in the management of GDM as there could be long-term cost savings in the prevention of negative future consequences of GDM for mothers and children.

GDM- Gestational Diabetes Mellitus

MNT- Medical Nutrition Therapy



## **Biography**

Dr. Savitha is an Assistant Professor, School of Food Science, MOP Vaishnav College for Women, Chennai. Graduated with M.Sc., M.Phil. and Ph.D. from Avinashi lingam University, Coimbatore has a teaching experience of more than 15+ years and has been guiding several Post graduates and M. Phil Scholars in their research work. She has several article publications in National and International Journals to her credit and authored chapters in Medical books on Medical Nutrition Therapy.

She is active in designing new curriculum and implementing new concepts, she consistently strives to create a challenging learning environment and nurtured the young minds in taking up various job avenues in the food industry besides inculcating entrepreneur skills in the food-based sector.

Life member of professional bodies like Association of Food Scientists and Technologists (AFSTI), Nutrition Society of India (NSI) Indian Dietetic Association (IDA) and Network of professionals of Food and Nutrition (NetProFan) has organized International, National conferences, workshop and Seminars, besides participation. She is currently the Secretary for AFSTI, Chennai Chapter. Has received best paper awards at the National & International Conference of Diabetes in Pregnancy Study Group (DIPSI), IDA & NSI.



## **A Novel Use of Torrefacto Roasting with Superheated Steam on Black Seeds (*Nigella sativa*)**

**Harivaindaran K. Veeriah**

Universiti Sains Malaysia

**Nguyễn Hữu Tiến**

Universiti Sains Malaysia

**Syazana Sulaiman**

Universiti Sains Malaysia

**Hayati Samsudin**

Universiti Sains Malaysia

**Fazilah Ariffin**

Universiti Sains Malaysia

### **Abstract**

**N**igella sativa or commonly known as black seeds or habbatus sauda (Arabic origin) is a spice that is therapeutic against a myriad of ailments. However, common culinary practices of roasting or heating the seeds cause damage to its bioactive and volatile compounds. This could be thwarted by roasting it with superheated steam (SHS) in tandem with sugar; the latter known as torrefacto roasting. With three roasting temperatures (150, 200, and 250 oC), and three roasting time for each temperature (10, 15, and 20 minutes), convection, SHS and SHS torrefacto roasting were evaluated for proximate analysis and antioxidant assays, namely, 2,2-Diphenyl-1-picrylhydrazyl (DPPH) radical scavenging capacity (RSC) and total phenolic content (TPC). Moisture content significantly decreased from 9.08% (raw seeds) to a range of 1.04 to 4.18% (roasted seeds). Fat content increased to as high as 44.76% with increase in roasting temperature and time (from 32.87% in raw seeds). Protein content was markedly lower in torrefacto roasted samples (16.03 to 18.17%) than in convection or SHS roasted samples (19.19 to 23.58%) as a result of higher carbohydrate content. Roasting had minimal effect on

ash content. DPPH RSC was highest in 150oC torrefacto samples (>92% inhibition) and decreased as roasting time and temperature increased for all three roasting methods. Conversely, TPC increased with increase in roasting time and temperature. Moisture loss and cell wall breakdown during roasting caused significant changes in proximate content. Concurrent increase of TPC and resistance to decrease in DPPH RSC indicate that SHS roasting with sugar positively affected black seeds.

## **Keywords:**

*Nigella sativa*, black seeds, superheated steam, torrefacto, roasting

## **Biography:**

Harivaindaran K. Veeriah began his academic journey at the Universiti of Malaya, with a Bachelor of Science Degree in Biology majoring in Biotechnology. Having graduated with his degree in 2009, he pursued his Master of Science Degree in Food Technology from the School of Industrial Technology, Universiti Sains Malaysia. He is currently a PhD candidate in Universiti Sains Malaysia in the same area of studies with an interest in food roasting technology that relates to black seed and coffee roasting.



## **Determination of Lycopene Content in Malaysian Selected Fruits for Development of Functional Drink**

**Hasnisa binti Hashim**

Malaysian Agricultural Research and Development Institute (MARDI)

### **Abstract**

Lycopene (C<sub>40</sub>H<sub>56</sub>) is a phytochemical compound of carotenoid hydrocarbon. Lycopene is one of the most potent antioxidant which is naturally present in red colored fruits and vegetables (papaya, watermelon, tomato, red pepper, etc). Recently, lycopene has gained attention among nutritionists due to the evidence of epidemiological studies that proving its preventive properties toward chronic diseases such as cancers, cardiovascular diseases and diabetes. This study was carried out to determine lycopene content in selected Malaysian fruits in order to develop a functional drink to fulfill the recommendation of daily lycopene diet intake. Lycopene was extracted using hexane: ethanol: acetone (2:1:1) and determined using UV-vis spectrophotometer method at 503nm (hexane as blank). This study showed watermelon contained the highest lycopene content (66.6 mg/kg) followed by papaya (31.3 mg/kg). Watermelon was used as raw material in producing lycopene rich drink to meet the recommendation of 5-10mg of daily lycopene intake. Lycopene and its isomers (cis and trans) was then determined using high performance liquid chromatography method and the results showed that the lycopene rich drink contained 10 mg of lycopene in 200 ml.

### **Biography:**

Graduated from Universiti Kebangsaan Malaysia with BSc (Hons) of Chemical Technology and MSc of Chemistry. Works as a research officer at Food Science and Technology Research Centre, Malaysian Agricultural Research Institute (MARDI) from August 2006. Actively involved in projects funded by MARDI and Malaysia's government fund (RMK) either as project leader or collaborator. Current research interests: food chemistry, fats and oils and food contaminants.



## **Quality of Oil Extracted from Oil Palm Fruit (*Elaeis guineensis*) after Enzymatic Pre-Treatments**

**Hui Yin Fan**

Universiti Malaysia Sabah

**Hui Min Kho**

Universiti Malaysia Sabah

### **Abstract**

The quality differences in physicochemical properties, antioxidant properties and oxidative stability for palm oils extracted under the influences of enzymatic pretreatments were investigated. The oil palm fruits were pre-treated with cellulase (S), pectinase (P) and tannase (T) at 0.5% enzyme solution (w/v), respectively, ratio of enzyme solution to pulp of 1:1 and 30 minutes of incubation time at 50°C, while control sample was prepared without enzyme treatment. In comparison with sample SP and control sample, sample SPT had the highest colour intensity (L: 2.97, a: 8.3 and b: 4.26) and iodine value (69.28g I<sub>2</sub>/100g), with significantly lower in specific gravity, insoluble impurity, free fatty acid content and moisture content (0.86, 3.56%, 22.72% and 1.66%, respectively). Antioxidant capacity of sample SPT was significantly higher for both DPPH and FRAP assays ( $p < 0.05$ ), and these results were supported with its high content ( $p < 0.05$ ) of total phenolic content and carotene content. In oxidative stability assessment, the peroxide value, *p*-anisidine value and total oxidation value increased over the onemonth storage period for all samples, with sample SPT significantly lower than other samples. The results revealed the potential of enzymatic pre-treatment with SPT on oil palm fruits for the production of palm oils with improved quality.

