

Synthesis

EXPLORING RESEARCH • INSPIRING INNOVATION

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UPM
UNIVERSITI PUTRA MALAYSIA
BERILMU BERAKTI

Food AND HEALTH



Healthy Bites,
Healthy Way of Life



Food
for Brain

NEW HIGHLIGHT:
RESEARCH PERSONALITY
PROF. DR. TAN CHIN PING

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Editorial

"Healthy Bites, Healthy Way of Life"

What we eat is central to our health. The food we eat gives our bodies the materials they need to function properly and maintain healthy. Overweight, undernourished, diseases and conditions, such as arthritis, diabetes, and heart disease are among others related to the eating habits and food that we consume. However, instead of viewing food as the enemy, we should look as a way to create health and reduce disease by boosting our metabolism.

In this issue of Synthesis, we look at the synergy of food and health. We have aimed to present the readers a wide knowledge with the advice and guidance from the experts. In regards to the theme, we have featured on the research project, research group, and the innovation in UPM. You will also find our usual featured articles from the group of Science & Technology and Social Science. Not to forget the commercialization in UPM and books published by our own researchers related to the issue. We also dedicated a page to introduce a research personality from UPM. Also, since we love food, we have interesting infographics on facts and recipes to catch your attention. Finally, to keep you updated, we bring all the current news around the university. We hope you enjoy the issue and please let us know what you think.

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Evaluation of the Rehabilitation Programme for MALNOURISHED CHILDREN

Who Received the Food Basket in Malaysia

Malnutrition is a broad term that includes both undernutrition and overnutrition, and is characterised by a shortage or surplus of calories and/or specific nutrients. Undernutrition is a direct result of inadequate dietary intake, presence of disease, or the interaction of both factors. Inadequate dietary intake could adversely affect growth, as well as the cognitive, motor, and psychosocial development of the child.

The National Nutrition Surveillance of the Ministry of Health (MOH) Malaysia reported an overall prevalence of underweight amongst Malaysian children aged below 5 years as 17.3% in 2004. Meanwhile, the Third Malaysian National Health and Morbidity Survey (NHMS III, 2006) showed that the prevalence of underweight and stunting among children below 5 years was 12.9% and 17.2%, respectively. Based on the findings of the Malaysian National Health and Morbidity Survey 2015, the highest prevalence of stunting and wasting was noted among children below 5 years old at 17.7% and 8.0%, respectively (NHMS, 2015).

In recognition of the importance of achieving optimal health and nutrition in the early years of life, the MOH started a rehabilitation programme for malnourished children in June 1989. It was developed based on the findings of the National Nutrition Surveillance system 1982-1986. This rehabilitation programme is also known as the "Food Basket Programme". The children selected for inclusion in this programme, based on their weight and family income, were given a series of food basket supplies each month to achieve optimum physical and mental development.

As the financial allocation for the programme is expected to rise due to increasing costs, the evaluation of the "Food Basket Programme" is necessary to ensure that the programme continues to benefit the malnourished children in Malaysia. Furthermore, since the programme was first implemented in 1989, there has been no comprehensive evaluation from an independent body to assess its effectiveness in the rehabilitation of malnourished children. Therefore, based on these justifications, there is a need to evaluate the programme as the evaluation outcomes will be useful to improve the implementation of the programme in the future.



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Total allocation: RM 1 Million

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Research Centre of Excellence (RCoE):

Nutrition and Non Communicable Disease (NNCD)



NCD or non-communicable diseases, mainly consist of cardiovascular diseases (CVD), cancers, diabetes mellitus (DM) and obesity are the leading threat to human health. Nutrition plays a major role in prevention and management of NCD.

Research programs and activities under the RCoE NNCD focus on the needs, metabolism and role of substances, nutritional effects and physical activity of NCD through multi-dimensional researches (based on food, community, and molecular / biochemical studies).

The RCoE NNCD aims to develop innovative strategies related to risk prevention and quality management of NCD to reduce disease burden and increase productivity and quality of life.

“A total of 43 projects from different disciplines were established under the great initiative of researchers from RC-NNCD.”

For Storage and Drying



For Extraction



For Analysis



Availability of state of the art Physical Facilities and Laboratory Equipment



Non-communicable diseases (NCDs) contribute up to 60% of all deaths especially in low and middle-income countries, with nutrition plays a central role in the prevention and management of NCDs. The RC-NNCD was established in January 2014, with the aim as the leading centre of nutrition research for the prevention and management of NCDs in the nation.

