

IN THE NEWS

FAO launches e-learning for Codex food standards

The United Nations Food and Agriculture Organization (FAO) has launched an e-learning course – *Enhancing participation in Codex activities* – for professionals dealing with food control and food standards setting. The course provides basic information on Codex and recent changes in procedures. It extends helpful tips on forming national delegations to attend the meetings of the Codex Alimentarius Commission, and on making effective interventions at Codex meetings, the basic concepts of food safety risk analysis, and the World Trade Organization agreements' relevance.

The e-learning modules have been developed by FAO and the World Health Organization, with support from the Government of Canada. The new course will help delegates to participate more effectively at meetings of the Codex Alimentarius Commission, provide guidance on preparing a country's input to the Commission's debates on food safety and quality and national standards setting. It consists of 13 lessons, each of 30-50 minutes, for a total of 10 hours of self-paced learning and includes a range of e-learning methods such as storytelling, practical case studies, as well as interactive exercises. A set of Power-Point slides, handouts and exercises, which can be easily customized by trainers for face-to-face training, are also available in the course. (Source: www.commodityonline.com)

Groundbreaking guidelines on marketing to children

The International Council of Beverages Associations (ICBA), the worldwide trade association that represents the non-alcoholic beverage industry, has adopted guidelines on marketing to children. The ICBA Guidelines on Marketing to Children set a standard whereby beverage companies voluntarily agree to eliminate advertising and marketing through the media of a wide range of beverages, including carbonated soft drinks, to any audience that consists mostly of children aged below 12 years.

As part of the guidelines, ICBA will also review other forms of marketing, including presence in schools, sponsorships and point-of sale promotions by the end of 2009. The policy does not cover water, juices and dairy-based beverages, as these segments are not represented by all ICBA members. These guidelines were developed within the framework of a wider food and drinks industry commitment to collaborate with the World Health Organization (WHO) and other stakeholders to help implement the 2004 WHO Global Strategy on Diet, Physical Activity and Health. They are the first, sector-specific step in a broader movement that will include a variety of initiatives and a large number of food and beverage partners. ICBA intends to issue its first report on the implementation of the Guidelines by the end of 2009. (Source: sev.prnewswire.com)

Large source for bacterial fermentation of foods

The food industry has a new resource of bacteria for the development of fermentation-based foods, thanks to a collaboration between the Dutch Nizo Food Research and Belgian Co-ordinated Collection of Micro-organisms (BCCM)/LMG, one of the world's biggest bacteria stores.

Nizo has long held its own collection of food bacteria and a technology platform to screen them for their properties. Now, with the addition of a subset of BCCM/LMG's bacteria store, the collection is extended to about 3,900 different bacteria, which are open for screening. The collaboration brings to Nizo and its industry clients strains of the genera *Lactococcus*, *Lactobacillus*, *Leuconostoc*, *Bifidobacterium* and *Streptococcus*. It includes cultures used in the production of dairy products and plant-based products – such as wine, vegetables and fruit – and probiotic bacteria strains that are recognized for their beneficial effect on immunity, gut health, and other health markets.

Dr. Johan van Hylckama Vlieg, principal scientist at Nizo, said BCCM/LMG is particularly strong in bacteria storage, while Nizo's strength is in handling and selecting bacteria for the food industry. Nizo's own "treasure box" of bacteria has been developed over the last 60 years, he said, with many originating from food products. (Source: www.foodnavigator.com)

Irradiation to add value to Sri Lankan products

A multi-purpose gamma irradiation facility is to be established in Sri Lanka. The Ministry of Science and Technology signed an agreement with the Board of Investment recently to allocate two acres of land in the Biyagama Export Processing Zone. This will provide irradiation services to small- and medium-scale entrepreneurs, to enhance quality of their products, such as rubber gloves, spices, food articles and medical items. The estimated cost of the facility is Rs 450 million (US\$4.2 million).

The facility is being established by the Atomic Energy Authority of Sri Lanka. The International Atomic Energy Agency has already agreed to provide technical assistance in terms of work force development, expert services and some laboratory equipment, said Professor Tissa Vitharana, Minister of Science and Technology. The participation of government will ensure its services to a range of different sectors. Besides commercial operations, the plant will also make available opportunities for research and development, said Prof. Vitharana. (Source: www.island.lk)

Philippines strengthens food safety campaign

The Philippine government is beefing up its food safety campaign on coconut-based food products. Philippine Coconut Authority (PCA-XI) regional manager Mr. Lornito U. Orillaneda said the advocacy campaign that they launched in Davao City was a multi-sectoral effort joined by coconut farmers, millers, traders, officials from government agencies and a delegation from the European Commission to the Philippines. The launch was simultaneously carried in the cities of Lucena, Zamboanga, Catarman and Calbayog. The cities where the programme was launched constitute the country's major coconut production hubs.

Quoting Mr. Oscar Garin, PCA Administrator, Mr. Orillaneda said the food safety campaign will also help coconut farmers improve the quality of copra they produce. He said ensuring food safety is an area where PCA plays a critical role and that there must be an uninterrupted chain of food safety from farm to fork to reduce health risk associated

with copra and to secure long-term sustainability of the export product to the world market. As part of the thrust on safety, PCA has supplied dryer units to 15 coconut farmer-cooperatives across the country to assist the farmers in shifting from drying their copra under the sun or in direct smoke-filled dryers. (Source: www.pia.gov.ph)

India to develop infrastructure in food processing sector

India's Minister of State for Food Processing Industries Mr. Subodh Kant Sahai recently announced that the government would soon be launching a scheme to develop infrastructure in the food processing sector. According to reports, only two per cent of the fruits and vegetables are processed in India and about 35 per cent of them are wasted due to lack of processing and storage facilities. Addressing a national seminar on food safety and quality management systems in New Delhi, Mr. Sahai also said that there was an urgent need to sensitize the food processing industry to meet increasing food safety standards, which would help India garner a higher share in the world food trade. He said this step would also ensure better and hygienic food to the common man. He added that for achieving better food quality, the focus has to be on development of integrated food law, strengthening institutional set up for standards, better human resource development and capacity enhancement. (Source: www.thaindian.com)

China's leisure fast food sector shows promise

At a salon for fast food and leisure food entrepreneurs held recently, a person from the China Cuisine Association said that leisure fast food industry had great development potential and was creating a new life style, which will become a key aspect in the development of the country's catering industry. So, what is leisure fast food? Experts from China Cuisine Association describe it as a form of food and beverage that fits in between a formal dinner and fast food. The number of dishes in leisure fast food is not many, but they can meet the consumer demands both for dinner and snack.

