

1. [Application of Artificial Neural Networks \(ANNs\) in Wine Technology](#)

ผู้แต่ง: Halil Baykal & Hatice Kalkan Yildirim

วารสาร: Critical Reviews in Food Science and Nutrition, Volume 53, Issue 5, 2013 pages 415-421

Abstract: In recent years, neural networks have turned out as a powerful method for numerous practical applications in a wide variety of disciplines. In more practical terms neural networks are one of nonlinear statistical data modeling tools. They can be used to model complex relationships between inputs and outputs or to find patterns in data. In food technology artificial neural networks (ANNs) are useful for food safety and quality analyses, predicting chemical, functional and sensory properties of various food products during processing and distribution. In wine technology, ANNs have been used for classification and for predicting wine process conditions. This review discusses the basic ANNs technology and its possible applications in wine technology.

2. [Advances in Edible Coatings for Fresh Fruits and Vegetables: A Review](#)

ผู้แต่ง: R. K. Dhall

วารสาร: Critical Reviews in Food Science and Nutrition, Volume 53, Issue 5, 2013 pages 435-450

Abstract: Edible coatings are an environmentally friendly technology that is applied on many products to control moisture transfer, gas exchange or oxidation processes. Edible coatings can provide an additional protective coating to produce and can also give the same effect as modified atmosphere storage in modifying internal gas composition. One major advantage of using edible films and coatings is that several active ingredients can be incorporated into the polymer matrix and consumed with the food, thus enhancing safety or even nutritional and sensory attributes. But, in some cases, edible coatings were not successful. The success of edible coatings for fresh products totally depends on the control of internal gas composition. Quality criteria for fruits and vegetables coated with edible films must be determined carefully and the quality parameters must be monitored throughout the storage period. Color change, firmness loss, ethanol fermentation, decay ratio and weight loss of edible film coated fruits need to be monitored. This review discusses the use of different edible coatings (polysaccharides, proteins, lipids and composite) as carriers of functional ingredients on fresh fruits and vegetables to maximize their quality and shelf life. This also includes the recent advances in the incorporation of antimicrobials, texture enhancers and nutraceuticals to improve quality and functionality of fresh-cut fruits. Sensory implications, regulatory status and future trends are also reviewed.

3. [Fermented Milks and Milk Products as Functional Foods—A Review](#)

ผู้แต่ง: V. K. Shiby & H. N. Mishra

วารสาร: Critical Reviews in Food Science and Nutrition, Volume 53, Issue 5, 2013 pages 482-496

Abstract: Fermented foods and beverages possess various nutritional and therapeutic properties. Lactic acid bacteria (LAB) play a major role in determining the positive health effects of fermented milks and related products. The *L. acidophilus* and

Bifidobacteria spp are known for their use in probiotic dairy foods. Cultured products sold with any claim of health benefits should meet the criteria of suggested minimum number of more than 10^6 cfu/g at the time of consumption. Yoghurt is redefined as a probiotic carrier food. Several food powders like yoghurt powder and curd (dahi) powder are manufactured taking into consideration the number of organisms surviving in the product after drying. Such foods, beverages and powders are highly acceptable to consumers because of their flavor and aroma and high nutritive value. Antitumor activity is associated with the cell wall of starter bacteria and so the activity remains even after drying. Other health benefits of fermented milks include prevention of gastrointestinal infections, reduction of serum cholesterol levels and antimutagenic activity. The fermented products are recommended for consumption by lactose intolerant individuals and patients suffering from atherosclerosis. The formulation of fermented dietetic preparations and special products is an expanding research area. The health benefits, the technology of production of fermented milks and the kinetics of lactic acid fermentation in dairy products are reviewed here.

4. [Physical Properties of Non-Agglomerated Cocoa Drink Powder Mixtures Containing Various Types of Sugar and Sweetener](#)

ผู้แต่ง: Maja BenkoviĆ, Ana Belšćak-CvitanoviĆ, Draženka Komes, Ingrid Bauman

วารสาร: Food and Bioprocess Technology, April 2013, Volume 6, Issue 4, pp 1044-1058

Abstract: Characterization of flow properties represents a crucial step in the production of powdered composite mixtures. Mixing of cocoa powders with different sugars is the first step in the production of this type of beverages, which leads to a change in the mixtures flow properties. The objective of this work was firstly to determine the physical properties of non-agglomerated powdered cocoa and sugar mixtures and, after that, to determine which physical properties of cocoa powders are influenced by sugar addition and in what way they are influenced by sugars. Mixtures were formulated by two cocoa powders containing different amounts of fat and 11 different kinds of sugar or sweetener. A significant change was found in the median diameter, poured bulk density, compression and decompression force of the mixtures compared to the sole components' physical properties. All the mixtures display a decreasing compaction coefficient with increase of flow speed, which indicates that these powder mixtures flow more freely at higher transport speeds. An increase of cake height ratio was detected in all the mixtures, indicating that all the mixtures were susceptible to caking and that they formed a strong cake. Insolubility of the mixtures was influenced significantly by the median diameter of the sugar particles added to the mixture. Addition of sugars and sweeteners to the cocoa powder reduced the red and yellow colour components, but the type of sugar or sweetener did not produce a considerable difference in the colour of the cocoa drink mixtures.

