

บทความที่น่าสนใจประจำเดือนตุลาคม 2559

สาขาวิทยาศาสตร์และเทคโนโลยี

1	Title:	Nutraceuticals and Functional Foods: The Foods for the Future World
	Author:	Khalid Gul, A. K. Singh & Rifat Jabeen
	Journal:	Critical Reviews in Food Science and Nutrition, Volume 56, 2016 - Issue 16, pages 2617-2627
	Abstract:	<p>The health and wellness of human beings is largely dictated by the consumption of nutritious foods. Various studies have linked foods as helpful in combating a number of degenerative diseases; as such, a lot of research on functional attributes linked directly to the health benefits of various plant and animal foods have been witnessed in recent years. Although vast number of naturally occurring health-enhancing substances are of plant origin, there are a number of physiologically active components in animal products as well that deserve attention for their potential role in optimal health. Consumption of biologically active ingredients in fruits and vegetables has been linked to help combat diseases such as cancer, cardiovascular diseases, obesity, and gastrointestinal tract disorders. Lot of research is required to substantiate the potential health benefits of those foods for which the diet-health relationships are not sufficiently validated, and create a strong scientific knowledge base for proper application of naturally present foods in combating various diseases and disorders.</p>
	Database:	Taylor & Francis Journals

2	Title:	Mechanisms Linking Colorectal Cancer to the Consumption of (Processed) Red Meat: A Review
	Author:	Daniel Demeyer, Birgit Mertens, Stefaan De Smet & Michèle Ulens
	Journal:	Critical Reviews in Food Science and Nutrition, Volume 56, 2016 - Issue 16, pages 2747-2766
	Abstract:	<p>Colorectal cancer (CRC) is the third most commonly diagnosed cancer in the world. The vast majority of CRC cases have been linked to environmental causes rather than to heritable genetic changes. Over the last decades, epidemiological evidence linking the consumption of red and, more convincingly, of processed red meat to CRC has accumulated. In parallel, hypotheses on carcinogenic mechanisms underlying an association between CRC and the intake of red and processed red meat have been proposed and investigated in biological studies. The hypotheses that have received most attention until now include (1) the presence of polycyclic aromatic hydrocarbons and heterocyclic aromatic amines, two groups of compounds recognized as carcinogenic, (2) the enhancing effect of (nitrosyl)heme on the formation of carcinogenic N-nitroso compounds and lipid peroxidation. However, none of these hypotheses completely explains the link between red and processed red meat intake and the CRC risk. Consequently, scientists have proposed additional mechanisms or refined their hypotheses. This review first briefly summarizes the development of CRC followed by an in-depth</p>

	overview and critical discussion of the different potential carcinogenic mechanisms underlying the increased CRC risk associated with the consumption of red and processed red meat.
Database:	Taylor & Francis Journals

3	Title: Development of Methods for Determination of Aflatoxins
	Author: Lijuan Xie, Min Chen & Yibin Ying
	Journal: Critical Reviews in Food Science and Nutrition, Volume 56, 2016 - Issue 16, pages 2642-2664
	Abstract: Aflatoxins can cause damage to the health of humans and animals. Several institutions around the world have established regulations to limit the levels of aflatoxins in food, and numerous analytical methods have been extensively developed for aflatoxin determination. This review covers the currently used analytical methods for the determination of aflatoxins in different food matrices, which includes sampling and sample preparation, sample pretreatment methods including extraction methods and purification methods of aflatoxin extracts, separation and determination methods. Validation for analysis of aflatoxins and safety considerations and precautions when doing the experiments are also discussed.
	Database: Taylor & Francis Journals

4	Title: Machine vision system for food grain quality evaluation: A review
	Author: P. Vithu, J.A. Moses
	Journal: Trends in Food Science & Technology, Volume 56, October 2016, Pages 13–20
	Abstract: Background Quality of pre-processed food grains is a critical aspect and a major decider of market acceptability, storage stability, processing quality, and overall consumer acceptance. Among various indices of food grain quality evaluation, physical appearance (including external morphology) provides the foremost assessment on the condition of the grain. Conventional method of grain quality evaluation, visual inspection (a manual method) is challenging even for trained personnel in terms of rapidity, reliability and accuracy. Scope and approach Machine vision systems have the potential to replace manual (visual) methods of inspection and, have therefore gained wide acceptance in industries as a tool for quality evaluation of numerous agricultural products. This note provides an up-to-date review on the major applications of machine vision systems for grain quality evaluation applications in non-touching arrangement, highlighting system components, image processing and image analysis techniques, advantages and limitations of machine vision systems.