The basic features of leisure fast food restaurants are elegant and comfortable environment,

complete service facilities and fast food. They can depict different diet cultures of various countries, or different cultural ideas by distinctive themes made up of dishes, services, environment, etc. These outlets cater to people's multiple needs for relaxation, communication as well as food.

According to incomplete statistics, there are over one million outlets of chain fast food outlets in China, and the industry is growing steadily. Among China's top 100 catering enterprises, 15 are fast food enterprises and they together have 4,375 chain outlets and a turnover of 23.171 billion yuan (US\$3.4 billion), accounting for 27.81 per cent of the total business volume of the top 100 catering enterprises. (Source: en.ce.cn)

Malaysia to announce incentives for halal industry

Malaysia's Prime Minister Datuk Seri Abdullah Ahmad Badawi is expected to announce incentives for the development of halal parks and halal producers. Datuk Jamil Bidin, the CEO of Halal Development Corporation (HDC), said the halal industry has a long way to go and the incentives are expected to make Malaysia as major source of halal products and services.

Currently, there are four halal parks, which are ready for investors in terms of groundwork, with facilities located at Pulau Indah in Selangor, Gambang in Pahang, Padang Besar in Perlis, and Tanjung Manis in Sarawak. Datuk Jamil said the current global halal market is estimated at US\$ 2.3 trillion, covering the industry from all products and services related to food and beverages, cosmetics and toiletries, pharmaceuticals, travel and tourism, banking and finance, insurance, storage, shipping, packaging, publishing, branding, marketing, etc. (Source: www.bernama.com.my)

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STANDARDS/ REGULATIONS

China seeks public opinion on food safety regulation

China's new draft food safety law, which lays out penalties from fines to life in prison for makers of sub-standard food, was recently published on the national legislature website for public discussion. The solicitation of public opinion will last till 20 May, and the submissions received from the public will then be delivered to the National People's Congress (NPC) Standing Committee for further study.

The draft law, covering food safety evaluation, monitoring, recall and information release, was submitted to the NPC Standing Committee last December for the first hearing. According to the draft, producers of sub-standard food products face fines, the confiscation of their incomes and revocation of production certificates. In serious cases, they could face prison terms ranging from three years to life. (Source: news.xinhuanet.com)

India defers food labelling rules

The Indian government has decided to defer implementing the new food labelling rules by three more months. The Ministry of Health had issued a draft notification regarding food labelling, which was to be implemented by 20 May. This is the second such action. The government had earlier postponed implementation of the labelling rules by six months.

In view of the practical difficulty in implementing labelling rules in the present form, the Solvent Extractors' Association (SEA) had requested the Ministry to put off the implementation for six months. Rule 32(2) (iv) of the Prevention of Food Adulteration Act makes it mandatory for food brands to give nutritional information per 100 g of the product. The information required covers energy value, amounts of protein, carbohydrate and fat, and type of fatty acids including saturated fatty acids (SFA), polyunsaturated fatty acids (PUFA), monounsaturated fatty acids (MUFA) and trans

fatty acids, cholesterol and numerical information on vitamins and minerals. SEA was of the contention that the content of SFA, PUFA, MUFA and other ingredients could vary from batch to batch and it is not possible to print the batch-wise label.

(Source: www.financialexpress.com)

Food fortification enforcement in the Philippines

The Task Force on Food Fortification, created by Mayor Mr. Rodrigo R. Duterte for the implementation of food fortification in Davao City, together with the local government unit and the Department of Health (DoH), is monitoring its implementation in all food outlets in the city. The Task Force on Food Fortification (chaired by the Mayor himself) was created to ensure that foods – such as rice, refined sugar, wheat flour and cooking oil – are being fortified as mandated by law.

Under Republic Act 8976 or the Philippine Food Fortification Act of 2000, all food establishments are required, to carry out mandatory fortification of staple products with iron. The DoH has been providing technical assistance to food fortification programme, and information, education and communication materials to local government units, including suggestions on local ordinances for food fortification. (Source: www.pia.gov.ph)

China takes big step forward in nutrition labelling

China has introduced new guidelines for nutrition labelling on packaged foods which, although not mandatory, will standardize presentation of information on products that already state nutrient levels. Under the new guidelines, all foods carrying nutrition labels or health and nutrition claims will have to convey levels of energy, protein, fat, carbohydrates and sodium (in that order) per 100 g, 100 ml or serving. They will also have to label nutrient content as a percentage of the nutrient reference value. The guidelines set out restrictions including font size and on-pack positioning when health and nutrition claims are made on packaging. Labelling of fatty acids, sugar, vitamins and minerals remains optional, although they may be required in some export markets.

(Source: www.ap-foodtechnology.com)

SAFETY/ QUALITY CONTROL

Diffused ozone system keeps spinach free of contaminants

Seair Diffusion Systems Inc., Canada, successfully tested a system designed to ensure packaged spinach is free of potentially harmful bacteria. The system, which was designed and installed by Ozone Science Design, applies ozone-saturated water directly to the spinach and related processing equipment during packaging. Tests confirmed that the system ensures no potentially harmful bacteria, such as *E. coli*, is present in spinach shipped to customers. In addition, the processing equipment remains cleaner during use and, therefore, less sanitization is required at the end of production runs.

The key to this application is Seair's ability to produce micro-bubbles of ozone gas, 5 microns in diameter. Ozone is an extremely powerful oxidant, but unless small bubble size is consistently achieved too much ozone will be lost as off-gas to make it economically viable in commercial-scale operations. Seair's micro-bubbles create a stable supersaturate solution where ozone off-gas is minimized and oxidation is maximized. *Contact: Mr. Harold Kinasewich, Seair Diffusion Systems Inc., 9554 Yellowhead Trail, Edmonton, Alberta, Canada T5G 0W4. Tel: +1 (780) 477 7188; Fax: +1 (780) 477 6622; E-mail: info@seair.ca.* (Source: www.cnw.ca)

Measuring the hotness of chilli sauce with nanotubes

Prof. Richard Compton and his team at Oxford University, United Kingdom, have developed a sensitive technique to measure the levels of capsaicinoids, the substances that make chillies hot, in samples of chilli sauce. The technology might soon be available commercially as a cheap, disposable sensor for use in the food industry.

