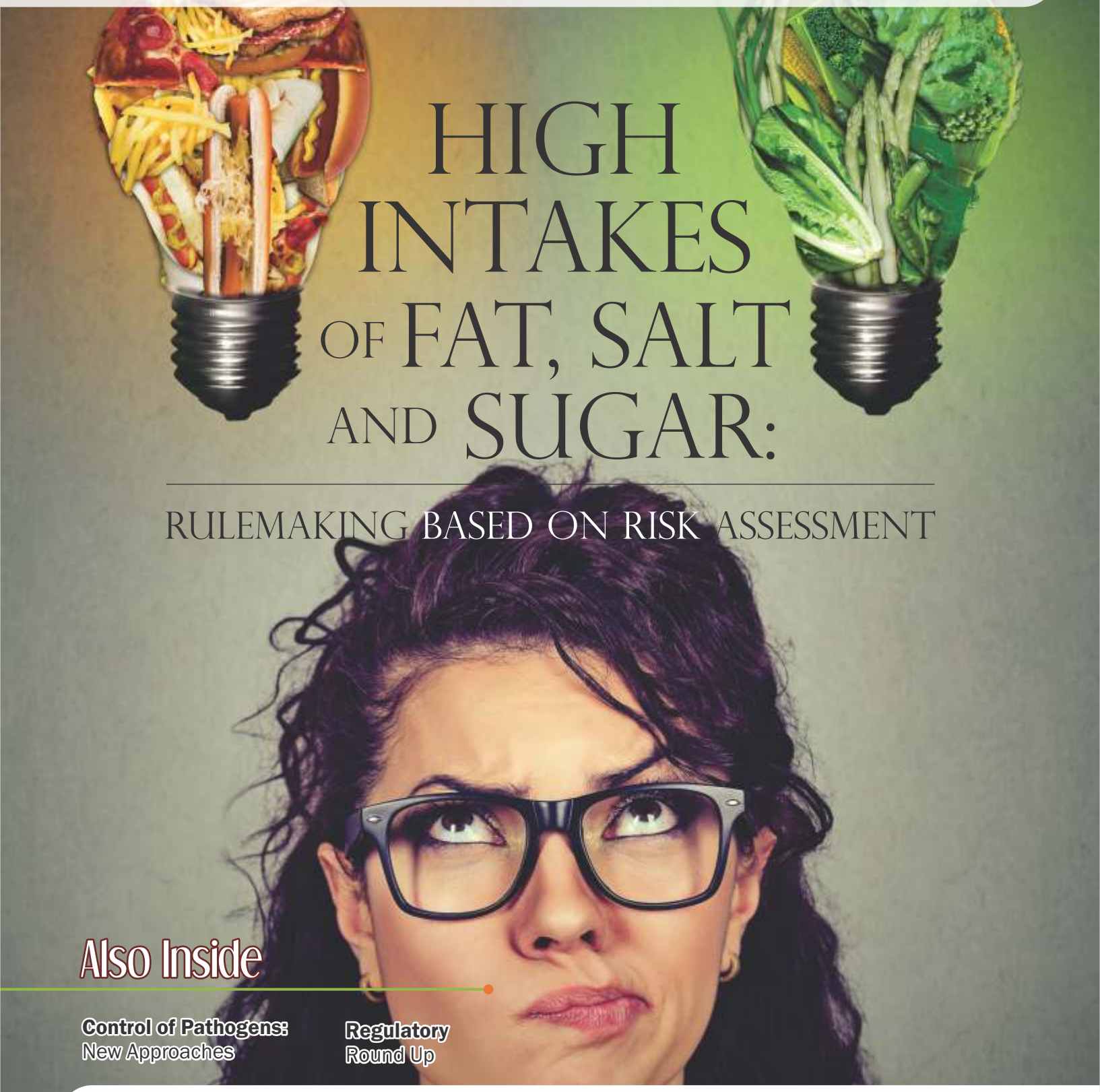
AUG 2018

PFNDAI Bulletin

FOOD, NUTRITION & SAFETY MAGAZINE



HIGH INTAKES OF FAT, SALT AND SUGAR:

RULEMAKING BASED ON RISK ASSESSMENT

Also Inside

Control of Pathogens: New Approaches

Regulatory Round Up

PROTEIN FOODS AND NUTRITION DEVELOPMENT ASSOCIATION OF INDIA

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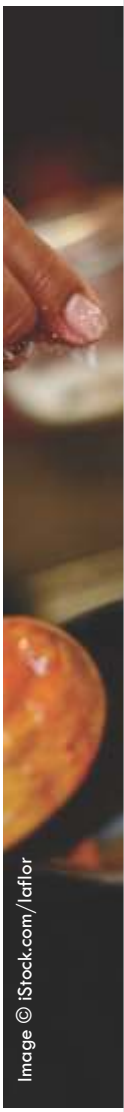
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EDITORIAL

Plastics have come into our lives in many ways and the life has become easier with its advent. We have many applications in foods & beverages including the packaging for these. It has caused many problems due to improper disposal of the plastic material including the containers such as bottles, sachets and bags which cause problems by creating obstruction to flow of waste water. In some states single use plastic has been banned or highly restricted.