### **Biography:**

Hui Yin Fan completed a B. Food Sc. (Hons) in Food Science and Bioprocess from the Universiti Malaysia Sabah in 2001, and a M.Sc. in Food Science from the Universiti Kebangsaan Malaysia in 2007 researching in enzymatic modification of palm oil. She has worked with the palm oil-based food manufacturer from 2005, MOI Foods Malaysia Sdn. Bhd., and left the organization as Assistant Quality Assurance Manager after 4 years. She joined Universiti Malaysia Sabah as an academician

since 2009 until present, and she has recently completed a Ph.D in Food Science and Agricultural Chemistry from McGill University, Canada. Her research interest lies in food biopolymers, food enzymology, and edible fats and oils.



## **Assessment of Nutritional Status of Rural Children (2-5 Years) of Udaipur District**

**Jai shree dadhich**

College of community and applied science

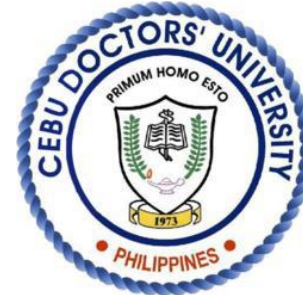
### **Abstract**

The nutritional status of 80 children (2-5years) in Udaipur district was studied. Personal interviews consisting, 24 hour dietary recall of children was used. Amount of nutrients obtained per day from food consumed was calculated and compared with RDA for Indian children. Anthropometric measurements including weight and height were used to identify the physical condition of children. Water low's, Gomez's classification BMI-for-age determined the extent of mal-nutrition in children and were compared with IAP standards. The height, weight and BMI of all respondents were significantly ( $p<0.05$ ) lower than the reference value. As per Water low's and Gomez's classification, only 11.25 per cent of the children were normal. 87.5 per cent of the children were wasted and 41.25 per cent severely malnourished. Food consumption patterns indicated that except fat, diet consumed lacked all major and minor nutrients required for growth of children. Nutritional inadequacies, poverty, lack of infrastructure and poor education of mother resulted in severe mal-nutrition in children. This condition needs careful consideration. Steps like nutritional interventions and women education programmers organized along with governmental and non-governmental groups can help in improving this condition

### **Biography**

My-self Jai shree dadhich I have done M.Sc. in Food & Nutrition, presently working in SR Dietician in GMCH Udaipur and also working in sports nutritionist in Rajasthan football team. I got published my article in Rajasthan patrika, state news express about nutrition awareness, anemia, malnutrition. I'm member of NNSHA and archived national nutrition award-2019.





## **Status and Quality of Food Offerings of Public Schools in Cebu City**

**John Rafael R. Arañas**

Faculty, Cebu Doctors University, Department of Nutrition and Dietetics, Cebu City, Philippines

### **Abstract**

The study consisted of Public School Canteens (N=93) both in elementary and high school. Public School canteens share common challenges in operations and management that affect the quality of their food offerings. Most cafeterias have no foodservice manager and staff and personnel were given little or no training with regards to food safety and food handling. Furthermore, space requirement and canteen facilities were not compliant to the required allocation of space and number of basic facilities, tools and utensils used inside the cafeteria. The results regarding the nutritional quality and adequacy of nutrition to the food offerings shows that, Cebu City public schools do offer some nutritious foods which are adequate enough to the students. However, menus are categorized to be limited. The Cebu City public school canteens are compliant to food safety and sanitation and its regulation to the food offerings. However, most of the school canteens fall short in complying with the following, (1) all canteen personnel/staff should wear their identification cards with photo inside the premises of the canteen, (2) posting of the menu/daily cooked food offerings indicating their nutritional value on a bulletin board within the school, and (3) exclusion of “fruit” drinks, ades, cocktail, beverages, and punches in the menu.

### **Biography**

Mr. John Rafael Arañas is a graduate of BS Nutrition and Dietetics in the University of San Carlos (USC). He completed his graduate study as Master of Public Health at Southwestern University in April 2018. He had taught in the USC for four years and now pursues Food, Nutrition and Diet Consultancy at the Sonnet's Catering Services while working as a full-time assistant instructor at Cebu Doctor's University. His areas of expertise include food safety, nutrition in the life stages, foods and foodservice management and community health nutrition.





## **Development of Malt-Based Food Fortified With Decaffeinated Green Coffee Extract**

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Department of Food Technology, Bannari Amman Institute of technology, Sathyamangalam, India

**Ramalakshmi K**

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### **Abstract**

**M**alt is a germinated cereal grain that has been dried in a process known as malting. Malted health drinks are traditionally consumed as milk substitutes and also available in mix with water and marketed as nutritious drink. This project aims in incorporating malted foxtail millet flour with malted barley and wheat flour which are traditionally used for the preparation of malt-based health drinks. Foxtail millet is rich in dietary fiber and minerals like iron and copper, due to this it helps to reduce levels of bad cholesterol and keeps the immune system strong. Green coffee extract is a rich source of polyphenols and anti-oxidants, especially chlorogenic acid and of variety 5-CQA has been known to protect tissues from oxidative stress, modulate glucose metabolism and mediate anti-obesity. Malt flour was prepared by mixing malted barley and malted foxtail millet in 1:1 ratio. Standard malt-based food was prepared with the composition as malt flour 40%, wheat flour 25%, sugar 20%, milk solids 15%. To this decaffeinated green coffee extract was incorporated at different levels of 3%, 5% and 7% and was analysed for its physico-chemical and sensory properties. Overall the developed product is aimed to give high nutritional benefits with anti-oxidant and anti-obesity properties.

### **Biography**

Ms. Kavinya Vijayakumar is pursuing her final year in B.Tech Food Technology at Bannari Amman Institute of Technology, Sathyamangalam, Tamil Nadu, INDIA and currently she is working as an intern at Britannia Industries ltd., at Perundurai, Erode since 05.08.2019.



## **Enhancement of resistant starch content in sago (Metroxylon Sagu) starch by combination of acid methanol treatment and annealing**

**Jau-Shya. Lee**

Universiti Malaysia Sabah, Kota Kinabalu, Sabah, Malaysia

**Chee Kiong Siew**

Universiti Malaysia Sabah, Kota Kinabalu, Sabah, Malaysia

**Hasmadi Mamat**

Universiti Malaysia Sabah, Kota Kinabalu, Sabah, Malaysia

**Patricia Matanjun**

Universiti Malaysia Sabah, Kota Kinabalu, Sabah, Malaysia

**Jia-Qin, Ng**

Universiti Malaysia Sabah, Kota Kinabalu, Sabah, Malaysia

### **Abstract**

Owing to the health benefits offer by low digestible starch, particularly resistant starch (RS), various attempts had been carried out by researchers to reduce the digestibility of starch using a wide arrays of modification methods. In this study, several combinations of acid methanol treatment (AMT) and annealing (ANN) were carried out on sago starch (Metroxylon Sagu) to modify its in vitro digestibility. Sago starch was hydrolysed with 1 and 2 ml of hydrochloric acid (36 %, v/v) at 35oC and 40oC respectively, prior to annealing for 72 hours. The effects of modification on the in vitro digestibility, thermal properties, crystallinity, and morphology were investigated. AMT treatments increased the RS content whilst ANN increased the slowly digestible starch (SDS) fraction ( $p < 0.05$ ). Two combined treatments induced highest amount of RS ( $p < 0.05$ ) in sago starch. This RS exhibited better heat stability thus resulted at least three-fold of increment in RS content with significant reduction in glycaemic index after cooking ( $p < 0.05$ ). Acid hydrolysis enhanced the formation of new

crystallites during ANN without changing the crystal pattern of the starch ( $p > 0.05$ ). Sago starch granules were found agglomerated with minor protuberance, surface erosion and surface fissures after dual-modification.