The current industry procedure is to use a panel of taste-testers, and is highly subjective. Prof. Compton's new method determines the precise

amount of capsaicinoids, and is not only quicker and cheaper than taste-testers but more reliable for purposes of food standards; tests could be rapidly carried out on the production line.

The well-established Scoville method – currently the industry standard – involves diluting a sample until five trained taste testers cannot detect any heat from the chilli. The number of dilutions is called the Scoville rating; the relatively mild Jalapeño ranges from around 2,500-8,000, whereas the hottest chilli in the world, the “Naga Jolokia”, has a rating of 1,000,000. High performance liquid chromatography can also be used, but this needs bulky, expensive equipment and detailed analysis of the capsaicinoids.

In Mr. Compton’s method, the capsaicinoids are adsorbed onto multi-walled carbon nanotube electrodes. The current change that occurs as the capsaicinoids are oxidized by an electrochemical reaction is measured, and this reading is then translated into Scoville units. The technique is called adsorptive stripping voltammetry, and is a relatively simple electrochemical method. (Source: www.sciencedaily.com)

Multipurpose milk tester for high-speed analysis

A new testing device for milk products can rapidly analyse a variety of different factors without compromising accuracy, says its manufacturer, Foss, Denmark. Milkoscan FT+ analyser can test up to 600 milk samples per hour for almost any parameter, from unsaturated fatty acids and proteins to pH levels, whether the product is derived from cows, buffalo, sheep or goats. The new model can perform advanced services, such as profiling milk with regard to the levels of unsaturated fatty acids present.

Foss says that the product’s main purpose is to offer broad and high-speed analysis at a specific temperature. Milkoscan FT+ uses a self-cleaning pipette to ensure that automated checking can be maintained on even products like sheep’s milk, which boast a higher fat content. A RFID reader can also be used during testing to trace samples back to source to reduce concerns over compromised batches of product. (Source: www.foodqualitynews.com)

Cheaper acrylamide test

While techniques involving mass spectrometry for measuring the suspected carcinogen acrylamide in foods work well, the cost of the instrumentation is relatively high. Alternative high-performance liquid chromatography methods for acrylamide have suffered variously from complex sample pre-treatment, poor sensitivity and interferences from other compounds in foods. Another technique is the gas chromatography-electron capture detector (GC-ECD) procedure, which involves bromination of acrylamide to give a derivative that is more easily detected at low levels than acrylamide itself.

Now, scientists from the Chongqing Academy of Metrology and Quality Inspection, China, have adopted the GC-ECD method for the analysis of acrylamide in heat-processed starchy foods using the method of standard additions. Mr. Yonghong Zhu and colleagues selected standard additions as it is known to produce accurate measurements for complex matrices, such as food. For each sample, equal aliquots are spiked with increasing amounts of a standard solution of acrylamide, and a further aliquot is analysed without any addition. The intercept on the axis when the GC peak areas are plotted against the amount of added standard represents the amount of acrylamide in the unspiked aliquot.

The food samples were pulverized, homogenized and then the acrylamide standard solutions were added. After extraction with water and defatting with hexane, the aqueous phase was mixed with potassium bromide, hydrobromic acid and saturated bromine-water and left in the dark over an ice bath. This converted acrylamide to 2,3-dibromopropionamide (2,3-DBPA), which was extracted with ethyl acetate without further concentration. The extract was analysed by GC-ECD, using a polar Supelcowax column. During its time on the column 2,3-DBPA was converted to the more stable derivative 2-bromopropenamide (2-BPA). The GC-ECD detection and quantification limits were 0.6 and 2.0 µg/kg (ppb), which compare favourably with mass spectrometric methods. The overall performance was good in terms of repeatability (3.9-7.1 per cent), reproducibility (3.8-7.7 per cent) and recovery (92.5-101.5 per cent) in four food groups. (Source: www.separationsnow.com)

Rapid meat test could eliminate recalls

A new rapid meat test created by an assistant professor from Colorado State University (CSU), the United States, could help prevent meats contaminated with bacteria like *Salmonella* and *Listeria* from ever reaching grocery stores and consumers' refrigerators. The Phast Swab test was developed by Dr. Larry Goodridge under a project that he worked on for more than 10 years. The swab is simply swiped over the meat, and then placed in a tube with a "broth" to help the bacteria grow and in 10-12 hours. Contamination of the meat with certain strains of bacteria will be indicated by a colour change of the broth. The test can have a significant impact on the meat packing industry, where some current tests for *Listeria* or *Salmonella* strains can take up to 28 hours. (Source: ansci.colostate.edu)

Integrated approach to quality and safety in egg industry

Dutch food ingredients company DSM is stepping up its focus on the egg industry, promising reduced costs for companies that use its products packaged in an integrated "Total Concept". DSM offers "increased safety for consumers, increased animal health and increased value of egg and egg-products," says Mr. Theo Verleun, DSM's industry manager. The Optimum Vitamin Nutrition complex in feed helps strengthen the egg, resulting in up to 20 per cent less breakage during transport. The average size of the eggs can also be increased by 25 per cent. DSM's ingredients such as Carophyll Check allow processors to manage the shades of colour of egg yolk for different applications.