One of the conveniences of modern times is microwave ovens and plastic has carved a place in this application also making the heating by microwave even more convenient. Earlier glass or ceramic was used for heating any food or beverage in microwave oven as it was inert to microwaves and metal containers could not be used for this application.

Both glass and ceramic are still used for small portions such as heating milk, tea or water but when larger portions are to be heated, the glass and ceramic vessels are too heavy and there is also a chance of breakage or chipping in use or when cleaning. Some glass and ceramic may crack when microwaved. This is where plastic comes in.

Plastic is light-weight and also it does not break easily. It becomes very convenient for reheating foods and even making some easy recipes in microwave ovens. However, there are some plastic containers sold in market with a tag stating 'Microwavable' or 'For Use in Microwave' or 'Microwave Safe' etc.

Plastics contain plasticisers such as phthalates which make plastic soft and flexible and bisphenol-A (BPA) to make it clear and hard.

Thus hardness or softness and other physical attributes could be achieved with the help of these plasticisers. When food comes in contact with the plastic especially when food has higher fat content or when it is heated, there is migration or leaching of these plasticisers from plastic to food.

Different plastics contain different amounts and types of these plasticisers. Plastic containers which have been tested to be safe for use in microwave may migrate negligible amounts and so they are safe to use.

BPA and phthalates are believed to be "endocrine disrupters" and mimic human hormones and can affect fertility issues and also they appear to have the potential to impact the development of the brain and reproductive organs in developing foetuses. Thus it is better to use safer material. Plastics for use in microwave ovens have been tested for this aspect and have been found to be safe.

Prof. Jagadish S. Pai,
Executive Director,
PFNDAI

HIGH INTAKES OF FAT, SALT AND SUGAR:

RULEMAKING BASED ON RISK ASSESSMENT

By
Dr. JI Lewis,
Food Regulatory Consultant & Vice Chairman, Regulatory Affairs Committee, PFNDAI

It would be unrealistic to believe that the mandatory iced birthday cake (high fat, high sugar) would make the happy individual and those attending his party, obese or mildly increase the risk to non-communicable diseases (NCD). Everyone will argue that birthdays come once a year and an annual indulgence does not make for an unhealthy diet. Not strangely enough this common thinking, actually leads on to a scientific term "exposure assessment". In risk assessment - this is the most significant step.

Diets are made of foods one eats everyday or very frequently and not the 'once – in – while' indulgence foods that make life enjoyable. It's the total intake of fat, salt and sugar in the foods we eat daily that leads to increasing risk of obesity, high blood pressure and coronary heart disease.

Should not the consumer know why they are being alerted on products high in fat salt and sugar? Have the adverse health issues – if any – been estimated through risk assessment – a cornerstone of rulemaking? Is a public health goal to be achieved?

Risk analysis is defined in the Act to comprise of risk assessment, risk management and risk communication. Each one is separately defined in terms of what they mean and therefore what is to be done. How should we apply this methodology (of thinking) to the case of HFSS in Indian diets?

Risk Assessment (Sec. (3)(zo): means a scientifically based process consisting of the following steps;

- Hazard Identification
- Hazard Characterization
- Exposure Assessment
- Risk Characterization

Each of these terms requires proper understanding of what is to be done. Very simply, if the scientific evidence or data exists and accepted by the scientific community, no further determination is required.

Hazard Identification - Step 1:

The first step in risk assessment is identifying the hazard. The term hazard is not appropriate for nutrients and a preferred term would be risk factor as used by Codex. Identification of the risk factor requires a narrow and accurate definition of the statement being discussed or investigated. If the definition is not precise, a wrong outcome will result and the exercise futile.


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Hazard is defined [Sec. (3)(u)] to mean a biological, chemical or physical agent in, or condition of food with the potential to cause an adverse health effect. Two important points to be fulfilled in defining a hazard or risk factor are; "Agent in" or "condition of" and "potential to cause an adverse effect"

However the mere existence of an agent is insufficient; the potential to cause harm must be demonstrated (by evidence – not opinion, prejudice or belief).

- In the case of HFSS: the "agent' identified is fat, salt and sugar arising from the total dietary intake.
- However the potential to cause an adverse effect requires;
  - Quantification of the term " high" i.e. how much is consumed to cause harm; and
  - Major source(s) contributing to " high'

In this case the amount of fat, salt and sugar consumed to identify them as a risk factor is to be determined.

Hazard Characterization - Step 2: relates to the nature of an adverse health effect - qualitative or quantitative, associated with high intakes of fat, salt and sugar. There is enough scientific evidence to reach a conclusion that "high" amounts of the nutrients fat, salt and sugar are risk factors leading to increase in incidence of coronary heart disease, high blood sugar, hypertension and obesity. An important factor - generally ignored – is physical activity.
Hazard (risk factor) characterization recognizes the universal principle of "the dose is the poison", which is the basis of approving use of food additives or setting tolerance levels for contaminants.