## **Biography**

J-S Lee is an Associate Professor in Faculty of Food Science and Nutrition in Universiti Malaysia Sabah, which is located in the state of Sabah, Malaysia. Her primary area of expertise is starch modification; particularly improvement of either the technological or biological functionalities of a starch. She had carried out research in this field for more than 10 years. Her recent interest focuses on the enhancement of resistant starch fraction in various kinds of flour and starchy foods.



## **Nanoencapsulation of Curcumin in Protein Matrices for Enhanced Bioaccessibility**

### **Mahalakshmi L**

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### **Moses J A**

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### **Anandharamakrishnan C**

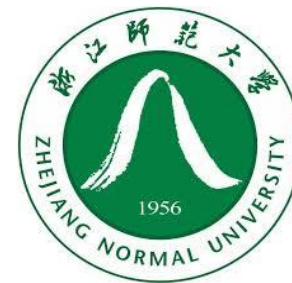
Computational Modeling and Nano Scale Processing Unit, Indian Institute of Food Processing Technology (IIFPT), Ministry of Food Processing Industries, Govt. of India, Thanjavur 613005, Tamil Nadu, India.

### **Abstract**

**C**urcumin is a hydrophobic bioactive compound found in *Curcuma longa* and its demand has increased due to its anticancer, anti-inflammatory, antioxidant and antimicrobial activities. Formulation of curcumin enriched functional foods is limited because of its very low water solubility, physicochemical stability, sensitivity towards light, temperature and pH resulting in poor bioaccessibility and bioavailability. The objective of this study is to improve the water solubility and bioaccessibility of curcumin by nanoencapsulation through electrospray technique. Different protein matrices (zein, soy protein isolate and whey protein concentrate) were used for nanoencapsulation of curcumin. Emulsion characteristics, encapsulation efficiency, particle size and morphology of the nanoencapsulated curcumin were studied. Bioaccessibility of nanoencapsulated curcumin were analyzed using in-vitro simulated gastrointestinal digestion. The average particle size of about 430 nm and 320 nm for curcumin encapsulated with whey protein concentrate and zein matrix, respectively were produced. Electrospray process yielded higher encapsulation efficiency of about >75%. Compared to other protein matrices, zein matrix protected curcumin effectively under gastric condition and showed better gastro intestinal stability and improved bioaccessibility. Thus, nanoencapsulation through electrospray improves enhance the stability and bioaccessibility of sensitive bioactive compound during food processing, storage and distribution.

## Biography

Mahalakshmi L is currently pursuing Ph.D in the department of computational modeling and nanoscale processing unit, at IIFPT, Thanjavur, India. She has completed her Masters in Nanoscience and technology, Anna University, Trichy. She has awarded best project award for her PG research work. She has completed her bachelor degree in Biomedical engineering, at Veltech Multitech, Engineering college, Chennai. She has participated and presented in various national and international conferences.



## **DASH Diet Lowers Blood Pressure in Hypertensive Patients in Association with Age, BMI and Intervention Duration: A Systematic Review and Meta-Analysis**

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### **Feng Hong**

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### **Yubo Liu**

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### **Weibing Ye**

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## **Abstract**

### **Background:**

**H**ypertension caused by poor dietary habits and physical inactivity, is a risk factor for variety of cardiovascular diseases. Studies with dietary approaches to stop hypertension (DASH) have been shown to lower the blood pressure (BP) in patients with hypertension. However, reports are inconclusive on lowering the systolic BP (SBP) and diastolic BP (DBP) following DASH diet, probably due to the variances in patients' age, body mass index (BMI) and intervention duration. **Purpose:** This study examined the association between DASH diet intervention and BP, and explored the influence of patients' age, BMI and DASH diet duration on lowering the SBP and DBP. We further identified the effective variable that could potentially control the SBP and DBP in patients. **Methods:** PubMed, Web of Science, ScienceDirect and Google Scholar were searched for the relevant randomized controlled trials published until August 2019. Eligible trials were included according to the PRISMA (preferred

reporting items for systematic reviews and meta-analyses) guidelines. Along with meta-analyses (pooled effect of DASH diet), we performed meta-regression analysis to identify the involved variables (age, BMI and DASH diet duration), and subgroup analysis to emphasize the effectiveness of each variable on changing the SBP and DBP in patients. **Results:** The pooled outcome of 14 trails showed that DASH diet significantly ( $P < 0.005$ ) decreased both SBP and DBP in patients with hypertension. Subgroup analysis results for the age factor revealed that younger adults ( $< 50$  years) represented with a significant decrease of both SBP ( $I^2 = 57.3\%$ , 95% CI: -8.91, -5.55,  $P = 0.05$ ) and DBP ( $I^2 = 68.7\%$ , 95% CI: -5.00, -2.58,  $P = 0.01$ ) following DASH diet. However, in older adults ( $\geq 50$  years) only SBP ( $I^2 = 63.6\%$ , 95% CI: -5.20, -3.21,  $P = 0.005$ ) was decreased, not DBP ( $I^2 = 35.1\%$ , 95% CI: -2.91, -1.75,  $P = 0.137$ ). Furthermore, patients with higher BMI ( $> 30$  kg/m<sup>2</sup>) showed a notable decrease of SBP ( $I^2 = 71.7\%$ , 95% CI: -5.67, -3.77,  $P = 0.000$ ) and DBP ( $I^2 = 63.2\%$ , 95% CI: -3.08, -1.92,  $P = 0.004$ ), whilst patients with lower BMI ( $\leq 30$  kg/m<sup>2</sup>) did not responded to DASH diet. Interestingly, shorter duration of DASH diet intervention ( $< 12$ -week) effectively lowers the SBP ( $I^2 = 75.1\%$ , 95% CI: -8.87, -5.35,  $P = 0.001$ ) and DBP ( $I^2 = 76.2\%$ , 95% CI: -3.73, -2.05,  $P = 0.000$ ) in patients, but longer duration of intervention did not contributed. **Conclusions:** Our findings conclude that DASH diet decreases both SBP and DBP in patients with hypertension, but patients' age and BMI are the key factors to achieve the goal. Furthermore, longer period of DASH diet intervention appears to be ineffective in controlling the BP in patients.