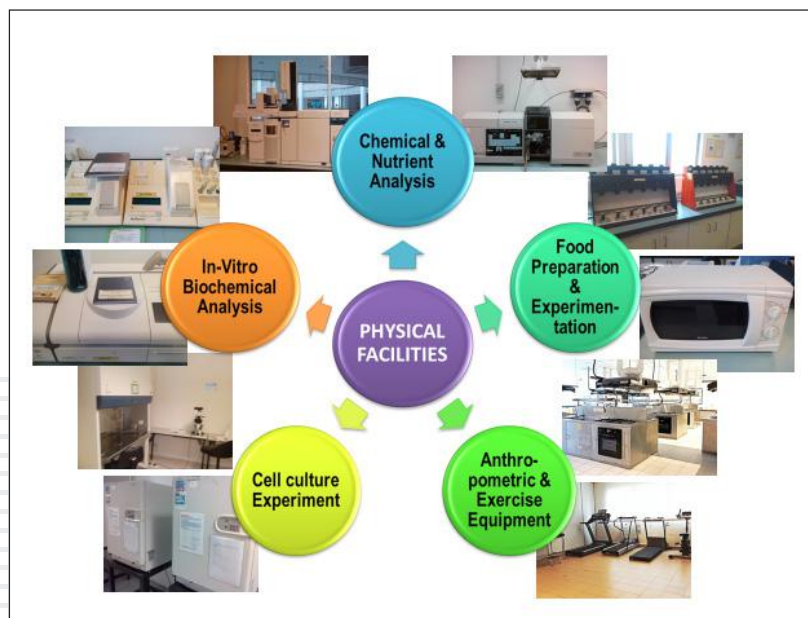
Objectives

1. To conduct research actively for prevention of non-communicable diseases through various laboratory research methods
2. To promote, increase awareness, educate and implement nutrition-related activities in community research interventions
3. To collaborate with the industry and community effectively by applying knowledge and new technologies for the prevention of non-communicable diseases and health promotion

RCoE-NCDD comprises of 11 members:

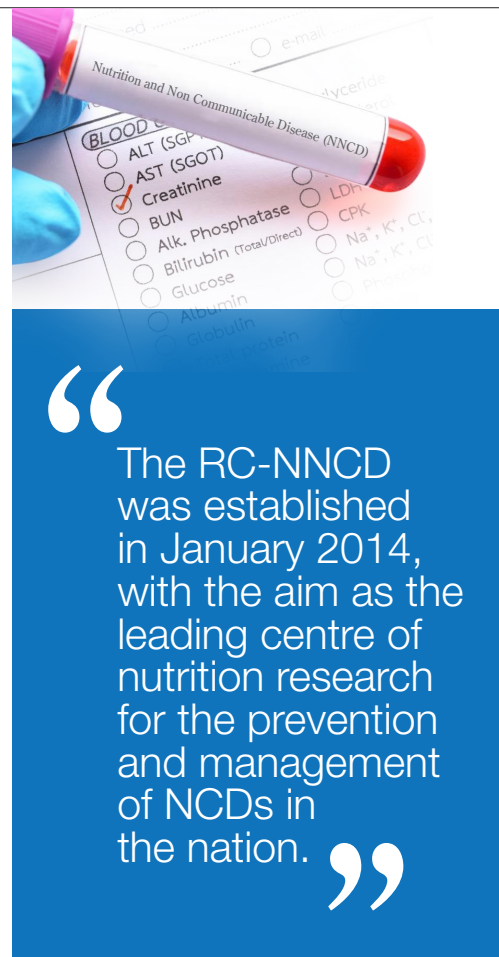
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- Dr. Zulfitri Mat Daud.

There are 5 core focus areas of the RC-NNCD, namely Food Bioactive Components, Diet and Chronic Diseases, Community and Public Health Nutrition, Nutrition Education and Product Development. A total of 43 projects from different disciplines were established under the great initiative of researchers from RC-NNCD. With the well-blend of researchers from nutritional sciences, community nutrition and clinical nutrition, we anticipate the RC will uptake more impactful projects in relation to the prevention and management of NCDs in the near future.



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Production of Standardized Extract from **Morinda Citrifolia Leaf**

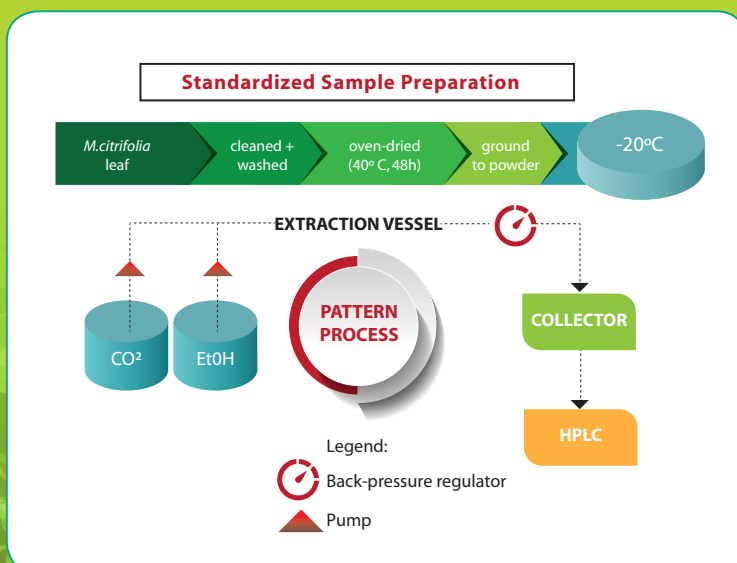
Using Supercritical Fluid Extraction

A common and widely used method in extracting antioxidants and other phytochemicals is solvent extraction (SE). Apart from that, soxhlet extraction has also been used especially in extracting oil-based antioxidants. Supercritical fluid carbon dioxide extraction (SF-CO₂) is an environmental friendly green technology, non-toxic technique that is suitable for production of food ingredient and high-end products. The extraction can be carried out at low temperature, as low as 31.0 °C. Thus, it is suitable in extracting thermally labile bioactive compounds. The process is rapid (compared with other conventional method), reliable and highly reproduceable. The usage of carbon dioxide as an extraction medium and the application of pressure allows for SFE extract to possess better quality properties than that of SE.