DSM's PremiTest diagnostic testing kits screen for antibiotic residues and antimicrobials. It also offers PremiTest Salmonella which can detect 72 *Salmonella* serotypes within three days. The fermentation-derived enzymes MaxapalA2 and MaxapalG04 can be added at the final stage of egg processing to improve egg's emulsification properties and to de-sugar egg products before spray drying. They also allow for improved pasteurization to help reduce infection risk. (Source: www.nutraingredients.com)

INGREDIENTS

Iron-fortified fish sauce

Iron-fortified fish sauce was introduced to Hanoi's markets recently by one of the companies participating in Viet Nam Health Ministry's project to supplement fish sauce products with iron. Each millilitre of the new fish sauce product is fortified with 0.4 milligrams of iron. Hanoi-based Seafood Area No. 1 Joint-stock Company created the fortified product under a National Nutrition Institute project, and sponsored by the Global Alliance for Improved Nutrition (GAIN) in partnership with the World Bank. The three-year project, launched in 2006, aims to reduce the prevalence of iron deficiency anaemia in Viet Nam. The participating companies are expected provide around 20 million litres of fish sauce, accounting for some 15 per cent of total fish sauce in the market, three years after project launch. (Source: www.thanhviennews.com)

Process targets dairy cholesterol cutting

A proprietary process for natural dairy-based ingredients can offer a lower cholesterol alternative to regular milk, while maintaining the same taste profile, according to its manufacturer. Alliance Enterprises LLC, the United States, says that its patented Benelact process has been found to cut cholesterol content by about 90 per cent in skim milk and 35 per cent for the whole fat variety. Benelact is already available globally on the market, both as a licensed production technique and a final ingredient product.

The Benelact process combines mixing and separating operations with the addition of natural oils to the milk. During the processing, these oils work to "grab" and then separate cholesterol from the actual milk under controlled temperature conditions. In order to develop Benelact into a product capable of meeting changing consumer demand, the company had to address several key concerns, such as to create un-adulterated milk that does not have any adverse organoleptic effects and to not introduce any unnatural component. "Because temperatures and other factors are

controlled throughout the process, proteins, calcium and vitamins are left undisturbed," said a spokesperson for the company. (Source: www.foodproductiondaily.com)

Low-sodium soy isolate

Since it is estimated that one-third of the salt consumed is 'hidden' in processed foods rather than sprinkled onto meals just prior to eating, salt reduction has become a major target for food manufacturers. Solbar, Israel, is introducing a new isolated soy protein with about a quarter of the sodium usually found in isolates. Solbar's new 90 per cent isolated soy protein is called Solpro 957.

Sodium is typically used in the extraction process for soy protein isolates, and sodium levels in the ingredient are between 11,000 and 13,000 ppm. Solbar, however, says it has found a way to reduce this to 3,000 ppm, or 300 mg/100 g. Solbar has set about testing its new ingredient in different applications. So far, it has reported favourable results for pizza dough tested in the United States, and a ready-to-drink beverage. (Source: www.ap-foodtechnology.com)

High-gelling protein from defatted soybeans

McGill University, Canada, is offering a simple technology for preparing protein products from ground defatted soybeans. The primary product is a protein isolate with high solubility and high gelation properties. This freeze-dried product is a cream-white, free-flowing powder that is highly soluble in water, and has unique thermal gelation properties and cold-set gel properties.

From the same process, an isoelectric protein isolate similar in characteristics to commercial soy protein isolate is obtained as a secondary product. The residue from extraction is a source of animal feed. The extraction solvent can be recycled for subsequent extractions; it accumulates high-energy solids (oligosaccharides) and can find use as a tertiary product either alone or in combination with the extraction residue.

The soybean protein preparation could replace whey protein where non-dairy protein products

are required, and would be ideal for fortifying both soy-based and non-soy-based protein foods. It can also be used as a carrier for soybean nutraceuticals. The unique properties of the primary product are particularly well suited to targeted applications where solubility and gelling properties are important, such as protein-fortified tofu, soymilk and other as yet unidentified applications. (Source: www.flintbox.com)

New all-round topping base

Aerion DP 90 from the world's largest producer of powdered toppings, DMV International in the Netherlands, is an all-round topping base, with excellent whipping properties, smooth texture and superb taste. It does not contain hydrogenated vegetable oils (non-hvo). The first companies to try it out are reportedly pleased with the results. According to Mr. Jos Bevers, Senior Market Development Manager at DMV International, DP 90 is the ideal solution for non-hvo instant aerated desserts. It can be used both in an 'acid' environment (e.g. in the production of quark mousse), and in a 'neutral' environment (e.g. in the preparation of chocolate mousse). (Source: www.foodingredientsfirst.com)

Cultures encapsulated with chocolate food products

General Mills Inc., the United States, has been assigned a patent on chocolate food products that comprise a food base and chocolate or cocoa butter encapsulating a pro-biotic, especially lactic acid-forming cultures, as a coating or portion or phase of the food product. The food base or foodstuff is dried and has a water activity range of about 0.1 to 0.35. The weight ratio of food base to chocolate or cocoa butter encapsulated probiotic ranges from about 100:1 to 100:400. The probiotic cultures encapsulated in chocolate or cocoa butter may be freeze-dried, in amounts sufficient to provide at least 10^3 to about 10^9 cfu per gram. The chocolate or cocoa butter includes a cocoa butter fat ingredient, and a sugar ingredient in a weight ratio range of about 10:01 to about 10:50. The freeze-dried culture is homogeneously dispersed throughout the cocoa butter fat composition. The cocoa butter fat has a melting point of about 25^o-45^oC. (Source: www.flex-news-food.com)

Super food from prawn waste

Research by Ms. Renuka Karuppuswamy, a PhD student at the University of New South Wales, Australia, promises to turn millions of tonnes of seafood waste around the world into a useful commercial health supplement. She has developed a new commercially viable technique for extracting a super food supplement – a powerful antioxidant that protects cells in the human body – from prawn shells.

The antioxidant Ms. Karuppuswamy has extracted is called astaxanthin, which gives cooked prawns their red colour. However, almost all the astaxanthin is contained in the shells and heads which are thrown away. Most commercial astaxanthin is currently produced naturally from algae or synthetically by a chemical process. The extraction technique developed is efficient enough to make viable commercial-scale extraction from waste prawn heads and shells. Astaxanthin is used as a human health supplement, and it is also useful in salmon and egg production.