	<p>Key findings and conclusions</p> <p>Machine vision systems can provide rapid and accurate information about external quality aspects of food grains. However, it is a task to integrate such systems with those that can explain internal grain quality attributes. In the near future, with ever-growing application requirements and research developments, machine vision systems can provide effective solutions for various grain quality evaluation applications.</p>
Database:	ScienceDirect

5	Title:	Conventional spray-drying and future trends for the microencapsulation of fish oil
	Author:	Cristian Encina, Cristina Vergara, Begoña Giménez, Felipe Oyarzún-Ampuero, Paz Robert
	Journal:	Trends in Food Science & Technology, Volume 56, October 2016, Pages 46–60
	Abstract:	<p>Polyunsaturated fatty acids, especially long-chain polyunsaturated omega-3 fatty acids (LCω3-PUFA), are essential in human nutrition because they play an important role in humans and prevent several diseases. Fish oil is a natural source of LCω3-PUFA that can be incorporated into food products. One of the major drawbacks of oils containing a high amount of LCω3-PUFA, such as fish oils, is their high susceptibility to oxidation and unpleasant flavours. Microencapsulation of fish oil by spray-drying has been proposed as a strategy to retard lipid auto-oxidation, improving oil stability, prolonging its shelf life, limiting the development of off-flavours and controlling the release into food. The encapsulation of fish oil by conventional spray-drying has been performed by preparing fish oil-in-water emulsions (micro- or nano-sized) by applying high shearing forces.</p> <p>The objective of this review is to compile the scientific research on the encapsulation of fish oil to discuss the main formulation and process variables that affect the physicochemical properties of the fish oil microparticles obtained by conventional spray-drying, the stability of fish oil during storage and the application of fish oil microparticles in food systems. An alternative strategy to conventional spray-drying (water-free spray-drying) is also proposed.</p>
	Database:	ScienceDirect

6	Title:	Role of food processing in food and nutrition security
	Author:	Mary Ann Augustin, Malcolm Riley, Regine Stockmann, Louise Bennett, Andreas Kahl, Trevor Lockett, Megan Osmond, Peerasak Sanguansri, Welma Stonehouse, Ian Zajac, Lynne Cobiac
	Journal:	Trends in Food Science & Technology, Volume 56, October 2016, Pages 115–125
	Abstract:	<p>Background</p> <p>Food and nutrition security, a major global challenge, relies on the adequate supply of safe, affordable and nutritious fresh and processed foods to all people. The challenge of supplying healthy diets to 9 billion people in 2050 will in part be met through increase in food production. However, reducing food</p>

	<p>losses throughout the supply chain from production to consumption and sustainable enhancements in preservation, nutrient content, safety and shelf life of foods, enabled by food processing will also be essential.</p> <p>Scope and approach</p> <p>This review describes developments in primary food production systems and the role of food processing on population health and food and nutrition security. It emphasises the need to monitor the attitudes and values of consumers in order to better understand factors that may lead to negative perceptions about food processing.</p> <p>Key findings and conclusions</p> <p>For a resource constrained world, it is essential to have a balanced approach to both energy and nutrient content of foods. Environmental sustainability is critical and both the agrifood production and the food processing sectors will be challenged to use less resources to produce greater quantities of existing foods and develop innovative new foods that are nutritionally appropriate for the promotion of health and well-being, have long shelf lives and are conveniently transportable. Healthy diets which meet consumer expectations produced from resilient and sustainable agrifood systems need to be delivered in a changing world with diminishing natural resources. An integrated multi-sectoral approach across the whole food supply chain is required to address global food and nutrition insecurity.</p>
Database:	ScienceDirect

7	Title:	Chlorogenic Acid Oxidation and Its Reaction with Sunflower Proteins to Form Green-Colored Complexes
	Author:	Sabrina R. Wildermuth, Erin E. Young and Lilian M. Were
	Journal:	Comprehensive Reviews in Food Science and Food Safety, Volume 15, Issue 5, September 2016, Pages 829–843
	Abstract:	<p>Sunflower seeds are used to produce oil for human consumption, but its protein meal by-product has long been used as animal feed. Formation of green-colored complexes through oxidized chlorogenic acid(CGA)-protein interactions is a primary reason why defatted sunflower protein has not been widely utilized by the food industry. Sunflower protein possesses many properties that make it an appealing alternative protein source from both a marketing and formulation perspective, including its low cost, absence of major allergens, low antitrypsin inhibitors, and its status as both vegan and “clean” label friendly. With the global demand for sunflower oil and novel protein sources expected to increase and waste recovery a concern for many, providing uses for the sunflower meal and its fiber and polyphenol components would provide added value to by-products from sunflower oil processing. This review addresses the unique green pigmentation associated with the interaction of sunflower protein and</p>