“ The standardized extract was found to consist of very high content of potent antioxidants, in particular, catechin and quercetin, proven to have anti-inflammatory, anticancer, antimicrobial, antiobesity, antiaging and ergogenic property. ”

In this study, optimization of SFE has been conducted in extracting potent antioxidants from *Morinda citrifolia* leaf. Manipulation of pressure, temperature and carbon dioxide (CO₂) flow rate were used in obtaining the highest flavonoids yield. Standardized extract from *Morinda citrifolia* leaf has successfully been produced by using SFE technique. Specific pressure, temperature and CO₂ flow rate were used in the study.

The standardized extract was found to consist of very high content of potent antioxidants, in particular, catechin and quercetin, proven to have anti-inflammatory, anticancer, antimicrobial, antiobesity, antiaging and ergogenic property. The standardized extract can then be used as functional food ingredient that is currently highly in demand.



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MENGKUDU as an ingredient for Synergistically Increasing Athletic Performance And Endurance



Mengkudu (*Morinda citrifolia*) fruit, enhanced performances in athletes and post-menopausal women in clinical studies. This research project proved the edible mengkudu leaves extract enhances performance in mammals better than the fruit or standardized green tea extract. After 4 weeks, the mengkudu leaf extract (containing scopoletin and epicatechin) progressively prolonged the time to exhaustion by three-fold longer than the control, fruit or tea extract. The extract improved the mammalian antioxidant responses, tissue nutrient (glucose) and metabolite (lactate) management, stress hormone (cortisol) regulation; neurotransmitter (dopamine, noradrenaline, and serotonin) expressions, transporter or receptor levels, anti-inflammatory responses; skeletal muscle new blood capillaries formation and energy and mitochondrial biogenesis.

Fatigue

Incapability to sustain power output

Common experience for individuals suffering from **chronic illnesses** and **exercise**



ERGOGENIC AIDS

| | | | | | | | |
|------------------------------|-----------|-----------|---------|---------------------------|--------------------|---------|--------------------|
| Anabolic-Androgenic Steroids | Creatine | Ephedrine | Caffein | Amphetamines | Carbohydrates | Taurine | Sodium bicarbonate |
| Glycerol | Carnosine | Tyrosine | Betaine | Branched-chain amino acid | Phosphatidylserine | Ephedra | Vanadyl sulphate |

ISSUES

Excessive usage leads to development of other disease such as cardiovascular disease, anxiety disorder, increase blood pressure, and even sudden death (eg: Anabolic-Androgenic Steroids, Ephera)
Ineffective (eg: Vanadyl sulphate, Phosphatidylserine)

(Reviewed by:

Assoc. Prof. Dr. Azrina Azlan)



10 Food for Brain



| NO. | FOOD | COMPONENT | BENEFITS |
|-----|----------------|---|---|
| 1 | Walnut | Alpha linoleic acid (ala), a type of omega-3 fatty acid | Relieve brain information and protect neurons |
| 2 | Salmon | Parvalbumin | Helpful in treating alzheimer's and parkinson's disease |
| 3 | Celery | Luteolin | Slow the progression of certain neurodegenerative diseases like alzheimer's |
| 4 | Broccoli | Sulforaphane | Help rebuild damaged neural cells in the brain and help to recover memory |
| 5 | Tomato | Carotenoids | Could help protect the brain against free radical damage |
| 6 | Blueberries | Anthocyanin | Boosts concentration, improve memory |
| 7 | Dark chocolate | Endorphines | Boosts mood by decrease stress |
| 8 | Pumpkin seeds | Tryptophan, an amino acid | Enhance memory and insomnia prevention |
| 9 | Tumeric | Curcumin | Improve brain function and lower risk of brain disease |
| 10 | Coffee | Caffeine | Mild stimulant to central nervous system that sharpened concentration |

The ergogenic extract helped delay fatigue by enhancing energy production, regulation and efficiency, which suggests benefits for physical activities and disease recovery. After 6 weeks, the mammals consuming the extract, swam almost five times longer than the control. The gene expressions analysis suggested the extracts enhanced performance by improving lipid catabolism, carbohydrate metabolism, electron transport, anti-oxidant responses, energy production and tissue glycogen stores, enhancing stamina by reducing blood lactate and blood urea, increasing liver and muscle glycogen reserve through augmenting the glucose metabolism, lipid catabolism, anti-oxidant defense responses, electron transport, and energy production, for alleviating fatigue. Additionally mengkudu leaves have potent antioxidant, anti-cancer, liver-protective, joint/ bone protective, wound healing and other beneficial health properties without any acute, sub-acute and sub-chronic oral toxicity at 1 g/kg body weight.



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“Patience,
Persistence
and
Perseverance,
and play the
“game” well!”



Introduction

Prof. Dr. Tan Chin Ping received his Bachelor of Food Science and Technology in 1998 and PhD in Food Processing in 2001, from Universiti Putra Malaysia (UPM). He began his career at the Department of Food Technology, Faculty of Food Science and Technology, Universiti Putra Malaysia in 2001. He then served as a JSPS Postdoctoral Fellow at the National Food Research Institute in Japan from 2002 to 2004. Currently, he is the head of the Department of Food Technology, UPM. At present, he leads one of the major research programs in Fats and Oils Technology at UPM. To date, he has published one joint-edited book, ten book chapters and over 300 scientific articles in peer-reviewed journals, filed more than 15 patents and presented more than 300 papers at various national and international conferences. His areas of research specialisation are palm oil, food nanotechnology, food emulsions and the extraction of bioactive compounds from various agricultural by-products. His research in the area of edible oil focuses on new product development, the development of value-added processes and products and quality and safety issues related to fats and oils.