Ms. Karuppuswamy's PhD project centres on the use of supercritical carbon dioxide to separate astaxanthin out from the solvents needed to extract it from the prawn waste. The technique works at lower temperatures, recovers more astaxanthin and causes less degradation to the antioxidant than other methods. It also finds an environmentally friendly use for the huge amounts of prawn waste generated by processing plants globally. Not only are the solvents and gas employed in the process fully recycled, the used shells can also be used as water filtering agents or to produce a natural food coating that replaces waxes derived from petrochemicals. (Source: www.sify.com)

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PRESERVATION

Natural preservative for fats and oils protection

Vitiva, Slovenia, has launched a new generation of its all-natural preservative, Inolens 4, for food-grade oils for protection against rancidity, taste change and colour alteration. Adding oil soluble Inolens 4 to oils and fats can increase their shelf life without compromising quality. The product is also claimed to slow down the oxidation process and acrylamide formation while helping to achieve clean label status.

“Vitiva's R&D team has successfully developed a natural solution based on rosemary that doesn't affect the taste, odour or colour of edible and frying oils” says Ohad Cohen, CEO of Vitiva. Inolens 4, in comparison with competing natural preservatives available, has up to 12 times lower green colour values and up to 50 times lower red colour values. It can be used in a wide range of applications, including: light-coloured mayonnaise, highly refined edible and frying oils, dressings, sauces, marinades, light-coloured confectionary and bakery fillings. *Contact: Ms. Dushka Dimitrijevic, Product Manager, Vitiva d.d., Nova vas pri Markovcih 98, 2281 Markoci, Slovenia. Tel: +386 (2) 1788 8738; Fax: +386 (2) 788 8731; E-mail: service@vitiva.si.* (Source: www.npicenter.com)

Process using chitosan as anti-microbial agent

Spontaneous fermentation or the uncontrolled growth of micro-organisms or lactic acid bacteria in vegetables results in gas formation and organoleptic changes, which reduce product quality. A Canadian firm, Caldwell Bio Fermentation Canada Inc., is looking for strategic alliances to explore market opportunities for a biological control process that uses a mixture of chitosan hydrolysate and organic acids to stabilize processed plant products.

The new process entails the use of anti-microbial compounds for specific inhibition of prolific growth of pathogenic or non-pathogenic micro-organisms causing food spoilage. This process was dev-

eloped at the laboratory and pilot project levels, involving a few tonnes of fermented products annually. It improves product stability, prolongs the shelf life of refrigerated vegetables and reduces production losses due to contamination by acid-resistant yeasts. *Contact: Mr. Gary Caldwell, President, Caldwell Bio Fermentation Canada Inc., 189 Chemin de la Rivière, Martinville, Quebec, Canada J0B 2A0. Tel: +1 (819) 849 4378; Fax: +1 (819) 849 2000. (Source: www.flintbox.com)*

Cyclodextrins to boost shelf-life of fresh-cut fruit

Mexican researchers are evaluating the use of cyclodextrins as carriers for anti-microbial ingredients in fresh-cut products, as the industry looks to alternatives to chlorine solutions for preserving fresh-cut vegetables. The research, at Centro de Investigacion en Alimentacion y Desarrollo and the Universidad Autonoma de Ciudad Juarez, indicates that anti-microbial compounds could be delivered using cyclodextrins (CDs), which function by controlling the release based on humidity levels.

The main problem facing the fresh-cut products is the loss of water, which promotes the growth of, predominantly, fungi and moulds that lead to spoilage. As a result, various approaches have been proposed to prolong the shelf-life of these products, including the use of edible films, active packaging and use of anti-microbial agents. CDs-containing anti-microbial essential oils can provide an interesting alternative, suggest the scientists, since interactions between water and the polysaccharide lead to weak CD-essential oil interactions. This, in turn, releases the 'guest' molecule and expression of its anti-microbial activity. Some CDs are in use as carriers for natural colours, flavours and vitamins, solubilizers of lipids, stabilizers of oil in water emulsions, or flavour or aroma modifiers in a variety of processed foods.

The researchers propose that future studies must focus on optimizing the micro-encapsulation process, identifying pre-treatments to that can better control the release according to humidity levels, and identifying the effects of the food matrix and temperature on the release rate. Research must also quantify optimal doses, besides investigating the sensory qualities of the resulting fresh-cut products. (Source: www.foodnavigator-usa.com)

Natural preservative from olives keeps fish fresh

Researchers from Spain's Instituto de Investigaciones Marinas (CSIC) have found that hydroxytyrosol, a natural polyphenol from olives, may extend the shelf-life of fish products to the same extent as synthetic preservatives. Fish is very difficult to incorporate into formulations since the oil is highly susceptible to oxidation. Hydroxytyrosol, thought to be the main antioxidant compound in olives, has provided oxidative stability of bulk fish oil, oil-in-water emulsions, and frozen minced fish muscle.

"Hydroxytyrosol demonstrated an antioxidant capacity similar to that of synthetic propyl gallate in oil-in-water emulsions and frozen fish muscle," wrote lead author Dr. Manuel Pazos from CSIC. Dr. Pazos' group tested the efficacy of different concentrations of the olive polyphenol (10, 50, and 100 ppm) to three different fish oil-rich foods: bulk cod liver oil (40 per cent omega-3), cod liver oil-in-water emulsions (four per cent omega-3) and minced horse mackerel muscle. They report that hydroxytyrosol was able to inhibit lipid oxidation in all the food systems tested. The optimal concentrations depended on the food system: 100 ppm performed best in bulk oil and oil-in-water emulsions, and 50 ppm produced optimal results in the frozen minced fish muscle.

Inhibition of the loss of vitamin E (R-tocopherol) and omega-3 fatty acids was also observed in minced muscle, added the scientists. Moreover, when compared with the synthetic preservative propyl gallate, an equivalent antioxidant activity was observed for hydroxytyrosol in emulsions and frozen fish muscle. (Source: www.foodnavigator-usa.com)

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BEVERAGES

Shelf-stable juice concentrate

Agriculture and Agri-Food Canada offers technology for the formulation of a shelf-stable juice beverage concentrate for both consumer use and industrial production. The product sustains high opacity as a concentrate at 65° to 68° Brix, and has microbiological and physical stability (no phase separation). Two formulations were developed – one for consumers and another for industrial applications. Both concentrates should be diluted six times before consumption. The industrial concentrate after dilution and pasteurization remains stable for a period of up to 9 months at room temperature. (Source: www.flintbox.com)

Packaging palm tree juice

A special filtration technique to enhance the shelf life of 'neera', a sweet juice tapped from the palm tree, ensures better distillation of the juice and increases shelf life. Mr. Sanjay Nene, a scientist at the National Chemical Laboratory, India, who was involved in the development of the technique, said this would help the drink to be transported over longer distances. Neera could be marketed wider as a nutritious and healthy alternative to aerated beverages.