All foods and food products comprising nutrients or substances added to food (e.g. food additives, residues etc.) have the potential to cause harm – but only above a certain level of consumption or intake. The question still remains what is the quantity above that an adverse effect will result. In case of food additives, this quantity is expressed as the acceptable daily intake (ADI) or, for toxins the tolerable daily intake (TDI).

In the case of most nutrients, e.g. vitamins and minerals, fat, salt and sugars which are essential for growth and nutritional sufficiency a recommended dietary allowance (RDA) is specified instead; it represents what the vast majority of healthy people need to consume to stay healthy.

In the case of nutrients such as fat (saturated fat, trans fat), salt and sugar, it is the over consumption, above recommended levels, that may lead to adverse effects (increase the risk). According to nutritional advice the dietary recommendations (based on 2000kcal energy) for acceptable intakes are given in Table 1.

Table 1: Recommended Intake Levels

Nutrient	Percent Energy	Amount per day (g)
Fat	30	67
Saturated Fat	10	22
Trans Fat	1*	2.2
Salt	-	6**
Sugar	10	50

* WHO recommends that the total trans fat intake be limited to less than 1% of total energy intake, which translates to less than 2.2g/day.
** Sodium 2400mg

These recommendations serve, as the characterizing level above which there may be an increasing risk of coronary heart disease, high blood sugar, or hypertension. So two questions arise:

- Is the Indian population consuming high amounts of fat, salt and sugar?
- What are the major contributing sources for these high levels?

This brings us to the next step in risk assessment: exposure assessment.

Exposure Assessment- Step 3: Exposure assessment is the process of estimating how much of a food or nutrient or a food chemical a population, or population sub group, consumes. These assessments consider the potential exposure to chemicals like food additives, pesticide residues, and chemical contaminants. The term 'dietary intake assessment' is used to refer to nutrients and other substances that have a nutrition or health purpose.

The Food Safety and Standards Act under Section 16 relating to duties and function of Food Authority states that the "Food Authority shall search, collect, collate, analyze and summarize relevant scientific and technical data particularly relating to – food consumption and the exposure of individuals to risks related to the consumption of food" [(b)(I)], which requires a total diet study to be conducted.

When doing an intake assessment the totality of the food and beverage intake must be considered at the level of food groups (milk, oils, fruits, cereals, fruits, vegetables and protein foods) as well as processed or prepared foods (sauces, snacks, biscuits, crisps, chocolates etc.) and

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A recent survey suggests that 73% of Indian diets are protein-deficient*. Part of the reason lies in the insufficiency of protein content in conventional protein sources such as eggs, lentils, milk etc. Moreover, the steep cost (per 100 gms of protein) of these sources makes it even difficult for families to fulfil their daily protein need. We at Ruchi Soya, the makers of Nutrela Soya Chunks, Mini Chunks and Soya Granules, help consumers bridge this gap by providing the richest source of protein at the most affordable price, which we call '52% Dhaakad Protein'. 200 grams of soya contains 52% protein which is equivalent to 15 bowls of cooked daal or 16 boiled eggs or 17 glasses of cow's milk. We urge you to make soya an integral part of your diet recommendations. Let us join hands to help India say a GOODBYE to protein-deficiency!

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*Source: The Times of India, July 2017

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how these sources contribute to nutrient excess. Identifying major source(s) generating these high intakes can be simply done by estimating intakes from cooked foods –home, schools, canteens, fast foods or sit-down at restaurants – and pre-packaged ready to eat foods.

The absence of a total diet study does not preclude conduct of specifically designed food consumption surveys to indicate intake levels. A dipstick is better than speculation and unfounded opinions. Two food consumption surveys by post-graduate students were done to estimate intakes of fat, salt and sugar from two sources namely (1) the monthly purchase of foods used to prepare home cooked meals, e.g. oils and fats, sugar, salt, cereals, milk etc.; and (2) most frequently purchased pre-packaged foods e.g. sauces, snacks, biscuits, chocolates as part of their term work. Certain broad assumptions were made; assigning consumption unit of one for adults and half a unit for children up to 12 years to ease out calculations. The survey data is given in Fig.1, 2).

The two surveys carried out at different times, is not meant to be a definitive status of food consumption in India. However exploratory surveys done quickly, provide broad indications of a prevailing situation. Factors such as socio-economic groups, regional slants, out of home food consumptions (restaurant or bought in foods) could provide a more accurate result.

However a significant result is that home cooked foods - a cornerstone of Indian dietary practice - is a major source contributing to high fat, salt and sugar intake. Pre-packaged foods are a minor contributory source; limited to peripheral accompaniments of the meal plate; e.g. pickle, papad, sauce, jam etc. or occasional snacking on biscuits, chocolates, crisps.