Get To Know Better

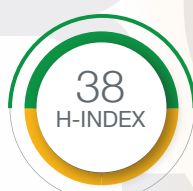
How would you describe about yourself as a researcher and what motivates you?

I am a fats and oils “Specialist”. I always stay focused and motivated towards my own research goals. I am motivated to strike a balance between academic- and industry-driven research as I believe research cannot be conducted in isolation. Therefore, I am motivated to spearhead research in the area of fats and oil to continuously fuel the need for innovation in the industry.

Contributions to UPM

**Well recognized by the food scientists
around the world**

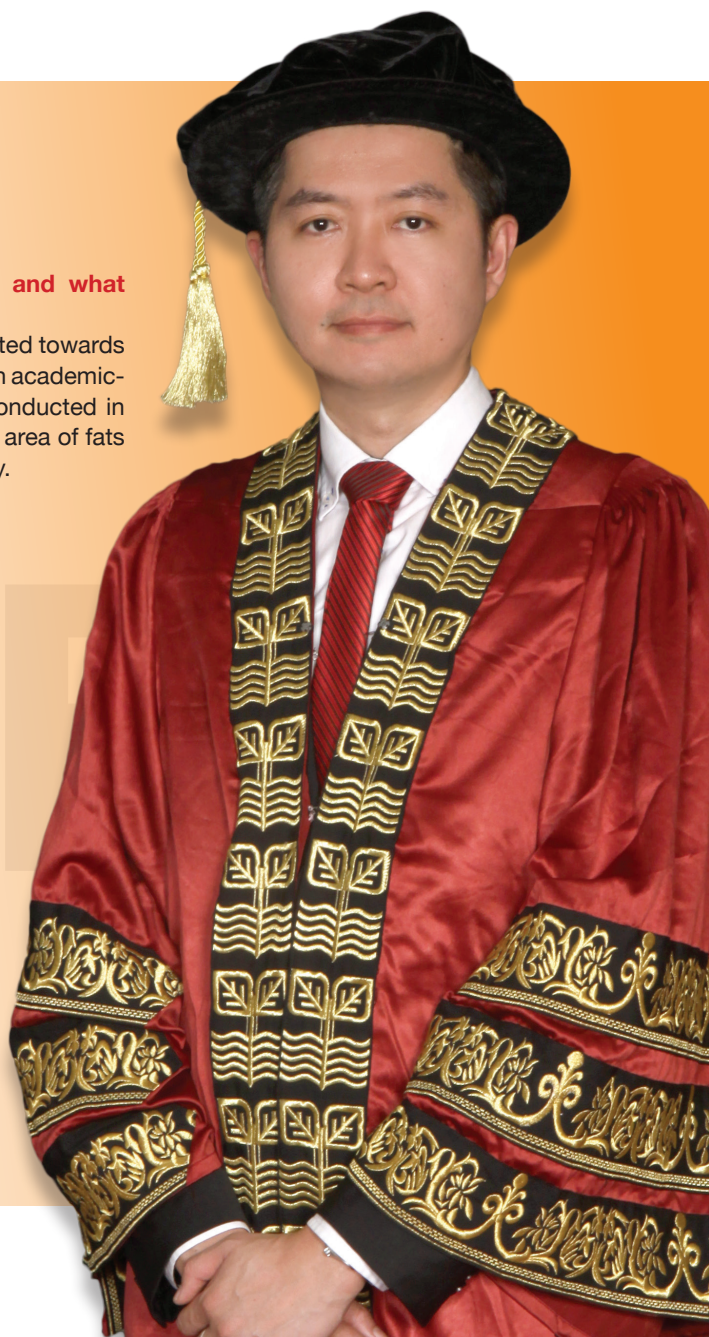
Research Output



5600 CITATIONS



Supervision



What is your most recent research project? How many projects have you successfully managed and what aspects of project interest you?

My recent research project is related to mitigation of 3-MCPD esters and glycidyl esters in palm oil products. Both 3-MCPD esters and glycidyl esters are processing contaminants, formed mainly during the refining of crude palm oil. The project is important to our country, as Malaysia is one of the main producers and exporters of palm oil products. My research group is currently looking at various modification processes to reduce the formation of these contaminants, evaluate the formation of these contaminants during heat processing, e.g. deep fat frying and oven cooking. In addition, my group is also currently modifying the existing standard analytical method to increase the robustness and accuracy of the standard method for the determination of these contaminants and developing a rapid analytical method using FITR.

I am very much interested with food nanotechnology related projects, especially on the preparation and characterization of functional lipid nanodispersion. Nano-sized lipids are very different from bulk lipids and it is interesting to evaluate the physicochemical properties of these lipid materials in relation to various functional characteristics.



Which part of this field do you personally find most satisfying? Most challenging?

Food nanotechnology opens up new research perspective in the field of food science and technology. I have been involved in food nanotechnology since my postdoctoral attachment at the National Food Research Institute (NFRI), Japan about 16 years ago. Mechanism for the formation of nano-sized food materials was rather new during my research stay in NFRI. I find personal satisfaction in contributing towards the research community as well as developing young talents in this field.