## Biography

Dr. Mallikarjuna Korivi is an Assistant Professor at Zhejiang Normal University, China (2017 to date). He obtained his PhD in Animal Science (Molecular Biology) from Sri Venkateswara University, India in 2006. Afterwards, Dr. Korivi worked as a Post-doctoral scientist at Inje University, Korea from 2006-07, then moved to Taiwan and served as Post-doctoral scientist and Research Assistant Professor for University of Taipei, National Health Research Institutes and China Medical University from 2007 to 2017. His major research areas are nutritional biochemistry, pharmacology, metabolic syndrome, sports medicine, redox biology and cancer treatment. From his doctoral program to now, Dr. Korivi published more than 70 articles in reputed SCI journals with accumulated Impact Factor  $\sim 130$  (h-index=19; i10-index=36; Aug 2019). Additionally, he published one Book Chapter, supervised several post-graduate students and serving as Associate Editor, Guest Editor and Reviewer for various SCI journals. Dr. Korivi honored with several prestigious awards, including, Travel Grant Winner (2019, ACSE, Dubai), Young Investigator Award-Gold (2015, XI World Congress of ISAM, Japan), Travel Grand Award (2015, MOST, Taiwan), Marquis Who's Who in the World (2010, 2012, 2015 & 2016, USA), International Biographical Center-Man of the Year 2013 (Cambridge, UK), Young Investigator Award (2011, The 7th FAOPS, Taiwan), Travel Grand Award to attend ACSM annual meeting USA (2010, NSC, Taiwan), Junior Science of the Year 2005 (NESA, India) and Young Scientist (2004, Sri Venkateswara University, India).





## **Effect of Radio Frequency Heat Treatment on Physico-chemical and Microbiological Quality of Red Chilli Powder**

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### **Abstract**

In the present investigation the effect of radio-frequency (RF) heating on physico-chemical characteristics and microbial disinfection of red chilli powder was studied. The chilli powder was treated with RF energy (27.12 MHz) at three levels of electrode gaps (100, 125 and 150 mm) and exposure times (10, 15 and 20 min.) for product thickness of 30 mm. The post treatment effect on quality parameters of RF treated chilli powder was observed up to 180 days of storage. There was a significant reduction in the microbial load in RF treated chilli powder whereas, an insignificant change recorded in moisture content (8.40 to 7.95 % w.b), color (a\*value: 32.72 to 31.56), ascorbic acid (104.85 to 99.65 mg/100g) and capsaicin content (0.030 to 0.130%) during its storage. The results revealed that the RF treatment with 100 mm electrode gap for 15 min of exposure time was found to be optimum and this could be recommended to the commercial manufacturers of chilli powder for effective disinfection without much changes in its physico-chemical characteristics.



## **Keywords:**

RF heating, Chilli powder, Physico-chemical properties

## **Biography**

Dr. P. F Mathad working as Scientist (AICRP on PHET) in the Dept. of Processing and Food Engineering, College of Agricultural Engineering, University of Agricultural Sciences, Raichur, Karnataka, India. Has 10 years of experience in teaching, research, writing project proposals, handling of high-end instruments such as HPLC, GCMS, FTIR, DSC, Rheometer, Texture analyzer, TGA etc. Published 20 research papers in reputed journals and 15 abstracts in International and National conferences. Undergone international training on Image processing and application of Radio Frequency in food processing at University of Nebraska, Lincoln, USA. Filed patent and product license for Ph D research work.



## **Validation of Analytical Method for Estimation of Heavy Metals in Rice Using ICPMS**

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## **Abstract**

Rice is the main cereal product used as a food product in Southern India. Therefore, the aim of this study was to develop and validate an analytical methodology to determine the metals Pb, Cd, As, Hg, Cu, Zn and Sn in Rice (cereal) sample using inductively coupled plasma mass spectrometry (ICP-MS). To obtain the rice samples were homogenized, grinded, weighed and digested in microwave digester with supra pure nitric acid. The analytical method was validated by measuring several parameters including limit of detection (LOD), limit of quantification (LOQ), linearity, precision, accuracy, repeatability. Percent recoveries of spiked samples were within the acceptable range. The

results for Pb, Cd, As, Hg, Cu, Zn and Sn in Rice were 98.14%, 100.51%, 102.43%, 98.39%, 98.13%, 106.17% and 81.84% respectively. Therefore, the method using ICP-MS was developed and validated to determine metals concentrations in Rice samples and the proposed method could be applied in routine analytical laboratory.

## Biography

Dr. Nagaraj M Naik working as Assistant Professor (Agril.Microbiology) in the University of Agricultural Sciences, Raichur, Karnataka, India. Twelve years experience in Teaching, Handling of Research Projects, Quality assurance (Chemical & Microbiological), Setting up of Food Quality testing Laboratory and Hi-tech Analytical Instrumentation –Maintenance and operation (HPLC, LC-MS/MS, GC, GC-MS/MS, ICP-MS). Guided 10 master degree students in Agril. Microbiology discipline and served as advisory member for more than 40 students in obtaining Master's and Doctoral degree. Published 35 full length research papers in standard journals, 31 research papers in proceedings of national and international conference and also received young scientist award from NESI, New Delhi.



## **PUFA Premix Fish Soup with Mushroom**

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## **Abstract**

**P**re-mix fish soup with mushroom is a healthy and innovative product prepared from red tilapia fish (*Oreochromis Niloticus*), gray oyster mushrooms (*Pleurotus sajor caju*), rice and other ingredients in a convenient powder form. It is a complete food, good for health as it contains 1.3g / 100g of

polyunsaturated fatty acids (PUFA). Adequate consumption of PUFA in daily diet of 0.4g PUFA for 30g meal is good for cognitive function as well as reducing the risk of heart disease and improving body immunization. This pre-mix also contains high in dietary fiber (8.4g /100g) which can help with digestion, reduce the risk of diabetes and obesity. It also contains good source of protein (16g/100g) protein, essential for growth and contains Beta-glucan (0.4 /100g) good for lowering cholesterol in blood. This pre-mix is packed in aluminum/polyethylene with shelf life of 12 months at 25°C. Sensory evaluation by 17 trained panelists through descriptive quantitative tests on a scale of 1 to 5, showed that in terms of color, taste, texture, appearance and overall acceptance score were 4.0 and above ( $p>0.05$ ). The pre-mix was accepted by 400 respondents from all ages and races with score 87.6% on overall acceptance, while taste 84.5%, color 83.8%, texture 86%, aroma /odor 82% and 85% physical appearance. Feasibility analysis showed that Internal Rate of Return was 53.8% and payback periods was 2.1 years. As a result of financial analysis this pre-mix is viable at a sales price of RM 2.00 per pack of 30 grams.

## **Biography**

Nor Salasiah Mohamed, obtained her Master of Food Technology in Chulalongkorn University, Bangkok, 2014. Her career started as Research Officer at Malaysian Agriculture Research and Development Institute (MARDI) from 2004 up to now. Her research is currently focusing on food processing and product development of fisheries products. She active as Malaysian Institute of Food Technology members and joining the activities.