The two survey results show a significant daily consumption of fat, salt and sugar requiring attention. Total fat approximately 76g/day is the consumption against a dietary recommendation of 67g/day. Of this total daily intake of fat about 10 -15% is contributed by pre-packaged foods, mostly from snacks, butter and biscuits, chocolates etc.

The daily consumption of salt ranges from 9-12g, which 3-6g more than the recommendation of 6g/day. Once again sodium from natural foods is not considered, leading to a higher intake. Sugar consumption , ranging from 29-50 g/day with pre-packaged foods accounting for 26-52 % of total intake.

The exposure assessment from the two surveys indicate that:

- There is a significant consumption of fat, salt and sugar; and
- Home cooked foods are a major source contributing to this intake

While there may be a debate on design of the study regarding non inclusion of other sources, a broad indication emerging is that pre-packaged foods are not major contributing factors to high intakes of fat, salt and sugar.

Risk Characterization: Step 4:

This is the final phase of the risk assessment process, integrating the previous three phases: hazard identification, hazard characterization and exposure assessment. Risk characterization is assessing the magnitude of concern based on data obtained above. Home cooked or generally - cook and serve foods - are a major source of fat, salt and sugar - suggesting the risk is population wide and deeply embedded in culinary practices.

Fig. 1. Source of Dietary Intake: Fat, Salt and Sugar

Nutrient	Source of Intake (g/day) Commodity Foods (home cooking)		Packaged Foods (ready to eat)		Total Intake
Fat	65.4	(86.2)*	10.5	(13.8)*	75.9
Salt	8.9	(96.8)*	0.3 (48% namkeen)	(3.2)*	9.1
Sugar	22.2	(77)*	6.6	(23)*	28.8

* Figures in brackets are percentage
Project Work: M.Tech Students - Survey of 32 households

Fig. 2. Source of Dietary Intake: Fat, Salt and Sugar

Nutrient	Source of Intake (g/day) Commodity Foods (home cooking)		Packaged Foods (ready to eat)		Total Intake	
	Median	95th	Median	95th	Median	95th
Fat	44 (91.7)*	67 (85.7)*	8 (16.7)*	15 (19.2)*	48	78
Salt	8 (91.1)*	11 (91.7)*	0.8 (8.9)*	1.8 (15)*	9	12
Sugar	21 (72.2)*	35 (70)*	10 (27.8)*	26 (52)*	36	50

* Figures in brackets are percentage
Project Work: M.Sc Students - Survey of 38 households

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This article is a rudimentary explanation of the thinking process of risk assessment and risk management , even when data is skimpy. Anyone can do a 24-hour food recall to know that pre-packaged foods (ready to eat) are not the major source of fat, salt and sugar.

Having completed the risk assessment, the next step is risk management. While undoubtedly there is concern about highfat, salt and sugar (HFSS); it is debatable if labelling – front of pack graphic - is the most impactful measure. This discussion is however is to be done under risk management – separate from risk assessment.The traditional narrative that home cooked foods are safe may be true but whether they provide healthy nutritional outcome needs to be examined.

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COMING EVENTS

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Nutrition 2018
International Conference on Nutrition, Health & Aging
September 26-27, 2018
Frankfurt, Germany
E: info@madridge.org
W: http://nutrition.madridge.com/

Annapoorna
World of Food India 2018
Sept 27-29, 2018
Bombay Exhibition Centre, Goregaon, Mumbai
T: +91 22 2496 8000,
E: narendra.naik@ficci.com
W: www.ficci.com

IDACON 2018
Annual National Conference of Indian Dietetic Association
Sept 30- Oct 2, 2018
Brilliant Convention Centre, Indore (MP)
T: 09977600104,
E: idacon2018@gmail.com
W: www.idacon2018.com

Golden Jubilee Seminar of PFNDAI
Emerging Foods for Healthier India
October 5/6, 2018
Kohinoor Continental
Andheri-Kurla Road, Mumbai
T: 022-2353 8858/8998
E: foodscientist@pfndai.org
W: www.pfndai.com

IUFoST 2018 India
World Congress of Food Sci & Tech
October 23-27, 2018
Mumbai
W: https://www.iufost2018.com/index.php

IFCON 2018
AFST (I)
December 12-15, 2018
CFTRI Mysore
Thanjavur, Tamil Nadu
T: +91 821 2515557, 2518670
E: ifcon2018mysore@gmail.com
W: http://afsti.org/ifcon

CILSI 2019
A Brave New World in Nutrition & Food Safety
December 12-15, 2018
Clearwater, Florida, USA
E: annualmeeting@ilsi.org
W: www.ilsi.org

CONTROL OF PATHOGENS: NEW APPROACHES

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FOOD SAFETY & QUALITY

Every year almost 50 million people get sick and 3000 of them die of food-borne diseases in the US. Salmonella is the cause of over a million cases of food-borne illnesses, Clostridium perfringens, 966,000; Campylobacter jejuni, 845,000; Staphylococcus aureus, 241,000; E. coli, including O157:H7, 205,800; Shigella, 131,000; Bacillus cereus, 63,400; Listeria monocytogenes, 1,600; Brucell, 840 and Clostridiumbotulinum, 55. Some of the other bacteria of concern are Yersiniaenterocolitica, Mycobacteriumbovis, Streptococcus spp. group A and Vibrio species (cholera, vulnificus, parahaemolyticus and others); viruses such as astrovirus, hepatitis A virus, norovirus, rotavirus and sapovirus; and parasites Cryptosporidium spp., Cyclysporacayetanensis, Giardiaintestinalis, Toxoplasmagondii and Trichinella spp. The Food Safety Modernization Act (FSMA) shifts the focus from responding to contamination and food-borne illnesses to preventing them.