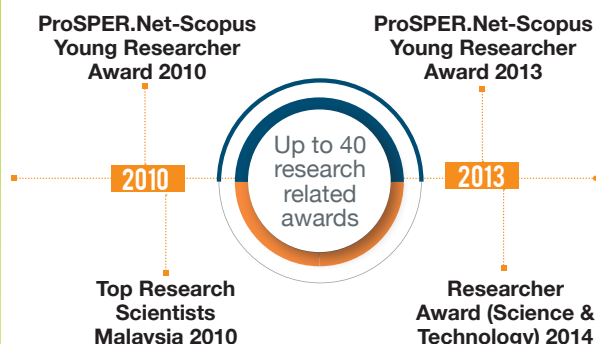
It was rather challenging during the initial stage of my work in this area upon returning from Japan as most of

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Awards & Achievements



processing equipment and analytical instrument for nanotechnology-related work were not available in the faculty. The challenge was to acquire funding to equip the lab which took me more than 8 years of effort. However, this situation paved ways in my research career which provided extensive networking opportunities with various research groups and equipment/ instrument providers. I am ever grateful to all equipment/ instrument providers and my research collaborators both in Malaysia and around the world.

From your perspective, what are the problems you foresee working in this field?

Safety issue related to food nano-sized materials is an important area that requires substantial in-depth studies before food industry can confidently introduce manmade food nano-sized materials into food system. Long-term exposure of nano-sized materials is rather challenging especially in the complex food system. Many scientists working in this area are rather reluctant to embark in long-term exposure studies, as they are time- and resource-intensive activities.

What kind of experience would you encourage for anyone who wants to pursue a career in this field?

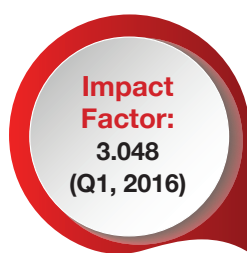
There are too many interesting research ideas out there and it is very easy to get distracted. Stay focused on your own research program. The most successful scientists do not jump on every project that comes along. Choose your research projects carefully and ensure these projects align with your expertise.

What is unique about your career field?

Fats and oils is one of the three major food constituents found in food. Palm oil is the number one vegetable oil in the world. As Malaysia is the one of the major producers and exporters of this important food commodity to the world, advancement in research related to fats and oils technology is important to support the industry. In order to achieve competitive advantage, we must stay focus and constantly provide advanced technology and unique products to the world market.

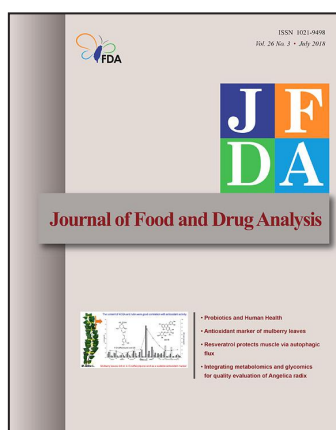


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“**MRQ 74 and MR 84** germinated brown rice had counter-properties.

The findings could serve as a basis for further studies in **diet-related diseases.**”



Compositional Analyses Of White, Brown And Germinated Forms Of Popular Malaysian Rice To Offer Insight Into The Growing Diet-Related Diseases

Diet-related metabolic diseases, and especially obesity, are metabolic disorders with multifactorial aetiologies. Diet has been a cornerstone in both the aetiology and management of this metabolic disorders. Rice, a staple food for over half of the world's population, could be exploited as part of the solution to check this menace which has been skyrocketing in the last decade. The present study investigated nine forms of rice from three widely grown Malaysian rice cultivars for in vitro and in vivo (glycaemic index and load) properties that could translate clinically into a lower predisposition to diet-related diseases. The germinated brown forms of MRQ 74 and MR 84 rice cultivars had high amylose content percentages (25.7% and 25.0%), high relative percentage antioxidant scavenging abilities of 85.0% and 91.7%, relatively low glycaemic indices (67.6 and 64.3) and glycaemic load (32.3 and 30.1) values, and modest glucose uptake capabilities of 33.69% and 31.25%, respectively. The results show that all things being equal, rice cultivars that are germinated and high in amylose content when compared to their white and low amylose counterparts could translate into a lower predisposition to diet-related diseases from the dietary point of view in individuals who consume this cereal as a staple food.

“We studied 9 different forms of rice from three widely grown cultivars in Malaysia. White rice cultivars showed diet-related disease predisposing properties. It includes high glycaemic index and load, low antioxidant indices and no glucose uptake.”



Prevalence And Risk Factors Associated With Suicidal Ideation Among Adolescents In Malaysia

Suicidal ideation, defined as thoughts, ideas and the desire to commit suicide, is becoming a major public health problem among adolescents. Indeed, suicidal ideation is known as a key predictor of future suicide risk. This study aims to determine the prevalence and risk factors associated with suicidal ideation among adolescents in Malaysia. This study used data from the 2013 Malaysian adolescent health risk behaviour (MyAHRB) study, a cross-sectional school survey conducted in Peninsular Malaysia among school-going adolescents aged 16–17 years (n=2789). Logistic regression analysis was used to determine the risk factors associated with suicidal ideation among Malaysian adolescents.

The overall prevalence of suicidal ideation among the adolescents was 6.2%. The prevalence was significantly higher among females than males (7.6% vs. 4.7%; $p=0.002$). Multivariate regression analysis revealed that adolescents who were females [odds ratio (OR) = 2.02; 95% confidence interval (CI): 1.40–2.92] or of Indian ethnicity (OR = 2.32; 95% CI: 1.35–3.98) were more likely to report suicidal ideation. Loneliness (OR = 2.54; 95% CI: 1.57–4.11), anxiety or worry (OR = 2.70; 95% CI: 1.70–4.31), no close friends (OR = 2.71; 95% CI: 1.43–5.14), and lack of supportive peers (OR = 1.69; 95% CI: 1.15–2.47) were identified as risk factors for adolescents' suicidal ideation. Adolescents who ever had sexual intercourse (OR = 2.70; 95% CI: 1.48–4.92) and had been in a physical fight (OR=2.45; 95% CI: 1.62–3.70) were also reported to have higher risks of suicidal ideation.