## **Isolation of Bacteriocin Producing Lactic Acid Bacteria from Mangrove Ecosystem and Its Effective Utilization as Bio Preservative against Certain Food Borne Bacterial Pathogens**

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**R.Elango**

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### **Abstract**

**C** Different samples *viz.*, Brackish water, mangrove leaf and mangrove soil were collected from the mangrove ecosystem of Pichavaram in Tamil Nadu, and the total viable count of lactic acid bacteria (LAB) were enumerated in MRS agar medium by pour plate method after characterization of their morphological, physiological and biochemical characters, Six different bacteriocin producing lactic acid bacteria *viz.*, *Lactobacillus acidophilus*, *Lactococcus lactis*, *Lactobacillus bulgaricus*, *Pediococcus acidilactici*, *Lactobacillus plantarum* and *Enterococcus faecalis* were screened for their antibacterial activity against four different food borne bacterial pathogenic organisms *viz.*, *E. coli*, *Salmonella typhi*, *Staphylococcus aureus*, and *Bacillus cereus*. It was observed that *E. coli* was found to be sensitive to five LAB's and moderately sensitive to one LAB. *Salmonella typhi* was found to be sensitive to five lactic acid bacteria and moderately sensitive to one lactic acid bacteria. *Staphylococcus aureus* was sensitive to five lactic LAB's and moderately sensitive to one LAB and *Bacillus cereus* was sensitive to four lactic acid bacteria and moderately sensitive to two LAB's. Among the four different pathogenic organisms tested, all the pathogens were inhibited either strongly or moderately by four different LAB's *viz.*, *Lactobacillus acidophilus*, *Lactococcus lactis*, *Lactobacillus plantarum* and *Lactobacillus bulgaricus*. Based on the results of the present study, it was concluded that the incorporation of

bacteriocin producing LAB as a bio preservative into food system will be effective in controlling of certain food borne bacteria pathogenic microorganisms.

## **Biography**

Dr.P.SIVASAKTHIVELAN is Assistant Professor in the Department of Agricultural Microbiology at the Faculty of Agriculture, Annamalai University; He has a teaching and research experience of 11 years. He has presented paper in 12 International and 51 National Conferences and delivered 15 invited lectures in various institutions. He has participated in 19 National level workshops and 16 National Training programmes. To his credit he has 37 research publications in peer reviewed international journals. He has guided 13 Research scholars in PG and currently guiding a scholar in Ph. D Programme. His area of research is formulation of bioinoculants with low cost carriers and development of agriculturally beneficial microbial consortium. He is a life member in various organizations and recipient of Young Scientist Award – 2017 instituted by the Indian Association of Applied Microbiology.





## **Development of Biopolymeric Film from Cashew Processing Waste with Antimicrobial and Anti-Browning Properties**

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### **Abstract**

**F**ood safety and waste utilization are the serious current issues to be addressed quickly. Food preservation is a technique to increase the shelf life of food and inhibit the growth of microorganisms. Research studies have described various hazardous effects of conventional packaging materials towards the environment. In this scenario, biodegradable films with antimicrobial agent are becoming an interesting alternative source of “Go Green” food packaging. Hence, this investigation emphasized the extraction of anacardic acid from liquid of cashew nut waste and its application as food preservatives, to replace the non-degradable packing material. The cashew nut liquid showed about 71-75% of anacardic acid with potent antibacterial effect against food pathogens such as *E. coli*, *Listeria monocytogenes*, *Streptococcus faecalis*, *Salmonella typhi* and *Shigella boydii*. Packing material was prepared with extracted anacardic acid (10 mg, 15 mg and 20 mg) along with different combination of polymers (chitosan alone, chitosan: gelatin: carboxymethyl cellulose, and chitosan: gelatin). Packaging film prepared with anacardic acid containing chitosan showed anti-mold activity in bread and anti-browning property in cut apples. The application of anacardic acid extracted from the waste in packaging material will elicit changes in the food preservation that replace and reduce the risk of commercially available packaging materials.



## Biography

Dr. Preethi Ramakrishnan is currently working as National–Post Doctoral Fellow under the scheme of SERB in the Department of Computational Modeling and Nanoscale Processing Unit, at IIFPT, Thanjavur, India. She has completed her Masters in Microbiology in Bharathidasan University, Trichy with Single Girl Merit Scholarship. She have completed her Ph.D. in Biotechnology from Avinashilingam University, Coimbatore. She has awarded as university rank holder, received two travel grant awards for the best poster presentation in international conferences and qualified ICAR-NET. She has published articles in the reputed international journals and participated and presented in various national and international conferences and acting as members in various scientific organization.



## **Development and Quality Evaluation of Little Millet Based RTC (Ready-To-Cook) Foods and Assessing Its In-Vitro Glycemic Response**

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### **Abstract**

**B**ackground: Diabetes is a growing challenge in India with estimated 8.7% diabetic population in the age group of 20 and 70 years. Millets are one of the oldest foods known to humans and they are found to have high nutritive value than wheat and rice. Millets are recommended to diabetics as they are rich in fibre and have low GI.

**Objective:** The objective of the study is to develop Ready -To- Cook (RTC) food mixes using little millets and study its quality parameters and determine its in-vitro glycemic response.

**Methods:** The little millet was processed as sooji, flour and grits. After several trails from 50% to 100% replacement of millet fractions with cereals, three highly acceptable variations 60%, 70% and 80% was selected for the formulation of food instant mixes. Above three variations in each product namely upma, kichadi, noodle, pongal, and soup mix, totally 15 variations were developed and used for further analysis. All the mixes were analyzed for its nutritional organoleptic, textural properties and storage studies using standard procedure. All the variations of millet mixes were analyzed for in-vitro glycemic responses.

**Results:** The results concluded that the 60% little millet incorporated upma, kichadi, soup mix and 80% little millet incorporated noodles was highly acceptable comparable with standard products and commercial products. The texture of the developed mixes was well defined in hardness, cohesiveness, stickiness etc. Keeping quality of the little millet incorporated mixes was found to be good.

**Conclusion:** All the developed ready-to-cook food mixes of both the millets were found to be in low and medium glycemic index range, which confirms its suitability in the management of diabetes.

**Key words:** Millets, Diabetes, RTC, Glycemic Index.

## **Biography**

Dr. P. Nazni is Doctorate in Food Science and Nutrition having more than 18 years of teaching and research Experience. She is the recipient of various national and International awards. She has presented more than 225 research papers in various National and International Seminars/ Conferences and has published 101 research papers in referred National and International journals. She has been resource person for 132 Seminars / Conferences/Workshops both national and International. She has visited various countries like Canada, Australia, South Africa, Czech Republic, Thailand, Iran, UAE and Nepal for her invited talks and paper presentation. She has completed Seven Major research projects funded by UGC, DST, RSSDI, MofPI and ICMR and 10 Minor research projects for the worth of Rs.2.25 crores. She has written four books published by Germany publications and five by Indian publications. She has guided 52 M.Sc, 45 M.Phil and 14 Ph.D candidates with 7 under guidance. She has been member in Editorial board of various reputed Journals and having membership in various Professional Bodies.



## **An Innovative Microbial Technology for the Safe Disposal of Sugar and Distillery Wastes**

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### **Abstract**

Sugarcane is one of the most important cash crops capable of producing high biomass yielding energy in the form of sugar, power and alcohol. India has the largest area of sugarcane, 4.23 million ha and yielding about 299 million tonnes of sugarcane and 15 million tonnes of sugar. Sugar industry also produces 7.5 million tonnes of molasses. Molasses serve as a raw material for alcohol production yielding 2.70 billion litres of alcohol by releasing 45 billion litres of spentwash possessing very high BOD. The sugar industry is one amongst the largest agro based industries in India letting out huge quantities of solid and liquid wastes causing environmental pollution. The existing method of disposing the solid and liquid wastes from sugar factories including distillery needs a scientific approach in order to reduce the hazardous effect on the environment, to reduce the period of composting and to improve the value of bio compost. In the present study, 30 Cellulolytic and lignolytic isolates were obtained from these waste materials and those isolates were characterized and studied for the present waste management. The results of the experiments showed that application of microbial consortium treated with sugar and distillery waste significantly improved macronutrient and micronutrient content of the compost.