Preventive Controls

The FDA notified the FSMA rule Preventive Controls for Human Food in September 2015 and the compliance began in September 2016. The rule mandates the owner, operator or agent in charge of a facility to evaluate the hazards that could affect food manufactured, processed, packed or held there; identify and implement controls to minimise or prevent the occurrence of those hazards and ensure that the food is not adulterated; monitor the performance of those controls; and routinely maintain monitoring records. Draft guidance has been issued for industry. Two other guidance documents will focus on important requirements for animal foods.

Guidance deals with the development of food safety plan outlining how a facility identifies and evaluates food safety hazards and how it will control hazards requiring preventive controls. This plan must be reanalysed every three years. It also deals with conducting hazard analysis; potential hazards of concern including biological, chemical and physical; preventive controls identification and implementation; and managing these controls using monitoring, corrective actions and verification activities.

It also discusses characteristics of vegetative and spore-forming pathogens and their hazards including those surviving treatment, those that grow and/or produce toxin, those coming from ingredients added after process controls and those that contaminate after packaging. It also addresses process control treatments including thermal, antimicrobials, refrigeration & freezing, water activity control and others. Guidance also includes how to identify hazards and how these could be controlled. It also refers to recontamination and how microbial population affects safety of foods.

Pathogen Control Alternatives

Common methods of reducing microbial population in foods include heating, antimicrobials, and irradiation among others. Some alternative preharvest and postharvest approaches are being looked at.

Bacteriophages

Use of lytic bacteriophages (phages) for postharvest control of bacterial pathogens is one such method. Phages which are naturally occurring viruses that attach specific target bacteria can be used for environmental decontamination and postharvest application. Effect of phage treatment on L. monocytogenes levels in lettuce, smoked salmon, and frozen entrees; reduction of E. coli O157:H7 levels in refrigerated and frozen ground meat; and the effect on Salmonella incidence in chicken meat has been reported. Phages are approved by the FDA. They are safe and effective and do not affect taste, appearance or smell of foods. They do not have any impact on normal microflora. They only act against targeted pathogens and may be easily controlled by common disinfectants and require refrigeration.

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One such study explore potential of bacteriophage as a preharvest treatment of control of E. coli O157:H7 in cattle as they are primary source of these pathogens and contaminate foods of bovine origin as well as vegetable products contaminated with feces that may cause human infection. Four phages

were studied which were found to be equally effective at mitigating these pathogens that were isolated from cattle and humans.

Probiotics

Probiotics could also be used for controlling enteric pathogens. Some bioengineered strains of L. plantarum reduced colonisation of H. pylori, L. plantarumand L. helveticus reduced nasal colonisation of S. pneumonia, L. lactis prevented attachment of Salmonella and also elicited antibody against SARS-associated coronavirus and rotavirus. All these probiotic strains were bioengineered to express pathogen proteins, thus showing antimicrobial effect against the pathogens.

Inhibitors that interfere with microbial cell-to-cell signalling could be introduced into foods in order to prevent microbial persistence and proliferation. They could also be used in cleaning solutions to prevent biofilm formation on food processing equipment. Cell-to-cell signalling inhibitors like ones from ground beef which influence metabolism of E. coli O157:H7 metabolism and E. coli K-12 biofilm formation, poultry-derived inhibitors and limonoids have been found to function at the molecular level to prevent pathogen survival and function. Researchers are trying to exploit them commercially.

Potential of probiotics directly fed to poultry to reduce the intestinal load of Salmonella and subsequent contamination in poultry production has been explored. Supplementation of probiotics like Lactobacillus, Lactococcus, Enterococcus, Pediococcus and Bacillus through feed and water or by vent lip administration have shown to increase resistance of poultry to Salmonella infections. It has led to reduced cecum colonisation and has improved weight gain, feed conversion ratio, breast meat quality and egg production.

Antibiotic use has favoured the selection of resistant bacteria like Salmonella, E. coli and Campylobacter in food animals. There are research opportunities to explore safer alternatives to antibiotics, including use of phytobiotics and plant derived compounds. Also such things as existing regimens and potentiating antibiotics with phytobiotics would be quitevaluable. Cinnamaldehyde and eugenol could be used as alternative antimicrobials against Salmonella enteritidis in chickens. It has also been shown that cinnamaldehyde and thymol could be effectively used as potentiators of antibiotics at sub-therapeutic doses as they increase the sensitivity of Salmonella typhimurium to antibiotics. It is also seen that removal of the selective pressure of antibiotics may not reverse bacterial resistance.