5. [High-Intensity Ultrasound Processing of Pineapple Juice](#)

ผู้แต่ง: Mayra Garcia Maia Costa, Thatyane Vidal Fonteles, Ana Laura Tibério de Jesus, Francisca Diva Lima Almeida, Maria Raquel Alcântara de Miranda, Fabiano André Narciso Fernandes, Sueli Rodrigues

วารสาร: Food and Bioprocess Technology, April 2013, Volume 6, Issue 4, pp 997-1006

Abstract: The influence of ultrasound processing on the physicochemical characteristics of pineapple juice was investigated through an experimental design changing ultrasound time and intensity. After processing, the polyphenoloxidase (PPO) activity

in the pineapple juice was reduced by 20% as result of the treatment with longer exposure and higher intensity (376 W/cm² and 10 min). The effect on phenolic compounds compared to the fresh pineapple juice (non-sonicated) was not statistically significant. Ultrasound processing reduced juice viscosity by 75% of the initial value (non-sonicated juice). The higher the ultrasound intensity and the juice exposure (processing time), the higher the final temperature of the juice, reaching a maximum of 54 °C. Ultrasound processing enhanced the juice color and its stabilization along 42 days of storage compared to the non-sonicated juice. Thermal treatment at the highest temperature reached due to juice sonication (54 °C) showed no effect on PPO inactivation.

6. [Virtual Fruit Tissue Generation Based on Cell Growth Modelling](#)

ผู้แต่ง: Metadel K. Abera, Solomon Workneh Fanta, Pieter Verboven, Quang T. Ho, Jan Carmeliet, Bart M. Nicolai

วารสาร: Food and Bioprocess Technology, April 2013, Volume 6, Issue 4, pp 859-869

Abstract: A cell-growth-based algorithm is presented based on the biomechanics of plant cells in tissues to help explain the typical differences in cellular architecture found between different pome fruit species, cultivars and tissues. The cell was considered as a closed thin-walled structure, maintained in tension by turgor pressure. The cell walls of adjacent cells were modelled as parallel and linearly elastic elements, which obeyed Hooke's law. A Voronoi tessellation was used to generate the initial topology of the cells. Cell expansion then resulted from turgor pressure acting on the yielding cell wall material. To find the sequence positions of each vertex of the cell walls, and thus, the shape of the cells with time, a system of differential equations for the positions and velocities of each vertex were established and solved using a Runge–Kutta fourth and fifth order (ODE45) method. The model was used to generate realistic 2D fruit tissue structures composed of cells of random shapes and sizes, cell walls and intercellular spaces. Comparison was made with fruit tissue micrographs. The virtual tissues can be used for numerical simulation of heat and mass transfer phenomena or mechanical deformation during controlled atmosphere storage of fresh pome fruit.

7. [Sitosterol as an antioxidant in frying oils](#)

ผู้แต่ง: Ashutosh Singh

วารสาร: Food Chemistry, Volume 137, Issues 1–4, 15 April 2013, Pages 62–67

Abstract: The antioxidative effect of sitosterol at 1, 2 and 5% levels, in triolein, refined canola, high oleic sunflower and flaxseed oils, continuously heated for a period of up to 72 h at frying temperature of 180 °C, was studied. High Pressure Size Exclusion Chromatography (HPSEC) was used to monitor changes in peak areas of triacylglycerol (TG) polymer, monomer and ester hydrolysis products. The presence of enhanced levels of sitosterol was found to significantly decrease TG polymer formation in triolein and the vegetable oil samples after heating at 180 °C for a period of 72 h. A corresponding increase in the level of intact TG monomer and the extent of TG ester hydrolysis was observed in all samples with enhanced levels of sitosterol. Conversion of sterol to steradiene, by the 1, 2 elimination of water, may be responsible for the antioxidative effect of sitosterol at frying temperatures.