The loss by way of excess time and deterioration, now around 12 per cent, could be reduced to about five per cent resulting in better revenue for tappers. Initially, the technique will increase the shelf life of the drink to about 10 days and later to 30 days. Properly refrigerated and packed, neera can be transported over a distance of 500 km. At present, tappers collect neera in the wee hours of the morning, as it is sensitive to weather conditions and perishes rapidly, making long-distance transportation impossible. (Source: www.thaindian.com)

Non-alcoholic, haze-free malt beverage

The World Intellectual Property Organization has assigned a patent to Pepsico Inc., the United States, on a method of making a haze-free, non-alcoholic malt beverage. The method includes

forming a malt solution containing a coagulant and water, adjusting the pH of the malt solution so that the pH of the malt solution is less than 4.0 and coagulating the protein from the malt extract in the malt solution. The malt solution when decanted contains about 10-40 per cent (w/v) of malt sugars from malt extract. The coagulated protein from the malt solution is removed to form a refreshing haze-free malt beverage.

A method of making a shelf-stable beverage from the malt beverage is also patented. The method includes: carbonating a malt solution with more than 1.5 volumes of carbon dioxide per volume of finished beverage; adding an acidulant to the solution so that the finished beverage has a pH of 2.5 to 4.0; and adding chemical preservatives to the solution. The preservatives include a sorbate salt, a benzoate salt, sorbic acid, benzoic acid or mixtures thereof in a total amount less than or equal to about 1,000 mg/litre. (Source: www.freepatentsonline.com)

Beverages enriched with pectin and PUFA

Martek Biosciences Corp., the United States, has applied for a United States patent on a method to produce beverages enriched with a hydrocolloid, such as pectin, and an oil containing at least one long chain polyunsaturated fatty acid (LC PUFA). The compositions are stable preparations, which lack alginate and calcium gluconate.

The LC PUFA is preferably selected from the group consisting of omega-3 and omega-6 PUFAs – such as docosahexaenoic acid, eicosapentanoic acid, docosapentanoic acid or arachidonic acid and their mixtures. They can be from a microbial source such as a micro-organism. They can also be from a plant source, such as soybean, corn, safflower, sunflower, canola, peanut, mustard, rapeseed, etc. The oil can alternatively be from an animal source, such as aquatic animals, animal tissues or animal products. The beverage component can comprise a natural or artificial flavour, or a mixture of the two. It is selected from the group consisting of fruit juice, fruit flavour, fruit concentrate, tea, water, carbonated water, protein and their mixtures. Normal or concentrated orange juice is one of the preferred beverage components. (Source: www.wipo.int)

FOOD BIOTECHNOLOGY

Multi-strain starter culture for vegetable fermentation

Caldwell Bio Fermentation Canada is interested in sub-licensing technology developed for sauerkraut-type fermented vegetable applications using a multi-strain lactic starter culture. The technology accelerates initial vegetable acidification and ensures better control of fermentation. It reduces gas-induced deterioration of vacuum-packed products without preservatives. Inoculation of the multi-strain starter culture makes it possible to obtain specific pH values and critical lactic and acetic acid concentrations. The targeted markets are those of fermented vegetables, vegetable and grain juices, prepared salads, particularly in health food stores. *Contact: Mr. Gary Caldwell, President, Caldwell Bio Fermentation Canada Inc., 189 Chemin de la Rivière, Martinville, Quebec, J0B 2A0 Canada. Tel: +1 (819) 849 4378; Fax: +1 (819) 849 2000. (Source: www.flintbox.com)*

New super veg food with the health benefits of meat

A Swedish scientist has developed a new vegetarian food, called tempe, that bolsters a person's uptake of iron and provides a good set of proteins. Ms. Charlotte Eklund-Jonsson at the Department of Food Science, Chalmers University of Technology, said that tempe is a whole-grain product, based on barley and oats, with high folate content.

Tempe is produced through fermentation with the aid of the fungus *Rhizopus oligosporus*. It originates from Indonesia, where soybean is used as the raw material. Ms. Eklund-Jonsson developed methods to preserve the high fibre content of the cereal grains and to enhance their content of accessible iron. Normally these two considerations work against each other. Iron uptake was doubled after a meal of barley tempe, as compared with unfermented barley, while both oat and barley tempe produced low blood sugar as well as insulin responses. (Source: www.thaindian.com)

PACKAGING

Safer, smarter, simpler: the future of packaging

Food packaging will in the future have to offer more protection, greater flexibility and be simpler to produce, according to trends identified by Oman-based packaging group Octal. "These are fundamental, long-term trends," claimed Octal chief operating officer Mr. Joe Barenberg.

According to Mr. Barenberg, the trend towards packaging that offers greater protection for the contents at the same time as providing greater product visibility is already well established. Consumers increasingly expect to see the product that they are buying before they pay.

The second trend is related in many ways to the first, says Mr. Barenberg. Brand managers and store planners want products that are capable of effective display in a variety of ways – whether on hooks, shelf-stacked, multi-packed or in trays – to maximize the in-store impact and simplify display refreshment.

The last, and the newest, trend identified by Octal is a growing desire on the part of brand owners to simplify the packaging of their products by using a single material. Besides concerns about production speed and efficiency, the importance of being seen to be green also plays a part in this mindset. A single packaging material helps easier recycling as the consumer takes on no burden of material separation.

Octal believes it can offer brand owners as well as retailers products that meet all three of these requirements with its amorphous polyethylene terephthalate (APET), which Mr. Barenberg claims as the ideal packaging material to offer simplicity, security and flexibility. (Source: www.foodqualitynews.com)

Researchers study natural packaging materials

The next time you sit down to a lobster dinner, think about how the animal's shell would look ground up and co-extruded into a protective film

to guard against food spoilage: that film would be thousands of times thinner than a human hair. Chitosan is an anti-bacterial polysaccharide derived from the shells of crustaceans being used in new active nanomaterials packaging.

