

1. [A Review on Mycotoxins in Food and Feed: Malaysia Case Study](#)

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วารสาร: Comprehensive Reviews in Food Science and Food Safety, Volume 12, Issue 6, pages 629–651, November 2013

Abstract: Fungi are distributed worldwide and can be found in various foods and feedstuffs from almost every part of the world. Mycotoxins are secondary metabolites produced by some fungal species and may impose food safety risks to human health. Among all mycotoxins, aflatoxins (AFs), ochratoxin A (OTA), trichothecenes, deoxynivalenol (DON and T-2 toxin), zearalenone (ZEN), and fumonisins (FMN) have received much attention due to high frequency and severe health effects in humans and animals. Malaysia has heavy rainfall throughout the year, high temperatures (28 to 31 °C), and high relative humidity (70% to 80% during wet seasons). Stored crops under such conditions can easily be contaminated by mycotoxin-producing fungi. The most important mycotoxins in Malaysian foods are AFs, OTA, DON, ZEN, and FMN that can be found in peanuts, cereal grains, cocoa beans, and spices. AFs have been reported to occur in several cereal grains, feeds, nuts, and nut products consumed in Malaysia. Spices, oilseeds, milk, eggs, and herbal medicines have been reported to be contaminated with AFs (lower than the Malaysian acceptable level of 35 ng/g for total AFs). OTA, a possible human carcinogen, was reported in cereal grains, nuts, and spices in Malaysian market. ZEN was detected in Malaysian rice, oat, barley, maize meal, and wheat at different levels. DON contamination, although at low levels, was reported in rice, maize, barley, oat, wheat, and wheat-based products in Malaysia. FMN was reported in feed and some cereal grains consumed in Malaysia. Since some food commodities are more susceptible than others to fungal growth and mycotoxin contamination, more stringent prevention and control methods are required.

2. [Safety of Novel Protein Sources \(Insects, Microalgae, Seaweed, Duckweed, and Rapeseed\) and Legislative Aspects for Their Application in Food and Feed Production](#)

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วารสาร: Comprehensive Reviews in Food Science and Food Safety, Volume 12, Issue 6, pages 662–678, November 2013

Abstract: Novel protein sources (like insects, algae, duckweed, and rapeseed) are expected to enter the European feed and food market as replacers for animal-derived proteins. However, food safety aspects of these novel protein sources are not well-known. The aim of this article is to review the state of the art on the safety of major novel protein sources for feed and food production, in particular insects, algae (microalgae and seaweed), duckweed, and rapeseed. Potential hazards for these protein sources are described and EU legislative requirements as regard to food and feed safety are explained. Potential hazards may include a range of contaminants, like heavy metals, mycotoxins, pesticide residues, as well as pathogens. Some safety aspects of novel protein sources are intrinsic to the product, but many potential hazards can also be due to production methods and processing conditions. These aspects should be considered in advance during product development. European law is unclear on several issues regarding the use of novel protein sources in food and feed products. For food product

applications, the most important question for food producers is whether or not the product is considered a novel food. One of the major unclaritys for feed applications is whether or not products with insects are considered animal-derived products or not. Due to the unclaritys in European law, it is not always clear which Regulation and maximum levels for contaminants apply. For market introduction, European legislation should be adjusted and clarified.

3. [Dried Plums and Their Products: Composition and Health Effects—An Updated Review](#)

ผู้แต่ง: M. Stacewicz-Sapuntzakis

วารสาร: Critical Reviews in Food Science and Nutrition, Volume 53, Issue 12, 2013, pages 1277-1302

Abstract: This paper describes composition of dried plums and their products (prune juice and dried plum powder) with special attention to possibly bioactive compounds. Dried plums contain significant amounts of sorbitol, quinic acid, chlorogenic acids, vitamin K1, boron, copper, and potassium. Synergistic action of these and other compounds, which are also present in dried plums in less conspicuous amounts, may have beneficial health effects when dried plums are regularly consumed. Snacking on dried plums may increase satiety and reduce the subsequent intake of food, helping to control obesity, diabetes, and related cardiovascular diseases. Despite their sweet taste, dried plums do not cause large postprandial rise in blood glucose and insulin. Direct effects in the gastrointestinal tract include prevention of constipation and possibly colon cancer. The characteristic phenolic compounds and their metabolites may also act as antibacterial agents in both gastrointestinal and urinary tracts. The indirect salutary effects on bone turnover are supported by numerous laboratory studies with animals and cell cultures. Further investigation of phenolic compounds in dried plums, particularly of high molecular weight polymers, their metabolism and biological actions, alone and in synergy with other dried plum constituents, is necessary to elucidate the observed health effects and to indicate other benefits.