### **Keywords**

Pressmud, Spentwash, Microbial Consortium and Compost

## Biography

Dr.R.Elango, Associate Professor is having 20 years of rich Teaching and Research experience. So far he has Produced 07 Ph.D, 21 M.Sc and 11 M.Phil Research Scholars. His research contribution is evident from the 4 Research Projects funded by the various funding agencies. His area of specialization is formulation of microbial consortium for the effective solid waste management. He has Published 35 research papers in the peer reviewed reputed academic research journals. He has also Acted as Board of Examiner for UG and PG programmes in Annamalai and other Universities. He has visited and presented papers in various International Conferences held at Egypt, Indonesia, Philipines and Thailand.



## ***Serratia rubideae* SNAU02 rhamnolipid influenced Cinnamon Oil Nanoemulsion Production Using High-Speed Homogenization Technique**

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### **Abstract**

Cinnamon has been used traditionally as remedies for oral conditions like toothache and gum swelling, widely used as a food additive and flavoring agent and qualified as 'generally recognized as safe' by the FDA. Nano emulsion systems have the advantage of a high capacity to solubilize drug compounds and to retain the drug in solution even after dilution. In recent years, the interest in biosurfactant has increased as they have the potentiality of replacing chemical surfactant. Based on the previous experiments, the isolate *Serratia rubideae* SNAU02 (GenBank KC560769, Locus KC560769 GI: 469954200) was identified as potential biosurfactant producer and was used in the production of Cinnamon oil Nano emulsion. In the high-speed homogenization, aqueous phase was biosurfactants (SNAU02) and the oil phase, was Cinnamon oil. Nano emulsions were prepared containing 0.1% oil phase and 99.9% aqueous phase (v/v). To make the emulsion stable, carrier oil as

coconut oil was used. Among the proportions, the 0.06 µg/ml cinnamon oil: 0.02 µg/ml, biosurfactant : 0.02 µg/ml, coconut oil based emulsion studies revealed that even at 30 min of stirring using high speed homogenizer, the maximum reduction of particle size achieved was 132±4.0 nm. The pH range falls in 7.1 to 7.6 from the day one to 30th day after storage of the Nano scale emulsion. The zeta potential values in modulus were greater than 30 mV indicating the molecules were highly electro stable. The Nano emulsion produced antimicrobial potential against Escherichia coli. The average zone of inhibition was 9.675 mm.

## Biography

I am Dr. R. Parthasarathi Assistant Professor is having 15 years of both Teaching and Research experience. He had Guided 4 Ph.D., 14 M.Sc. and 2 M.Phil students. He had Completed 14 Government and Private funded Research projects. Published 40 research papers in the reputed Web of science and Scopus indexed journals. Acted as Chairman in the Board of studies in UG and PG programs in Annamalai University and in other Indian Universities. First to report the Rhamnolipid producing capabilities of *Serratia rubidaea* SNAU02, and confirmed the presence of rhamnosyltransferase gene(777bp rhl gene). Visited Sri Lanka, Egypt, Thailand, Indonesia, Nepal and Philippines.



## **Development of Gluten Free Pasta**

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## **Abstract**

The present research is focused on the development of gluten free pasta using brown rice flour, sorghum flour, green gram flour and xanthan gum using extrusion technology and its optimization on sensory and textural characteristics. The optimized pasta product was compared with durum wheat pasta and analysed for protein, moisture, fat, ash, dietary fibre, antioxidant activity. The sample was also analysed for cooking loss, hardness, water absorption and overall acceptability. The difficulty in GF pasta development was to produce a texture similar to gluten network without using gluten.

The gluten free pasta developed in the present study will cater to the needs of people suffering from the celiac disease and was prepared with 50% brown rice flour supplemented with 25-35% sorghum flour, 15-25% green gram flour and 2.5-5% xanthan gum and water upto 80% v/w flour basis using design expert 11 following mixture design. Sixteen experimental trials with different composition of pasta ingredients were prepared and analysed for the cooking loss, water absorption, hardness and overall acceptability to find out the best formulation. Results showed that xanthan gum had a significant positive effect on hardness and overall acceptability of the pasta. Sorghum flour showed significant



positive effect on the water absorption. With design expert 11 software, the best formulation was determined as sorghum flour 25.222 g/ 100g flour basis, green gram flour 21.323 g/ 100 g flour basis and xanthan gum 3.455 g/ 100g flour basis. The product had a 94% desirability. The nutritional content of the optimized gluten free pasta per 100 g was protein 14.4g, fat 2.18g, ash 1.72g, moisture 7.58g and dietary fibre 7.4g whereas, the control pasta contain only protein 11.06g, fat 0.94g, ash 0.7g and dietary fibre 3.85g.

The total phenolic content of the optimized pasta sample is 2.3 mg GAE/g which is greater than the control pasta sample (1.4 mg GAE/g). Total phenolic content of the optimized pasta sample is high due to the presence of sorghum in the recipe. Sorghum is rich in phenolic acid, phytosterols and tannins which results in the increase in the total phenolic content. The % DPPH Scavenging activity of the optimized was also higher than durum wheat pasta.

## Biography

Rakhi Singh, Assistant Professor, Food Science & Technology Department, NIFTEM has done her Ph.D. in Food Technology from G.B. Pant University of Agriculture & Technology, Pantnagar, India. She is working with NIFTEM since its inception in 2012 and before that she was Assistant Professor in BHU, Varanasi, India. She is working in the field of new functional food development mainly from cereals and millets.



## **In Vitro Antioxidant and Anticholinesterase Activities of Ethanolic Turmeric Crude Extract as Potential Neuroprotective Agent**

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### **Abstract**

Oxidative stress is known as the main factor for the pathogenesis of neurodegenerative diseases. The present study aims at exploring the antioxidant and anticholinesterase activities of ethanolic turmeric crude extract. The ethanolic crude extract of turmeric showed antioxidant and anticholinesterase activities (% I) at  $80.2 \pm 1.30$  %,  $75.6 \pm 1.23$  % and  $10.43 \pm 0.28$  % for ABTS, DPPH and FRAP, respectively, and  $69.0 \pm 1.85$  % and  $70.5 \pm 1.11$  % for acetylcholinesterase and butyrylcholinesterase, respectively. However, the maximum % I for ABTS, DPPH and FRAP, that is,  $87.2 \pm 1.34$  %,  $86.0 \pm 1.59$  % and  $19.36 \pm 0.37$   $\mu$ g FSE, respectively, was shown by positive control ascorbic acid, and for acetylcholinesterase and butyrylcholinesterase inhibition at  $86.69 \pm 1.24$  and  $89.3 \pm 1.01$  %, respectively, by galanthamine. Turmeric provide a potential natural source of bioactive compounds, and valuable to the human health.

## Biography

Sameera Abbas was born in Talang, Pakistan. She received the B.Sc degree in Botany, Zoology and Chemistry from Government Post Graduate College and M.Sc degree in Biochemistry from PMAS-Arid Agriculture University, Rawalpindi, Pakistan in 2000 and 2002, respectively. In 2016, she joined the University Tun Hussein Onn Malaysia as a PhD scholar. Her area of interest is nanobiotechnology.