Ability of fermentative non-pathogenic bacteria, bacteriophages and antimicrobial fermentates has been studied for control of O157 and non-O157 STEC in beef before and after harvest. Primary types of biopreservatives are compounds with antimicrobial activity present in the above such as acid and bacteriocins. The non-pathogenic bacteria such as lactic acid bacteria inhibit growth of the pathogen by competing with it for nutrients and colonisation sites. Bacteriophages directly attack the pathogens killing them. Other fermented metabolites with antimicrobial activity inhibit activity of pathogens so these organisms can favourably grow. Some of these antimicrobials studied inhibited S. enteric, E. coli O157:H7 and L. monocytogenes.

Another study evaluated effectiveness of lactic acid bacteria (LAB) against biofilms of L. monocytogenes on food processing surfaces and in cantaloupes. Listeria biofilm could be controlled through plant sanitation, preventing biofilm formation, eradicating preformed mature biofilm and controlling L. monocytogenes in food processing plants. Certain species of Lactobacillus species were effective in controlling biofilm and in reducing pathogens on the surface of cantaloupes. Efficacy of some LAB against pathogens was evaluated. L. plantarum, L. fermentum, and L. lactis and their cell-free supernatants significantly reduced biofilm formation and inactivated preformed mature biofilm of L. monocytogenes; and L. plantarum, L. johnsonii, and L. caseireduced the survival of L. monocytogenes on cantaloupe.

Extracted from an article by Neil H. Mermelstein from Food Technology November 2016

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REGULATORY ROUND UP

By
Dr. N. Ramasubramanian,
VR Food Tech Private Limited
n.ram@vrfoodtech.com

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Dear Readers

I recently participated in a seminar, well attended by a large number of food professionals. One of the speakers, while making a presentation on draft labelling regulation, rightly observed that we have moved from days with no regulation to regulatory overdose. FSSAI has come out with standards of identity of many commonly consumed foods like textured vegetable protein, spice oleoresins, etc. It appears that final notification of Labelling and Display would be delayed due to differences among the stakeholders. Final notification on "Advertisement and Display" is expected sooner. Please read on for the update since last round up.

Standards

Final Notification

FSSAI recognizes that auditing food business operators to ensure compliance with regulations especially Good Manufacturing Practices is a humongous task and cannot be achieved without external support. To build capacity, FSSAI has notified a procedure to recognize auditing agencies who will audit food business operators on behalf of FSSAI. This would reduce the load on the scarce resource of FSSAI. This is a one more job avenue for food professionals.

Final notification on standards related to all pulses, whole and decorticated Pearl Millet grains, Degermed Maize flour and Maize grit, Tempe, Textured soy protein, Sago flour, Honey, Bee Wax, Royal jelly and Steviol glycoside.

Final notification relating to the removal of 'Boudouin test' requirement for Blended edible Vegetable Oil and revision of special provisions relating to sale of Vanaspati. The regulation permits the use of all the listed vegetable oils in Food Safety and Standards Regulation in the manufacture of Vanaspati, Margarine, etc

Regulation on fortification which was operationalized some time ago has now been notified. FSSAI has also come out with a FAQ document on fortification explaining its voluntary nature and other aspects.

Final notification permitting spices and condiments in Ice Lollies and standards for natural spring water.

Final notification related to tolerance limit of antibiotics and pharmacology active substances in edible tissues and various parts of animals, fat derived from animal tissues and milk. In absence of standardized methods for estimation of these contaminants and control at the farm level, compliance and enforcement is going to be a huge challenge. The control has to be exercised at the farm level as there processing is not likely to remove the contaminants. At the most there would be a dilution because of the addition of other products.

Latest list of FSSAI approved food testing laboratories along with their NABL accreditation validity.

Draft Notification

Draft notification amending the regulation on Health Supplements, Foods foe Special Dietary Uses. It is proposed to delete Areca nut from the list of permitted botanicals. A few more additives and solvents are proposed to be permitted.

Draft notification introducing limits for metal contaminants in food additives like emulsifiers, stabilizers, food colours, etc. This is an important introduction and additive manufactures, importers must pay special attention to this regulation and have a good look at their products. Please send in your comments and suggestions.

Draft Notification introducing standards related to Basmati rice, Chia seeds, Roasted Bengal gram flour, Ragi flour, Almond kernels, Coconut milk powder (Non-Dairy), Mixed masala powder, Spice oleoresins, Phytostanol, etc. Here the point of interest is the standards of identity for spice oleroresins which was long overdue.

Direction/Orders/Advisories

The order issued on 29 June 2018 with regard to Health Supplements and Nutraceutical contained a list of substances which are prohibited. The order dated 24 August 2018 prohibits the use of these substances in products manufactured after 29 June 2018.