4. [Absorption and metabolic fate of bioactive dietary benzoxazinoids in humans](#)

ผู้แต่ง: Adhikari, K. B., Laursen, B. B., Gregersen, P. L., Schnoor, H. J., Witten, M., Poulsen, L. K., Jensen, B. M. and Fomsgaard, I. S.

วารสาร: Molecular Nutrition & Food Research, Volume 57, Issue 10, pages 1847–1858, October 2013

Abstract:

Scope

Benzoxazinoids, which are natural compounds recently identified in mature whole grain cereals and bakery products, have been suggested to have a range of pharmacological properties and health-protecting effects. There are no published reports concerned with the absorption and metabolism of bioactive benzoxazinoids in humans.

Methods and results

The absorption, metabolism, and excretion of ten different dietary benzoxazinoids were examined by LC-MS/MS by analyzing plasma and urine from 20 healthy human volunteers after daily intake of 143 μmol of total benzoxazinoids from rye bread and rye buns. The results showed that 2- β -d-glucopyranosyloxy-1,4-benzoxazin-3-one (HBOA-Glc) and its oxidized analog, 2- β -d-

glucopyranosyloxy-4-hydroxy-1,4-benzoxazin-3-one (DIBOA-Glc), were the major circulating benzoxazinoids. After consuming a benzoxazinoid diet for 1 week, morning urine contained eight benzoxazinoids with abundant HBOA-Glc ($219 \text{ nmol} \times \mu\text{mol}^{-1}$ of creatinine). The sulfate and glucuronide conjugates of 2-hydroxy-1,4-benzoxazin-3-one (HBOA) and 2,4-dihydroxy-1,4-benzoxazin-3-one (DIBOA) were detected in plasma and urine, indicating substantial phase II metabolism. Direct absorption of lactam glycosides, the reduction of hydroxamic acid glycosides, glucuronidation, and sulfation were the main mechanisms of the absorption and metabolism of benzoxazinoids.

Conclusion

These results indicate that following ingestion in healthy humans, a range of unmetabolized bioactive dietary benzoxazinoids and their sulfate and glucuronide conjugates appear in circulation and urine.

5. [Recent developments on umami ingredients of edible mushrooms – A review](#)

ผู้แต่ง: Yin Zhang, Chandrasekar Venkitasamy, Zhongli Pan, Wei Wang

วารสาร: Trends in Food Science & Technology, Volume 33, Issue 2, October 2013, Pages 78–92

Abstract: Umami is a pleasant savory taste which has been attributed mainly to the presence of sodium salts of glutamic and aspartic amino acids and 5'-nucleotides. It was widely investigated in recent years. Edible mushrooms have a peculiar umami taste. The umami taste makes the edible mushrooms palatable and adaptable in most food preparations. There is an increased interest on the evaluation of umami ingredients in various edible mushroom species in recent years. This paper mainly summarizes effects of the species type, maturity stage, part of mushroom, quality grade, storing time and processing methods on contents of umami ingredients in edible mushrooms. In addition, newly developed mushroom products, health benefits of mushroom products, safety of umami ingredients are reviewed and the future trends of the umami ingredients in the edible mushrooms are proposed.

6. [Current perspectives on antifungal lactic acid bacteria as natural bio-preservatives](#)

ผู้แต่ง: Sarah Crowley, Jennifer Mahony, Douwe van Sinderen

วารสาร: Trends in Food Science & Technology, Volume 33, Issue 2, October 2013, Pages 93–109

Abstract: Fungal spoilage of foods represents a major cause of concern for food manufacturers. The use of lactic acid bacteria (LAB) to alleviate fungal decay of foods and feeds is a promising solution. The study and application of antifungal LAB has received a surge of interest in recent years. Significant progress has been reported on the isolation and characterization of antimycotic compounds, which include various organic acids, cyclic dipeptides and fatty acids, while various food-based applications of these antifungal LAB have been described in literature. This review summarizes the current knowledge on antifungal LAB, their bioactive metabolites, applications in food systems and interactions with their target fungi.