## **An Innovative Approach of Spray Freeze Drying to Develop $\beta$ -Carotene Aerosol**

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## **Abstract**

$\beta$ -carotene, the precursor of vitamin A is a potent antioxidant that protect from chronic diseases including cardiovascular, cancer and eye diseases. Administration of  $\beta$ -carotene in the form of aerosol by pulmonary route will help to maintain the respiratory mucosa which otherwise can undergo severe morphological and functional changes as a consequence of vitamin A deficiency; also this method will help to enhance the bioavailability of  $\beta$ -carotene. For aerosol preparation, spray drying (SD) and spray freeze-drying (SFD) of  $\beta$ -carotene were studied with different core to wall ratios (1:10, 1:25 and 1:50) using HP- $\beta$ -cyclodextrin as wall material. The aerosols prepared by SFD showed porous

structure (8.3-9.3  $\mu\text{m}$ ) with low density and free flowing behaviour whereas SD produced cohesive powder with smooth surface (9.3 to 9.6  $\mu\text{m}$ ). All formulations exhibited good mass median aerodynamic diameter ( $\text{MMAD}_t$ ) of 3.75 to 6.96  $\mu\text{m}$ ; % emitted dosage was found to be higher in SFD aerosols (57-60%) compared to SD (51-52%) with controlled release of  $\beta$ -carotene from SFD powder. Since particle density, size and morphology strongly affect particle deposition in lungs, therefore this approach can be conveniently scaled up for pulmonary supplementation of food bioactives.

## Biography

Dr. Sayantani Dutta is working as DST-INSPIRE Faculty in the Department of Computational Modeling and Nanoscale Processing Unit, at Indian Institute of Food Processing Technology, Ministry of Food Processing Industries, Thanjavur, India. She has completed her B. Tech and M. Tech in Biotechnology from West Bengal University of Technology, Kolkata in 2009 and 2012, respectively; and her Ph.D. (Engg.) in Food Technology and Biochemical Engineering from Jadavpur University, Kolkata in 2017. She has published her research findings in various international journals of repute; besides 8 book chapters, popular article, and numerous poster and oral presentations in scientific conclaves, as of date.



## **Retention and Release of Chlorogenic Acid in Instant Soluble Coffee through Different Drying Techniques**

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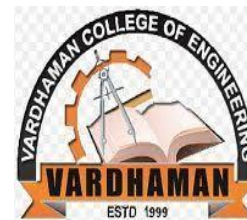
### **Abstract**

Coffee is one of the most consumed and preferred beverages in the world. Among the several polyphenols present in the coffee chlorogenic acids are major group of polyphenols which formed naturally due to esterification reaction during coffee processing. Chlorogenic acid shows nutritional and functional properties mainly due to its antioxidant, anti-inflammatory, antimicrobial, and antiviral activities; also it contributes bitterness and astringency note to the final beverage. In this investigation, for the retention of chlorogenic acid, different drying techniques such as spray drying, freeze drying, spray-freeze drying and refractance window drying were carried out on coffee bean extract for the production of instant soluble coffee powder. Powder characterization, morphology, particle size and solubility study was conducted for all the dried coffee powders obtained by various drying methods. Spray-freeze dried coffee powder displayed less particle size of 329 nm compared to powders (400-600 nm) obtained by other techniques. Solubility of spray-freeze dried powder in water was achieved within 10 sec. It was observed that maximum amount of chlorogenic acid has retained

(84%) in the spray-freeze drying conditions than other drying methods. Release kinetics showed rapid release of chlorogenic acid (80%) at the end of 6 h in in vitro release condition.

## **Biography**

Shweta Madhukar Deotale has completed her B.Tech in Food Technology from UDCT Amravati University and M.Tech in Food Technology from Laxminarayan Institute of Technology, RTMNU, Nagpur University and currently she is pursuing PhD from Indian Institute of Food Processing Technology, Thanjavur. Recently she has received ICMR-SRF fellowship for continuing her PhD research work. She has received two gold medals during her B.Tech and M.Tech for being University Topper during her academics and Institute level Merit Studentship during her PhD. She received 2nd prize for best paper in India International Science Festival 2015 and 1st prize in National Level Conference. She has also received Nestle Poster Award in IUFoST 2018.



## **Sensory Evaluation of Quinoa Based High Nutrition Upma for Breakfast**

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### **Abstract**

Breakfast plays most important role in each person's life. It supplements and provides energy for body and is considered the most important meal of the day. A healthy food intake in early part of the day helps maintaining good health. Quinoa, a small grain, provides very high nutrition in relatively small volumes as it is gluten-free cereal (pseudo cereal) containing high amount of fiber, biological-value proteins, essential fatty acids ( $\omega$ -3 and  $\omega$ -6), vitamins, and minerals. A Quinoa based breakfast thus is recommended for those who wish to consume small quantities and are reluctant to use carbohydrates/ gluten. Upma is a popular south Indian breakfast and has a simple traditional recipe. Enriching Upma with Quinoa has been experimented and sensory evaluation has been carried out by the authors in this work reported here. The paper presents procedure, evolution of results etc.

### **Key words:**

Quinoa, Upma, Health, Breakfast, gluten free, pseudo cereal.

### **Biography**

I, E. Tejaswini completed my Graduation and Post Graduation from Professor Jayashankar Telangana State Agricultural University, Rajendranagar. I am working as a Junior Research Fellow under the



project of DST initiated with institution, Vardhaman College of Engineering. This paper is written as a part of research under the guidance of Dr. H.S. Jain (Principle Investigator) for establishing novel procedures to prepare healthy and nutritious food recipes and make it acceptable by people of all age groups.



## **Effect of Ohmic Heating on the Quality Parameters of Carrot Juice**

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### **Abstract**

In this study, optimization of ohmic heating (OH) process parameters i.e. voltage gradient (15-30 V/cm) and time (40-90s) on Nantes cultivar carrot juice was conducted to study the effect of OH technique on electrical conductivity, heating rate and its quality parameters. Electrical conductivity and heating rate were performed at 15 V/cm, 20 V/cm, 25 V/cm and 30 V/cm. The range of electrical conductivity was 1.57 to 5.46 S/m and the range of heating rate was 0.43 to 1.17 °C/s. Response Surface Methodology was used for the optimization with voltage gradient and time as an independent variables to see the responses of seven variables viz. color, TSS, pH, beta-carotene, total phenolic content and ascorbic acid. As per the analysis conducted, there was significant effect of ohmic heating condition on all the above mentioned responses. The comparison between optimized OH juice (17.10V/cm, 40s) and conventional pasteurized juice (80°C, 60s) on the above mentioned seven parameters are conducted. As per the study, there was significant difference in pH, total phenolic content and ascorbic acid between the two treatments. OH showed 22.51% decrease in ascorbic acid content whereas CH showed 55.14% decrease from controlled sample. In terms of total phenolic content, there was 9.09 % increase in OH whereas CH showed 1.88% decrease from controlled sample. There were no significant difference observed in color ( $L^*$ ,  $a^*$ ,  $b^*$  and  $\Delta E$ ), TSS and  $\beta$ -carotene between the two treatments i.e. OH and CH. It

was observed that ohmic heat treated carrot juice had shelf life of 10 days and has better stability than conventional heat treated carrot juice .