Dr. José María Lagarón, at the Consejo Superior de Investigaciones Científicas-Instituto de Agroquímica y Tecnología de Alimentos (IATA) in Spain, said this is an example of the work being done in European laboratories to prolong product shelf life. Dr. Lagarón's novel materials and nanotechnology group is working on several such projects. These involve nanoclay films and nanofibres that can be combined with bioplastics to improve food safety and appearance. These are natural systems extracted from plants or even fruits. "They can act as barriers to delay bacterial migration," he said.

IATA's research is geared towards nanobiocomposites that processors can tailor to a packaging customer's specific food-storage needs. Its latest project combines a biodegradable polyester with a nanoclay containing thymol, a plant-based ingredient used in many commercial mouthwashes. The trick is getting the nano-additives to enhance the barrier properties of biofilms and also to control the release of germ-killing agents, Lagarón said. (Source: www.prw.com)

Controlling ethylene to extend shelf life

GuardIN Fresh, the United States, is bringing nanotechnology into produce packaging with a process that uses non-metallic nanoparticles coated with silver to control ethylene and thus extend the shelf life of fruits and vegetables. "The particles can be put in polymers or packaging relatively easily and relatively inexpensively," said Mr. David Lewis, CEO of GuardIN Fresh. The technology, which was developed by Prof. Ajay Malshe from University of Arkansas, is undergoing third-party verification.

Mr. Lewis said the nanoparticles could be incorporated into a variety of packaging, such as bags, films and clamshells. As silver also acts as an anti-microbial, the technology is more appealing to produce companies and open doors in other parts of the food chain, including meat and seafood. (Source: www.thepacker.com)

Compostable laminated packaging

Alcan Packaging, a member of the multinational Alcan Group, has launched what is claimed to be Europe's first fully compostable, printed laminated packaging. The packaging has been developed for Jordans Cereals, the United Kingdom, for the cereal manufacturer's Organics range. The films, inks and adhesives used have all been certified to DIN EN 13432 by Dincerto, the European Union regulatory body. The packaging has two different layers of certified compostable films. The outer layer is cellulose-derived from GM-free wood pulp and the inner layer is derived from GM-free cornstarch. The finished pack provides the same look and feel as a heavy-weight plastic film alternative, with glossy, printable surface and a tactile finish. The pack is biodegradable and suitable for industrial composting. (Source: www.jordancereals.co.uk)

New line of thermoform machines

Multivac, based in Germany, has completed the introduction of all models of its new thermoform machine generation to the market: the high-speed Multivac R535, the mid/high-range R245, compact R145 and economy R125 models. This new machine generation has significantly raised the bar in the packaging machinery industry, setting a new standard in hygiene and process security. The machines offer a totally new basic design, which simplifies and accelerates the cleaning process for food processors, while adding a host of other features for enhanced performance, ergonomics and efficiency.

Multivac's new generation thermoform systems are the first to offer a new option – the machines can be equipped with an integrated clean-in-place (CIP) system, which automates the cleaning of component groups inside the machine. After a pre-cleaning, a cleaning routine can be started at the push of a button, which can be controlled from the central control system. The standardized, logged process ensures adherence to pre-determined cleaning cycles, and dosages/mixtures of sanitizing chemicals. In this way the internal component groups are cleaned automatically by an extensive system of jets and pipes. Exterior

cleaning is executed manually with an attached spray gun, and is also integrated into the CIP procedure for process control. All new Multivac machines come standard with IPC control systems for seamless integration with upstream and downstream packaging line components. (Source: cr.pennnet.com)

Case/tray packers designed to maximize adjustability

Axiom® IM Series case/tray packers from Douglas Machine Inc., the United States, maximize adjustability with next generation electronic motion control technology. Adjustments for product size, corrugated blank warp and machine speed can be done very fast by simply accessing the program through an interface to adjust the servo function. IM series also features an open design for added convenience when cleaning and accessing machine components.

An electronic hand-wheel provides effortless hand cycling when needing to view the entire machine function in slow motion. Individual servo electronic overloads are easily adjusted as the load changes. Change-overs are completed in minutes with minimal change of parts, while customized motion profiles contribute to superior product and case handling. The Axiom IM series operates at speeds to 45 cases or trays per minute. A variety of options are offered, such as high-speed product stacker, which can handle continuous flow of up to 600 products per minute. *Contact: Douglas Machine Inc., 3404 Iowa Street, Alexandria, MN 56308, United States of America. Tel: +1 (320) 763 6587; Fax: +1 (320) 763 5754; E-mail: info@douglas-machine.com.* (Source: news.thomasnet.com)

Filler

MACHINERY/ EQUIPMENT

Blast chillers for foods

Vacutec, a leading Australian supplier of high quality chillers, offers blast chillers known in the industry for their quality and durability. The blast chillers are used by those running food preparation or catering business. These blast chillers help maintain the quality of food and adhere to the safety compliances. They also help increase the shelf life and retain moisture. The chillers comply with new Hazard Analysis Critical Control Point (HACCP) regulations, and are easy to manage and operate. Vacutec also offers a wide variety of extruded vacuum pouches and highly efficient oxygen barriers for the benefit of the customers. *Contact: Vacutec Pty. Ltd., P.O. Box 595, Helensvale 4212, Queensland, Australia. Tel: +61 (7) 5573 3691; Fax: +61 (7) 5573 3851.* (Source: www.ferret.com.au)

A new robotic tasting device

French researchers have developed an artificial mouth that chews apples and is able to reproduce the effects of chewing by analysing several factors that are involved in the release of aromatic and flavour compounds in the mouth, such as the release of saliva or the rate of food breakdown. This research work was carried out by Dr. Gaëlle Arvisenet and colleagues at the French ENITIAA School, which trains engineers for the food industry sector.

The artificial mouth is composed of a sample container (600 ml), a notched plunger and variable-speed motors to control precisely the speed of compression and rotation movements. The container is maintained at 37°C using a laboratory thermostat via an outer layer. The container is sealed with a cap.