	oxidized CGA by outlining the sunflower oil and protein meal market, CGA reactions contributing to greening, methods for CGA extraction, and the effect of processing on sunflower protein quality and the greening reaction. This review also addresses potential food applications of sunflower protein-based ingredients, such as addition of texturized protein to food products; a microencapsulation matrix for antioxidants; edible, flexible biodegradable films; and even use of sunflower butter as an alternative to peanut butter where the green color is not considered undesirable. Continued studies are needed to make sunflower-based products and CGA-extraction processes available across the global marketplace.
Database:	Wiley Online Library

8	Title: Recent Advances in Nondestructive Analytical Techniques for Determining the Total Soluble Solids in Fruits: A Review
	Author: Jiang-Lin Li, Da-Wen Sun and Jun-Hu Cheng
	Journal: Comprehensive Reviews in Food Science and Food Safety, Volume 15, Issue 5, September 2016, Pages 897–911
	Abstract: The total soluble solids play an important role in the fruit maturity process and determine the acceptance of rich nutrients as well as economic benefits in the fruit trade. Thus, development of rapid and nondestructive techniques for evaluating soluble solids content in fruits is important. This review focuses on recent advances in nondestructive techniques for soluble solids contents of fruits including hyperspectral imaging, laser light backscattering imaging, magnetic resonance imaging, X-ray computed tomography, near-infrared spectroscopy, and Raman spectroscopy. The advantages and disadvantages of these techniques are compared and discussed, and some viewpoints about future trends are also presented.
	Database: Wiley Online Library

9	Title: Evaluation of Food Quality and Safety with Hyperspectral Imaging (HSI)
	Author: Raúl Siche, Ricardo Vejarano, Victor Aredo, Lia Velasquez, Erick Saldaña, Roberto Quevedo
	Journal: Food Engineering Reviews, September 2016, Volume 8, Issue 3, pp 306–322
	Abstract: The current lifestyle and a greater awareness of the benefits of proper nutrition demand requirements for products offered in the market, being very important the safety, sensory attributes and composition of these respect to the benefits from their constituents, which in most of cases can only be assessed using techniques that require high investment of human, technological and time resources. This has caused the food industry to seek to develop products, besides the aforementioned requirements, which use technologies with less product loss during the analysis. Of all the available options, hyperspectral imaging technology is shown as one of the most promising alternatives, being a

	<p>nondestructive analysis technology that can easily engage in productive processes. In this review, we collect the most important studies conducted using the hyperspectral imaging technology in assessing the quality and safety of food products, such as fruits and vegetables, legumes, cereals, meats, dairy and egg products.</p>
Database:	SpringerLink

10	Title:	Application of Hybrid Neural Fuzzy System (ANFIS) in Food Processing and Technology
	Author:	Majdi Al-Mahasneh, Mohannad Aljarrah, Taha Rababah, Muhammad Alu'datt
	Journal:	Food Engineering Reviews, September 2016, Volume 8, Issue 3, pp 351–366
	Abstract:	<p>Adaptive neuro-fuzzy inference system (ANFIS) has emerged as a synergic hybrid intelligent system. It combines the human-like reasoning style of fuzzy logic system (FLS) with the learning and computational capabilities of artificial neural networks (ANNs). ANFIS has several applications related to food processing and technology. The first part of this review provides a brief overview and discussion of ANFIS including: the general structure and topology, computational considerations, model development and testing. In the second part, two detailed examples are explained to demonstrate the capabilities of ANFIS in comparison with other modeling methods, followed by a brief but comprehensive discussion of ANFIS applications in different food processing and technology areas. The applications are divided into five main categories: food drying, prediction of food properties, microbial growth and thermal process modeling, applications in food quality control and food rheology. In all applications, the performance of ANFIS is compared to other methods such as ANNs, FLS and multiple regressions when available. It is concluded that, in most applications, ANFIS outperforms other modeling tools such as ANNs, FIS or multiple linear regression. Finally, some application guidelines, advantages and disadvantages of ANFIS are discussed.</p>
	Database:	SpringerLink