The study concludes that suicidal ideation among adolescents of aged between 16 to 17 years old is prevalent and those who have significant risk factors should be identified so that early intervention could be implemented to prevent further complications.

“Those who have significant risk factors should be identified so that early intervention could be implemented to prevent further complications.”

Journal:

International Journal of Adolescent Medicine and Health

Authors:

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“Suicidal ideation among adolescents of aged between **16 to 17** years old is prevalent”



DEKOPONIX RACK



Dekoponix rack is an indoor hydroponic system that was designed to meet the needs and inspiration from the urban lifestyle. The product is a compact modular system concept that can be assembled and disassembled easily by the user. Contemporary designed approach, with highly aesthetic appearances is the main designed factor that makes the product suited into any house space or interior.

The rack system also reduces the use of space and suitable for users who live in condominiums and apartments. The design features that are different from existing products, is to ensure the necessary user requirements can be met within their lifestyle. With the concept of DIY, users can install this product at home, and this product comes with a set of starter kit package that include fertilizers, seed, sponge and planting cups. Variety of vegetables are suitable to plant by using hydroponic system such as lettuce, spinach, kailan water and sawi (mustard green) which only take 20 to 30 days.

The Dekoponix rack system facilitates users for a healthy lifestyle, sustainable vegetable supply, quality organic food and saving expenses for vegetables.



“ Contemporary designed approach, with highly aesthetic appearances is the main designed factor that makes the product suited into any house space or interior. ”

More info for innovation and commercialization, contact us at:
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* RECIPE “KERABU ULAM” *

Ingredients A (*ulam*):

1 bunch of **pegaga** leaves (thinly sliced)
1 bunch of **selom** leaves (thinly sliced)
2-3 stalks of **basil** leaves (thinly sliced)
1 bowl of **bean sprouts** (soak in hot boiling water for a while)
1 red chilli (deseeded and sliced)
2 red onion (thinly sliced)

Ingredients B (*kerabu's* spices):

½ cup of grated coconut (fry without oil until slightly brown and slightly *pound it)
½ cup of dried shrimps (soak in hot boiling water, fry without oil until slightly brown and *pound it)
1 bowl of fresh shrimp/chicken/beef meat (boiled first)
*Pound using pestle and mortar

Ingredients C (*sambal belacan*/shrimp paste):

Small amount of *sambal belacan*
4 red chillies – add more for spicy taste

Method: Pound both ingredients till fine

Ingredients D (seasonings):

1 ½ teaspoon of salt
2 tablespoon of sugar
3 tablespoon of lime juice

Instructions:

Put ingredients A, B, C, and D in a big bowl.
Mix well all the ingredients.
Done.

(Reviewed by: Assoc. Prof. Dr. Azrina Azlan)



SELOM

Scientific name: *Oenanthe javanica*

- ✓ Anti-diabetic
- ✓ Anti-inflammatory properties
- ✓ Neuroprotective
- ✓ Neurogenesis
- ✓ Alcohol Detoxification
- ✓ Antitoxic
- ✓ Anti-coagulant
- ✓ Hepatoprotective (protects against liver damage)
- ✓ Memory Improvement

(Source: Eric Wei Chiang Chan, Siu Kuin Wong & Hung Tuck Chan. *Ulam Herbs of Oenanthe javanica and Cosmos caudatus: An Overview on their Medicinal Properties*, *Journal of Natural Remedies*, 2016)



BEAN SPROUTS

Scientific name: *Vigna radiata*



Health Benefits of Bean Sprouts



Antioxidant activity



Myocardial protective activities



Antidiabetic activities



Hepatoprotective activity



Antihypertensive effect (prevention and management of hypertension)



Anti-inflammatory effects



Anticancer effects

(Source: Ganesan, Kumar & Xu, Baojun. A critical review on phytochemical profile and health promoting effects of mung bean (*Vigna radiata*), *Food Science and Human Wellness*, 2018)

PEGAGA

Scientific name: *Centella asiatica*

- Wound healing (collagen formation)
- Sedative and anxiolytic properties
- Antidepressant properties
- Re-vitalize the brain and nervous system, increase attention span and concentration and combat aging
- Treatment of Alzheimer's disease
- Gastric ulcer healing
- Preventing radiation-induced behavioural changes

(Source: Kashmira J. Gohil, Jagruti A. Patel & Anuradha K. Gajjar. Pharmacological Review on *Centella asiatica*: A Potential Herbal Cure-all, *Indian Journal of Pharmaceutical Sciences*, 2010)

BASIL (Selasih)

Scientific name: *Ocimum basilicum*

- Analgesic and anti-inflammatory activity (comparable with aspirin)
- Hepato-protective activity (protect liver damage)
- Antiulcer activity
- Cardioprotective and stimulant activity
- Memory retention and stroke preventive activity
- Chemopreventative and chemomodulatory activity (inhibiting carcinogen-induced tumor)
- Antioxidant activity (anti-aging effects)