FSSAI through its advisory dated 23 August 2018 proposes to reduce the maximum trans-fat level in Vanaspati, Margarine, etc to 2% from the present 5%. This is towards the goal of achieving zero dietary trans fat in India. FSSAI must also undertake dietary survey on trans-fat intake in order to evaluate whether we are in the direction of achieving the desired goal. Otherwise it will remain just an intention.

Ethephon a chemical compound and plant growth regulator is permitted as a source of ethylene in controlled ripening of fruits.

Lecithin is permitted in Follow Up Formula

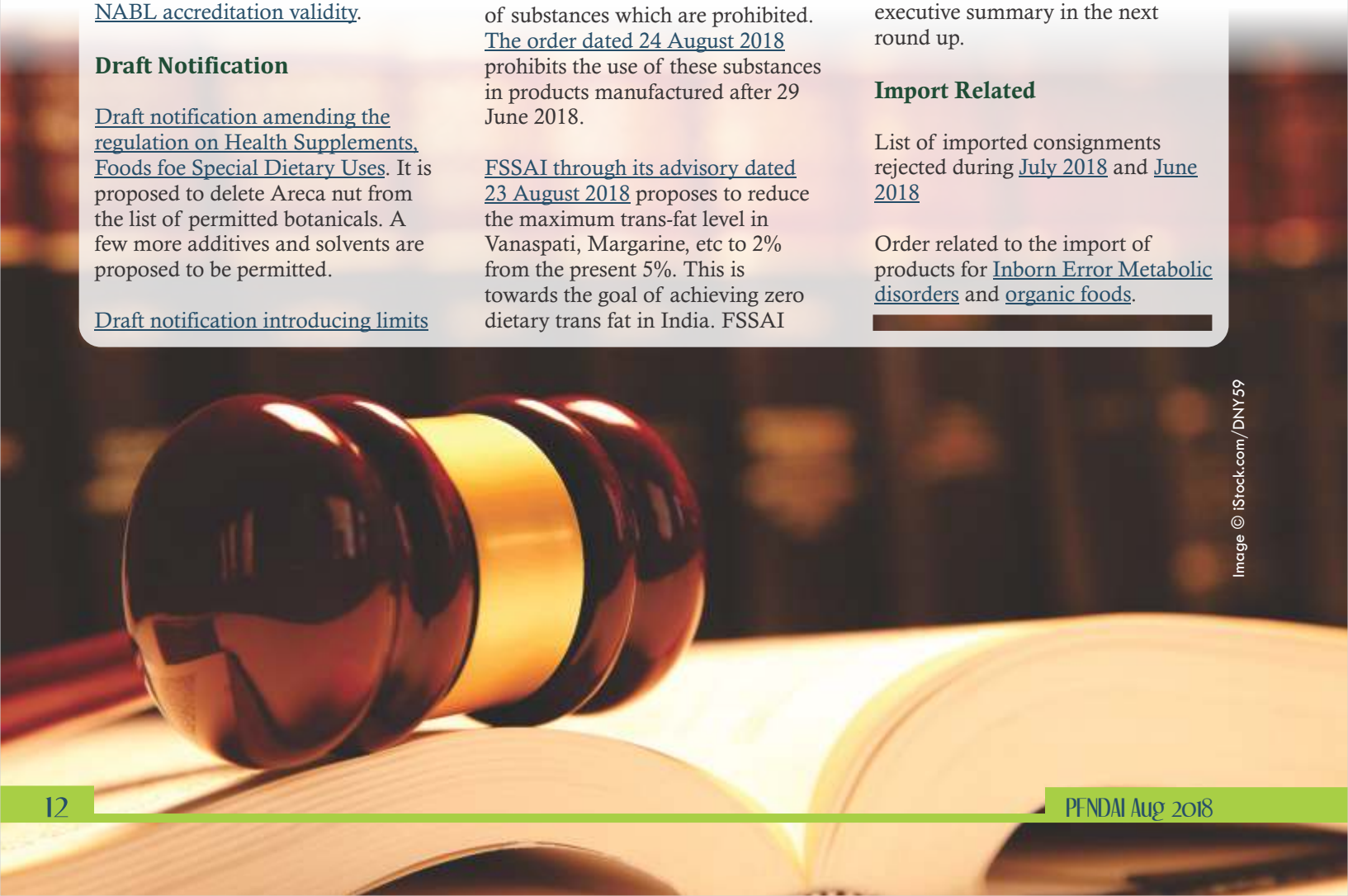
Heme iron (blood source) is not permitted as an iron source in fortified foods

A report by an expert team on the Tolerable Upper Limit of vitamins and minerals in context of RDA has been published. It is an important scientific document which requires thorough reading and understanding. I hope to give an executive summary in the next round up.

Import Related

List of imported consignments rejected during July 2018 and June 2018

Order related to the import of products for Inborn Error Metabolic disorders and organic foods.



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RESEARCH IN HEALTH & NUTRITION

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High vitamin D levels linked to lower cholesterol in children

June 7, 2018 Science Daily

There is a link between higher serum vitamin D levels and lower plasma cholesterol levels in primary school children, new research from the University of Eastern Finland shows.