Explaining the rationale behind the work, the scientists say, "Using a previous artificial mouth, we showed that the amounts of extracted volatile compounds were not the same when apples were crushed, cut into slices, or reduced to a puree state. It follows that, to study the aroma com-

pounds responsible for global aroma perception, it is necessary to reproduce the changes that the foodstuffs undergo in the human mouth. Our objectives were, first, to find artificial mastication settings that best reproduce human mastication and, second, to determine if artificial mastication conditions have an effect on the release of volatile compounds.”

By varying the crushing parameters in the model mouth apparatus, the researchers obtained different crushed apple samples, and these were compared to apples crushed in the human mouth by six people. An image analysis method was developed to measure the similarity between apple particles after crushing in the artificial mouth and in the human mouth. Thus, experimental conditions were determined that produced fruit in a state closest to that obtained after mastication in a human mouth. The influence of these different conditions on the quantity of released volatile compounds was then studied. The overall goal is to distinguish the compounds responsible for aroma in fresh apples. (Source: blogs.zdnet.com)

Compact pasta maker

Fuji Seiki, the pioneer of the automated “onigiri” rice ball machine in Japan, has developed a compact pasta maker. The MPIM-2500, features an extrusion nozzle that can be easily replaced to produce different kinds of pasta such as penne pasta, spaghetti and fettuccine. The machine is very easy to use. Because the parts that contact food can be easily removed for washing, it also provides for maintaining hygiene. (Source: www.japancorp.net)

Modular belt conveyors

Belt conveyors from Robotunits GmbH, Austria, allow customers to specify length, width, height, drive option, speed, belt-type and height of side-guides. They have widths ranging from 40 mm to 1,200 mm. Special widths exceeding 2,000 mm are also possible. The customer can specify length required up to 6,000 mm, with a variety of speed options and construction heights, ranging from 40 mm through to 100 mm.

All conveyors offer multiple drive options from end-drive to centre-drive, driven through a timing

belt or the space-saving direct drive. As they use standard aluminium extrusions for the base construction, the belt conveyors can be integrated into frames or existing systems using standard parts and elements from modular automation systems. *Contact: Robotunits GmbH, Dr. Walter Zumtobel Str. 2, 6850 Dornbirn, Austria. Tel: +43 (5572) 22000 200; Fax: +43 (5572) 22000 9200; E-mail: austria@robotunits.com. (Source: www.ferret.com.au)*

Automated coffee roasting and brewing system

Roasting Plant Coffee Company in New York, the United States, has built an automated coffee production machine called Javabot. Automation allows Roasting Plant to combine the roasting, grinding and brewing at the point of consumption, with a modern distributed control system running the entire operation.

Javabot’s storage section consists of clear tube-like bins. Six bins hold the green coffee beans prior to roasting and seven hold the roasted beans. Pneumatic tubes connect these storage bins to each other as well as to the micro-roaster and automated grinding-brewing machines. When a customer orders the coffee, the roasted beans shoot from the storage bins over to the grinding unit and drop down into the brewing machine. It takes only about 30 seconds to convey, grind and brew the coffee beans. The roaster – a modified off-the-shelf roaster – can stage, roast and cool beans simultaneously, which helps the small unit keep up with the demand for roasted beans. It has air temperature sensors and PID controls with ramp-soak capabilities.

The real-time distributed control system has a supervisory PC at the top, managing Roasting Plant’s drink- and roasting-related databases. The PC also gives the system a nice graphical user interface. Below the PC are two compact WAGO 750 Series PLCs, one that oversees the roasting operations and another that supervises the storage and conveying operations. Communications are via Modbus TCP/IP. The system’s control and software architecture makes it possible for customers to create their own blends by combining different percentages of coffee from two or more bins. (Source: www.designnews.com)

RECENT PUBLICATIONS

Carbohydrate Chemistry for Food Scientists

The second edition of *Carbohydrate Chemistry for Food Scientists* is a complete update of the critically acclaimed first edition of this authoritative carbohydrate reference for food scientists. The new edition is fully revised, expanded, and redesigned as an easy-to-read resource for those who need to understand this specialized area. It provides practical information on the specific uses of carbohydrates, the functionalities delivered by specific carbohydrates, and the process for choosing carbohydrate ingredients for specific product applications. Basic and specific applications of food carbohydrate organic and physical chemistry are clearly explained. The edition includes expanded sections on Maillard browning reaction, dietary fibre, fat mimetics and polyols.

Dietary fibre components and functions

Dietary fibre is of interest to both science and industry, and yet despite growing awareness of its benefits to health and nutrition, intakes remain below the recommended level. Industry has responded by developing new applications, products and processes to help consumers increase their fibre intake in a convenient way. At the same time science is developing the concept of dietary fibre. The mechanisms and actual components behind the physiological effects are of particular interest, and so are the analytical tools to measure these. The fate of dietary fibre in the gut, where certain fibre components are fermented and converted by microbes gains a great deal of attention. The role of molecular weight and viscosity of dietary fibre components in determining the health benefits are also discussed.

For the above two publications, contact: *AACC International Press, 3340 Pilot Knob Road, St. Paul, MN 55121, United States of America. Tel: +1 (651) 994 3840; Fax: +1 (651) 454 0766; E-mail: aaccpress@scisoc.org.*

TECH EVENTS

- 3-5 Sep**
Shanghai
China
- International Fair and Conference for Food Processing and Packaging**
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- 24-26 Sep**
Bangkok
Thailand
- FI ASIA 2008**
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- 3-4 Oct**
Mumbai
India
- FI INDIA - Food Ingredients India 2008**
Contact: CMP India (UBM India Pvt. Ltd),
Sagar Tech Plaza, A, 615-617,
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- 15-17 Oct**
New Delhi
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- International FoodTec India**
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- 3-6 Dec**
Jakarta
Indonesia
- PROPAK INDONESIA 2008**
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- 4-6 Dec**
Shanghai
China
- FHC - Food & Drink 2008**
Contact: Hong Kong Exhibition
Services Ltd., Unit 2010, 20/F,
China Resources Building,
26 Harbour Road,
Wanchai, Hong Kong,
China.
Tel: +852 2804 1500;
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