(Source: Mueen, Ahmad & Ch, Mueen & Batool Naz, Syeda & Sharif, Asifa & Akram, Maimoona & Saeed, Muhammad. Biological and Pharmacological Properties of the Sweet Basil (*Ocimum basilicum*), *British Journal of Pharmaceutical Research*, 2015)





AN INNOVATIVE LOW-COST MULTIVITAMIN SUPPLEMENT

SERDANG, May 24 – Our researchers, Associate Professor Dr Yus Aniza Yusof and the team from Department of Process and Food Engineering, are gaining attention for their innovative product named Chewable Moringa Fruity Tablets (CMFT). The Chewable Moringa Fruity Tablets are a unique formulation of Moringa oleifera leaves which are easily chewable, nutritious, natural, and economical and can be served as food supplement for all age group of people. Moringa oleifera leaves have been reported in various scientific publications as the leaves contain lots of nutrients and anti-oxidants which make them well known as super food. Moringa oleifera is the most nutrient-rich plant discovered so far. It provides a rich and rare combination of nutrients, amino acids, antioxidants, antiaging and anti-inflammatory properties used for nutrition and healing.

Besides Dr Yus Aniza, other researchers from the research group are Dr. Muhammad Azhar Ali, Prof. Ir. Dr. Chin Nyuk Ling and Dr. Mohd Nordin Ibrahim. The project was funded by COMSTECT –TWAS, The World Academy of Science, under The United Nations Educational, Scientific and Cultural Organisation (UNESCO) and fruit powder studies were funded by Fundamental Research Grant Scheme (FRGS), Ministry of Higher Education. The World Health Organisation (WHO) has been promoting Moringa as an alternative to import food supplies to treat malnutrition since 1998



UPM JUMPS TO 202nd SPOT IN WORLD UNIVERSITY RANKINGS

SERDANG, 7 June - Universiti Putra Malaysia (UPM) boost up its ranking to the 202nd position in the Quacquarelli Symonds (QS) World University Rankings 2018/19. UPM jumped 27 notches from last year position which was at 229th, its fifth consecutive rise since 2013. UPM's Vice Chancellor, Prof. Datin Paduka Dato' Dr. Aini Ideris was pleased to announce that UPM is in the top 20% of the world's best universities out of 1,223 universities evaluated by the QS.

"It is the UPM's vision to be a university of international repute, the QS ranking is useful in assessing the visibility level of UPM, especially in the aspects of teaching, learning, research and innovation"

Prof Aini also stated that increasing networking opportunities and the reputation of UPM students in the industry and amongst prospective

employers, as evaluated in the Employer Reputation indicator can be achieved by enhancement in curriculum quality and student marketability.

"UPM will double the efforts to improve itself in certain indicators such as developing strategies to increase the number of international lecturers as well as to improve academic and student quality."

"The university community must not be complacent and should intensify its achievement momentum in order to sustain international excellence as the international higher education industry is very competitive," she said.

Prof. Aini also said that UPM has strengthened its fundamental aspects especially in academic research quality and the number of journals published with citations in renowned

journals. UPM reached the highest scores in the International Student indicator while increasing its scores in three other indicators such as Employer Reputation, Academic Reputation, Faculty Student and International Faculty.





10 SUCCESSFUL COMPANIES GRADUATED FROM INNOHUB, UPM

SERDANG, 10 July - UPM InnoHub Innovation Showcase officiated by the Minister of Entrepreneur Development, Mohd. Redzuan Md. Yusof was held to recognize the officers and entrepreneurs from 10 companies. The techpreneurs or Chief Executive Officers (CEOs) from those companies successfully met 100% of the market validation activities criteria and gained sufficient income which enables start-up companies to remain competitive through a solid business model. The minister believes that the success was achieved due to the collaboration between the techpreneurs and academicians as well as the researchers who embraced a dynamic work culture.

InnoHub or Market Validation Hub established in late 2013 by UPM has successfully produced more than 50 technology entrepreneurs or techpreneurs with the ability to initiate a business. The minister in his officiating speech said that the ministry will offer its support to UPM InnoHub programme and provide assistance in various aspects to ensure that more techpreneurs will be reproduced to accelerate the country's economy.



UPM-NATIONAL CHENG KUNG UNIVERSITY, TAIWAN, PIONEERS ON MARINE FISH AND PRAWN BREEDING COLLABORATIVE RESEARCH

SERDANG, 18 April - The International Institute of Aquaculture and Aquatic Sciences (I-AQUAS), Universiti Putra Malaysia (UPM) pioneered a research collaboration with the National Cheng Kung University (NCKU), Taiwan to intensify the aquaculture researches within the field of marine fish and prawn breeding. The memorandum of understanding (MoU) was signed by UPM Vice Chancellor, Prof. Datin Paduka Dato' Dr. Aini Ideris and President of NCKU, Prof. Huey-Jen Su.

Prof. Aini Ideris believed that through this MoU, the technology sharing, technology transfer, and expertise sharing will boost the performance of the newly-upgraded research institute, I-AQUAS and the country's aquaculture industry in general. She also stated that both parties will take the initiative to generate the collaborative funds through the 'Taiwan's New Southbound Project' programme.

Among the implementation plans from this collaboration are to provide a platform for I-AQUAS researchers to obtain training and knowledge sharing with the researchers of the NCKU Bioscience and Biotechnology College, technical staff exchange, and students' mobility.