8. [Detection of trace metal in distilled alcoholic drinks](#)

ผู้แต่ง: Suw-Young Ly, Hai-Soo Yoo, Seung-Kyu Chun

วารสาร: Food Chemistry, Volume 137, Issues 1–4, 15 April 2013, Pages 168–171

Abstract: The presence of trace metal cadmium assay was investigated with a copper immobilized on a graphite carbon electrode (GPC), the modified property of which was determined with handheld voltammetric systems. Following the determination of the analytical stripping conditions of 0.45 V amplitude, 30 Hz frequency, -1.4 V initial potential, and 4.0 mV increment potential, only a 60-s experimental accumulation time was used. Using these conditions, the analytical detection limit approached the nano range. At this condition, the analytical application was performed on distilled alcoholic drinks for food manufacturing systems. This developed technique is faster and less costly than the common voltammetric and spectrophotometric methods.

9. [The effect of freeze–thaw cycles on microstructure and physicochemical properties of four starch gels](#)

ผู้แต่ง: Lan Wang, Bijun Xie, Guangquan Xiong, Wenjing Wu, Jun Wang, Yu Qiao, Li Liao

วารสาร: Food Hydrocolloids, Volume 31, Issue 1, May 2013, Pages 61–67

Abstract: The effect of repeated freeze–thaw (FT) cycles (up to seven) on microstructure, thermal and textural properties of four starch gels from various botanical origins (gingko, Chinese water chestnut, potato and rice) was investigated and compared by scanning electronic microscope, differential scanning calorimetry and texture analyzer. The chemical composition and molecular structure of four starches were also examined. The Chinese water chestnut, potato and rice starch gels formed a honey-comb structure after 7 FT cycles, while gingko starch gel exhibited lamellar structure. The 7 FT cycles decreased the transition temperatures and enthalpies of four starches in comparison with each native starch, and the retrogradation percentage followed the order: rice > gingko > Chinese water chestnut > potato. The 7 FT cycles increased the hardness of all the evaluated starch gels and decreased springiness and cohesiveness. Results showed that the molecular structure of starches caused notable differences to the microstructure and textural properties of starch gels. The higher amount of longer branch chain (degree of polymerization (DP) > 18) might benefit the formation of the lamellar structure of gingko starch. The percentage of branch chains (DP 18–23) was negatively related with the springiness and cohesiveness of native starch gels, while the percentage of medium chains (DP 12–17) was positively related to the springiness of starch gels after 7 FT cycles.

10. [Metatranscriptomic analysis of lactic acid bacterial gene expression during kimchi fermentation](#)

ผู้แต่ง: Ji Young Jung, Se Hee Lee, Hyun Mi Jin, Yoonsoo Hahn, Eugene L. Madsen, Che Ok Jeon

วารสาร: International Journal of Food Microbiology, Volume 163, Issues 2–3, 15 May 2013, Pages 171–179

Abstract: Barcode-based 16S rRNA gene pyrosequencing showed that the kimchi microbiome was dominated by six lactic acid bacteria (LAB), *Leuconostoc (Lc.) mesenteroides*, *Lactobacillus (Lb.) sakei*, *Weissella (W.) koreensis*, *Lc. gelidum*, *Lc. carnosum*, and *Lc. gasicomitatum*. Therefore, we used completed genome sequences of representatives of these bacteria to investigate metatranscriptomic gene-expression profiles during kimchi fermentation. Total mRNA was extracted from kimchi

samples taken at five time points during a 29 day-fermentation. Nearly all (97.7%) of the metagenome sequences that were recruited on all LAB genomes of GenBank mapped onto the six LAB strains; this high coverage rate indicated that this approach for assessing processes carried out by the kimchi microbiome was valid. Expressed mRNA sequences (as cDNA) were determined using Illumina GA IIx. Assignment of mRNA sequences to metabolic genes using MG-RAST revealed the prevalence of carbohydrate metabolism and lactic acid fermentation. The mRNA sequencing reads were mapped onto genomes of the six LAB strains, which showed that *Lc. mesenteroides* was most active during the early-stage fermentation, whereas gene expression by *Lb. sakei* and *W. koreensis* was high during later stages. However, gene expression by *Lb. sakei* decreased rapidly at 25 days of fermentation, which was possibly caused by bacteriophage infection of the *Lactobacillus* species. Many genes related to carbohydrate transport and hydrolysis and lactate fermentation were actively expressed, which indicated typical heterolactic acid fermentation. Mannitol dehydrogenase-encoding genes (*mdh*) were identified from all *Leuconostoc* species and especially *Lc. mesenteroides*, which harbored three copies (two copies on chromosome and one copy on plasmid) of *mdh* with different expression patterns. These results contribute to knowledge of the active populations and gene expression in the LAB community responsible for an important fermentation process.