7. [Antimicrobial agents for food packaging applications](#)

ผู้แต่ง: Suet-Yen Sung, Lee Tin Sin, Tiam-Ting Tee, Soo-Tueen Bee, A.R. Rahmat, W.A.W.A. Rahman, Ann-Chen Tan, M. Vikhraman

วารสาร: Trends in Food Science & Technology, Volume 33, Issue 2, October 2013, Pages 110–123

Abstract: Foods contamination leading to spoilage and growth of pathogenic microorganisms can happen when exposed to environment during slaughtering, processing, packaging and shipping. Although traditional food preservation methods such as drying, heating, freezing, fermentation and salting can extend food shelf-life, it is not consummate especially to inhibit the growth of pathogenic microorganisms that may endanger consumers' health. Antimicrobial packaging is a novel development that incorporates antimicrobial agent into polymer film to suppress the activities of targeted microorganisms. However, antimicrobial packaging is still an extremely challenging technology and there are only a few commercialized products found in the market. This review focuses on analyzing the antimicrobial agent development for the past decades till recent technology. The information about performance of antimicrobial packaging such as microbiology performance and physico-mechanical properties of the packaging film were discussed. It is expected such information would provide an overview as well as promote the development of antimicrobial packaging in the food related field and industry.

8. [Inactivation of *Escherichia coli* Population on Fruit Surfaces Using Ultraviolet-C Light: Influence of Fruit Surface](#)

[Characteristics](#)

ผู้แต่ง: Roopesh M. Syamaladevi, Xiaonan Lu, Shyam S. Sablani, Sunil Kumar Insan, Achyut Adhikari, Karen Killinger, Barbara Rasco, Amit Dhingra, Amit Bandyopadhyay, Uday Annapure

วารสาร: Food and Bioprocess Technology, November 2013, Volume 6, Issue 11, pp 2959-2973

Abstract: Ultraviolet-C (UV-C 254 nm) light is a possible alternative for chemical disinfection of fresh fruits. However, studies on the influence of surface characteristics on the kinetics of UV-C inactivation of microorganisms on fruits are limited. In this study, UV-C inactivation of generic *Escherichia coli* (ATCC 23716), a nonpathogenic surrogate strain for *E. coli* O157:H7, was inoculated onto the skin surface intact pear, pear with surface wounds, and the skin surface of intact peach. Disc shaped (0.057 m diameter × 0.01 m height) fruit surface were exposed at room temperature to UV-C light ranging from 0 to $7.56 \pm 0.52 \text{ kJ/m}^2$ and microbial inactivation kinetics was determined. Maximum reductions of $3.70 \pm 0.125 \text{ log CFU/g}$ were achieved for *E. coli* on intact pear surfaces ($P < 0.05$), with lesser reduction on wounded pear ($3.10 \pm 0.329 \text{ log CFU/g}$) and peach surfaces ($2.91 \pm 0.284 \text{ log CFU/g}$) after 4 min UV-C exposure at $7.56 \text{ kJ/m}^2 \text{ UV}$. The Weibull scale factor (α) values of UV-C inactivation for *E. coli* on an intact pear surface was $0.001 \pm 0.0007 \text{ min}$ ($0.235 \pm 0.001 \text{ kJ/m}^2$), wounded pear surface, $0.003 \pm 0.001 \text{ min}$ ($0.240 \pm 0.002 \text{ kJ/m}^2$) and peach surface, 0.004 ± 0.0004 ($0.241 \pm 0.0008 \text{ kJ/m}^2$). The time required for a 90 % reduction in *E. coli* cell numbers or the reliable life time (t_r) calculated with the Weibull model for intact pear surfaces ($0.019 \pm 0.009 \text{ min}$, $0.268 \pm 0.017 \text{ kJ/m}^2$) was smaller than for wounded pear ($0.062 \pm 0.013 \text{ min}$, $0.348 \pm 0.024 \text{ kJ/m}^2$) and peach surfaces (0.074 ± 0.012 , $0.371 \pm 0.012 \text{ kJ/m}^2$), suggesting that the wounds on pear surfaces and trichomes (100–1000 μm) on peach surfaces helped to shield and protect microorganisms from UV-C radiation. There was likely a more