## **Biography**

S.Thangalakshmi, Assistant Professor, Food Engineering Department , NIFTEM has done her Post graduation in Automation and Robotics from UPTU, Lucknow.(M.Tech). She is working with NIFTEM since its inception in 2012. The author has done her B.E in Electronics and Communication from Madurai Kamaraj University in the year 2001. She is currently pursuing her PhD in Food Engineering from NIFTEM.



## **Influence of AM Fungi and Rhizobacteria on the Growth and Yield of Chilli**

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### **Abstract**

The present study focused on the combining effect of *Glomus fasciculatum* with Rhizobacteria (*Azospirillum brasilense* and *Pseudomonas fluorescens*) on the growth and yield of chilli variety PLR-1. All the treatments were applied as single, dual and combined inoculants, under pot conditions, in a Completely Randomised Block Design (CRPD). The biofertilizers were applied to the roots by coating or dipping, with the inoculants in a solid or liquid support, respectively. The population of AMF and rhizobacteria were enumerated at 30, 90, 120 days after inoculation, the highest population of AMF was 75.1 % at 90 days after inoculation. The populations of *P. fluorescens* was ranged from  $3.55 \times 10^6$  to  $11.7 \times 10^6$  cfu g<sup>-1</sup> of soil and *A. brasilense* was ranged from  $2.99 \times 10^6$  to  $14.0 \times 10^6$  cfu g<sup>-1</sup> of soil were detected in the rizosphere soil of chilli. The highest population of *P. fluorescens* was recorded  $11.7 \times 10^6$  cfu g<sup>-1</sup> of soil and *A. brasilense* was recorded  $14.0 \times 10^6$  cfu g<sup>-1</sup> of soil at 90 days after inoculation. In the pot condition the combined inoculation showed highest results and slightly difference were occurred on growth parameter and chlorophyll content. Single and dual inoculation also promotes the growth of leaves, chlorophyll content, plant height and root weight. Overall obviously excellent results were observed in combined inoculation. The maximum yields (158.33) were recorded on T12 - *Pseudomonas fluorescens* + *Azospirillum brasilense* + *Glomus fasciculatum* (combined inoculation) and

minimum yield recorded on T3 - *P. fluorescens* (single inoculant) (104.33), these observations were significantly greater than control.

## **Keywords**

Chilli, biofertilizer, AMF, Rhizobacteria, root coating, root dipping, growth parameters, chlorophyll content.

## **Biography**

Professor Dr.P.Tholkappian, is having 31 years of Teaching and Research experience. He has so far produced 10 Ph.D, 27 M.Sc and 29 M.Phil research scholars. He has Completed 8 Research Projects and Published 25 research papers in the reputed journals. He has also acted as Chairman in the Board of Studies in UG and PG programmes in Annamalai University and in other Universities. He has also served as Head of the Department for three years and presently working as Professor in the Department of Microbiology, Faculty of Agriculture, Annamalai University. He has visited various countries like USA, Canada, Hong Kong, Dubai, Sri Lanka, Thailand, Mauritius, Egypt, Indonesia and Philippines.



## **Effect of Honeycomb Packaging Material on Minimization of Transportation Losses in Fig Fruits (*Ficus carica* L)**

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### **Abstract**

The present investigation focused to minimize the transportation losses in fresh figs (*Ficus carica* L.) through developing a honeycomb structured packaging material using 100 GSM craft paper based on the average of maximum diameter of the fruits. Freshly harvested fig fruits of commercial maturity and free from bruises/injury were packed in CFB box with news paper lining (Control), CFB box with single layer of fruits and CFB box with honeycomb packaging material lining. The packed fruits were transported to a distance of 300 km by road. The quality parameters viz., physiological loss in weight, firmness, per cent damage fruits and decay loss were analysed after transportation and during storage. The results showed that the percent damage (bruised and peeled) was significantly varied with different packaging materials. The fruit damage was found to be highest in case of CFB box with paper lining (12.2%) followed by CFB box with single layer packing (4.5%) and the lowest of 2.8% was observed in CFB box with honeycomb packaging material. Similarly, the higher firmness, lesser decay loss and less increase in TSS were found in case of fruits packed in honeycomb packaging material compared to other treatments during storage. It would be concluded from the present investigation that the CFB box with honeycomb packaging material could be adopted by the farmers and traders for reducing the transportation damage and for enhancing the shelf life of fig fruits.

## Biography

Dr. Udaykumar Nidoni is working as Professor and Head, Department of Processing and Food Engineering, College of Agricultural Engineering, University of Agricultural Sciences, Raichur. He has authored several publications in various refereed journals and books. His publications reflect his research interests in processing, value addition, extraction of bioactive compounds and active packaging of food grains, fruits and vegetables. He has handled research projects funded by MoFPI, DoCA, New Delhi, RKVY and GoK, Bangalore. He is currently in-charge of ongoing research project on AICRP on Post Harvest Engineering and Technology. He is also an Associate Editor of the Journal of Farm Sciences and is serving as a member convener for ISAE and AFST(I), Raichur Chapters. He has been honored by the UAS Raichur for his outstanding research in the field of Agricultural Processing and Food Engineering.



## **Melissopalynological Analysis of Malaysian Honey**

### **Arifullah Mohammed**

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### **Abstract**

**H**oney consists of pollen grains collected by honeybees and pollen analysis of honey will assist in the identification of plant species origin. The identification of different plant species is vital as they contribute towards the composition of honey and helps to verify honey authenticity. The main purpose of this study was to investigate the floral sources, botanical and geographical origins of the collected honey samples. Twenty types of honey were collected from six states in West Coast of Malaysia and pollen analyses were carried out. The melissopalynological methods used in this study were, pollen acetolysis to identify the pollen types using their morphology and pollen count to recognize the dominant pollen and calculate percentage of abundance. Analyses of the honey samples from 20 areas of West Coast of Malaysia revealed the occurrence of different types of pollens from 34 different plant families. Four honey samples were unifloral and the rest were multifloral. Predominant pollen of unifloral honey from Kedah (Kubang Pasu and Padang Terap districts) contained *Jacaranda obtusifolia* of Bignoniaceae family, from Jasin district of Melaka contained *Hevea brasiliensis* of Euphorbiaceae family and sample from Gertak Sanggul district of Penang contained *Cucumis melo* of Cucurbitaceae family. In conclusion, Malaysian honey can be recognized by the presence of coconut (*Cocos nucifera*) and palm oil (*Elaeis guineensis*) pollens, which are important food sources and are found to occur in almost every local honey and stingless bee honey samples. These studies significant to examine the purity of honey and prevent fraud adulteration of the honey in Malaysia.

### **Keywords**

melissopalynological, honey geographical origins, acetolysis, multifloral, unifloral



## **Biography**

Dr. Mohammed Arifullah is the Senior Lecturer at Faculty of Agro Based Industry (FIAT), Universiti Malaysia Kelantan. He has 16 Years of teaching and research experience. His research interests are plant biotechnology and plant biochemistry. He has achieved several awards and prizes at various conferences. He is an editorial board member/peer reviewer of some reputed journals. He is life member of professional bodies such as Malaysian Nature Society, Society of Biological Chemists, Indian Institute of Science, Bangalore. National Environmental Science Academy, New Delhi, etc