UPM'S SCIENTIST EXCEL IN BIOMASS RESEARCH

SERDANG, 14 May - Invaluable contributions of 35 years in the field of biomass and biotechnology qualifies Prof. Dr. Mohd Ali Hassan to receive the Vice-Chancellor's Fellowship Award for the Akademia Putra Special Award during Majlis Gemilang Akademia Putra (MGAP) 2017, Universiti Putra Malaysia (UPM). The award was given by Sultan of Selangor, Sultan Sharafuddin Idris Shah, who is also the Chancellor of UPM.

Prof. Dr. Mohd Ali, 60, from the Faculty of Biotechnology and Biomolecular Sciences has worked in UPM since 1982. He was selected due to his active involvement in research which focused on environmental biotechnology and biomass as well as for his exceptional leadership and management skills. More than 180 papers in Scopus's impact journals have been published with seven patents. His contributions also being acknowledged when he received the Malaysian Microbiology Award 2017 and the Malaysian Research Star Award 2017. Prof. Dr. Mohd Ali also received recognition as the Fellow of the Academy of Sciences Malaysia (ASM).

ENAU TREE: THE POTENTIAL AND DEVELOPMENT OF PRODUCT (POKOK ENAU: POTENSI DAN PEMBANGUNAN PRODUK)

Sugar Palm Tree: The Potential and Development of Product is the first book on sugar palm tree written in Malay language in Malaysia. The writing of this book is inspired by the ideas generated during the implementation of community project on sugar palm tree-based product development under the University Community Transformation Centre - National Blue Sea Strategy Center (UCTC-NBOS) programme sponsored by the Ministry of Higher Education Malaysia with the cooperation of the Village Development and Security Committee (JKKK), Kampung Kuala Jempol, Bahau, Negeri Sembilan.

This book is written in easy-to-understand language by considering the rural community who will be referring it to develop products from sugar palm tree. Besides, this book will also be useful for students, lecturers or any individual who wants to know deeper about sugar palm tree.

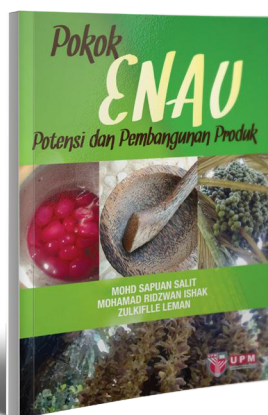
The book has won the National Book Awards 2018 for the General Books Category (Flora and Fauna Category).

Title: Sugar Palm Tree: The Potential and Development of this Product (Pokok Enau: Potensi dan Pembangunan Produk)

Authors: Mohd Sapuan Salit, Mohamad Ridzwan Ishak, Zulkiflle Leman

ISBN: 978-967-344-747-3

Price: RM40.00



MALAY CULINARY HERBS

This book documents via pictorial description of the common herbs traditionally used by the Malays or even other ethnic groups in Malaysia for ages to enhance the flavor of their cooked food. The rest are usually consumed fresh as side dishes during meal time, either at home or restaurants. Enthusiasts and consumers could have brief information on the health benefits of consuming the herbs. Universiti Putra Malaysia (UPM), being the custodian of agriculture in the country, has moral duty to publish a book of this genre as studying and conducting research on herbs are one of its core academic activities, especially in the Faculty of Agriculture. Many of the herbs described in this coffee table book are available in UPM's campus at Serdang. Some of them are being studied to determine their worth as traditional medicine that can be exploited for commercial production.

The book has won the National Book Award 2017 for the Best Designer Category and the MAPIM Award for the Best Design Category.



Title: Malay Culinary Herbs

Authors: Siti Aishah Hassan, Siti Hajar Ahmad, Rosenani Abu Bakar, Mohd Zakwan Zamri, Sumaiyah Abdullah, Noraini Md Jaafar, Dzarifah Mohamed Zulperi, Siti Izera Ismail, Muhammad Saiful Ahmad Hamdani, Shamshuddin Jusop, Abdul Shukor Jurami

ISBN: 978-967-344-517-2

Price: RM80.00

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FUNCTIONAL FOODS: WONDER OF THE WORLD

Functional foods are foods and food components with ability to beneficially influence body functions and help improve the state of well-being and health and reduce the risk of diseases. These foods include fruits, vegetables, many parts of plants and processed foods. Frequent consumption of functional food has been shown to improve health and prevent occurrence of diseases.

Functional food is important in our daily diet as they provide antioxidant phytochemicals to our body besides the basic food components. Many scientific studies have shown that these antioxidants are able to scavenge free radicals and diminish oxidative stress, thus reducing the risk of several diseases. Some antioxidant compounds possess antimicrobial effect and also improve memory and eyesight.

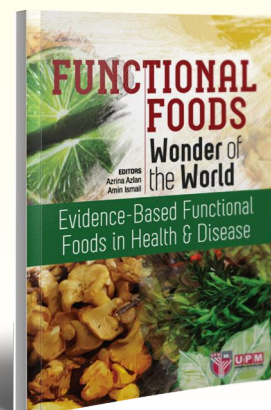
This book provides more information about these functional foods as well as nutritional components, health benefits and potential applications for our daily living and the scientific community.

Title: Functional Foods: Wonder of the World, Evidence-Based Functional Foods in Health & Disease

Editors: Azrina Azlan, Amin Ismail

ISBN: 978-967-344-737-4

Price: RM78.00



“ *Let food be thy medicine
and medicine be thy food* ”

- Hippocrates,
Greek physician



Synthesis

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INSPIRING INNOVATION

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