uniform distribution of bacterial cells onto pear surfaces due to its smaller surface roughness, spreading coefficient, and hydrophobic nature compared to peach. Fourier transform infrared spectroscopy indicate that bacterial membrane damage (phospholipids, protein secondary structures, and polysaccharides) and changes to DNA/RNA in *E. coli* resulted from UV-C treatment. UV-C can reduce *E. coli* populations on fresh fruit surfaces, but the efficacy of UV treatment is dependent upon the morphological and surface properties of the fruit and surface integrity.

9. [Temperature Dependency of Steady, Dynamic, and Creep-Recovery Rheological Properties of Ice Cream Mix](#)

ผู้แต่ง: Omer Said Toker, Safa Karaman, Ferhat Yuksel, Mahmut Dogan, Ahmed Kayacier, Mustafa Tahsin Yilmaz

วารสาร: Food and Bioprocess Technology, November 2013, Volume 6, Issue 11, pp 2974-2985

Abstract: In this study, effect of processing temperature (5, 15, 25, and 35 °C) on the steady, dynamic, and creep recovery rheological properties of the ice cream mix (ICM) was investigated. It was found that processing temperature significantly affected all rheological parameters of the ICM sample. The flow behavior of the ICM sample was fitted to the Ostwald de Waele model. The magnitude of storage modulus (G') was higher than that of loss modulus (G'') indicating that ICM sample had weak gel-like structure. Modified Cox–Merz rules were satisfactorily applied to the ICM sample to observe relationship between steady and dynamic shear properties. Additionally, Burger model was used to characterize the viscoelastic properties of the ICM sample. The gel strength (S) value was also calculated, and a decrease was observed with the increase of temperature. Arrhenius equation satisfactorily described the temperature dependency of the rheological parameters such as apparent viscosity at 50 s⁻¹ (η_{50}), consistency coefficient (K), the instantaneous shear modulus of the Maxwell unit (G_0), permanent deformation (J_∞), and S values that may be predicted by using established equations depending on the temperature. The increase in processing temperature caused a decrease in resistance of the mixture subjected to the deformation, which is very important for production of high quality ice cream.

10. [Deposition of Thin Lipid Films Prepared by Electrospraying](#)

ผู้แต่ง: Muhammad Kashif Iqbal Khan, Liyakat Hamid Mujawar, Maarten A. I. Schutyser, Karin Schroën, Remko Boom

วารสาร: Food and Bioprocess Technology, November 2013, Volume 6, Issue 11, pp 3047-3055

Abstract: An efficient way to apply coatings on complex surfaces is electrospraying. We report on coating of porous model surfaces with well-defined properties using a multiple nozzle electrospraying system to spray sunflower oil and butter-based coating materials. Selected model surfaces were nickel membranes with large rectangular straight-through pores (13 μm width), polyether sulfone membranes (PES) with small, interconnected pores (0.2 μm) and dense cellulose membranes. The coating materials penetrated the pores of PES and nickel membranes, filling them up and thereby significantly decreasing the water vapour permeation flux through the substrate. Once the pores were (partially) filled, application of additional coating material caused only minor further flux reduction. For the cellulose membrane, the materials accumulated on the membrane surface; the resulting reduction in water vapour permeation rate was much lower as for the other membranes. Surface coverage during deposition was simulated using a Monte Carlo approach and appeared in agreement with experimental values at lower

amounts of applied coating material ($<0.03 \text{ kg/m}^2$). After deposition of larger amounts, using repeated electrospraying, the water vapour permeation flux reduction was larger than expected from the simulations. This was explained by re-melting and fusion of droplets, which indicated that repeated electrospraying of lipids could be an attractive method to create thin coatings with excellent barrier properties for, e.g. foods and pharmaceuticals that typically have such complex, porous surfaces.