Children whose serum 25-hydroxyvitamin D levels exceeded 80 nmol/l had lower plasma total and low-density lipoprotein (LDL) cholesterol levels than children whose serum 25-hydroxyvitamin D levels were below 50 nmol/l, which is often regarded as a threshold value for vitamin D sufficiency. 25-hydroxyvitamin D is the major circulating form of vitamin D. The findings were reported in one of the leading journals of endocrinology, the Journal of Clinical Endocrinology and Metabolism.

Vitamin D is known to be essential for bone metabolism, and low serum 25(OH)D levels increase the risk of rickets, osteomalacia, and osteopenia. Vitamin D may also improve plasma lipid levels and have beneficial impact on other risk factors of cardiovascular diseases. However, evidence on these other health effects of vitamin D is still scarce and partially conflicting, and therefore not a sufficient basis for giving recommendations.

Lifestyle factors, such as healthy diet, physical activity, and spending time outdoors leading to the production of vitamin D in the skin, may be linked to both higher serum vitamin D levels and lower plasma lipid levels. The researchers found that the link between higher serum vitamin D levels and lower plasma cholesterol levels was independent of body adiposity, dietary factors, physical activity, parental education, and day length prior to blood sampling. Moreover, hereditary factors that have previously been linked to serum vitamin D levels did not modify the observed association. More research is needed to uncover the reasons behind the inverse association of serum vitamin D with plasma lipid levels.

The new findings provide support for the importance of following recommendations for vitamin D intake, which vary from country to country. The most important dietary sources of vitamin D are vitamin D fortified products such as dairy products and spreads, and fish. In addition to the dietary intake, vitamin D supplement use is also recommended for the general population in several countries. The recommended use of vitamin D supplements varies a lot among these countries (mostly 5-50 μg/d, corresponding to 200-2000 IU/d) depending on age group and other factors. Vitamin D is synthesised endogenously in the skin in the presence of UV-radiation from the sun. However, in northern latitudes, the exposure to sunlight alone is inadequate to maintain sufficient serum 25(OH) D levels, especially during the winter.

The study was part of the Physical Activity and Nutrition in Children (PANIC) Study, which is a lifestyle intervention study in the Institute of Biomedicine at the University of Eastern Finland. A total of 512 children aged 6 to 8 years participated in the baseline measurements in 2007-2009, constituting a representative sample of their age group. The PANIC Study produces scientifically valuable information on children's lifestyles, health, and well-being.

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Lentils significantly reduce blood glucose levels

June 13, 2018 Science Daily

Replacing potatoes or rice with pulses can lower your blood glucose levels by more than 20 per cent, according to a first-ever University of Guelph study.

Prof. Alison Duncan, Department of Human Health and Nutritional Sciences, and Dan Ramdath of Agriculture and Agri-Food Canada, found that swapping out half of a portion of these starchy side dishes for lentils can significantly improve your body's response to the carbohydrates. Replacing half a serving of rice with lentils caused blood glucose to drop by up to 20 per cent. Replacing potatoes with lentils led to a 35-per-cent drop. "Pulses are extremely nutrient-dense foods that have the potential to reduce chronic diseases associated with mismanaged glucose levels," said Duncan, who worked on the study with PhD student DitaMoravek and M.Sc. students Erica Rogers, Sarah Turkstra and Jessica Wilson. Yet very few Canadians eat lentils, she added.

"Canada has a huge production of lentils, but we export most of it and only 13 per cent of Canadians eat them on any given day," said Duncan. "We are hoping this research will make people more aware of the health benefits of eating pulses." Published and specially featured in the Journal of Nutrition, the study involved 24 healthy adults fed four dishes -- white rice only, half white rice and half large green lentils, half white rice and half small green lentils, and half white rice and half split red lentils.

Researchers measured glucose levels in the participants' blood before they ate and during two hours afterward. They repeated the process for white potatoes alone and the same combinations of potatoes and lentils. "We mixed the lentils in with the potatoes and rice because people don't typically eat pulses on their own, but rather consume them in combination with other starches as part of a larger meal, so we wanted the results to reflect that."

Blood glucose fell by similar amounts when half of the starch was replaced with each of the three types of lentils. Blood glucose comprises sugar found in the blood during digestion in the upper digestive tract and depends on the starch content of foods consumed. Pulses, such as lentils, can slow digestion and the release of sugars found in starch into the bloodstream, ultimately reducing blood glucose levels, said Duncan. "This slower absorption means you don't experience a spike in glucose. Having high levels over a period of time can lead to mismanagement of blood glucose, which is the hallmark of Type 2 diabetes. Essentially, eating lentils can lower that risk."

Pulses contain components that inhibit enzymes involved in absorption of glucose, and fibre contained in these foods can encourage the production of short-chain fatty acids, which can also help to reduce blood glucose levels, added Duncan. Health Canada requires a 20-per-cent reduction in blood glucose levels before a health claim about blood glucose lowering can be approved, said Duncan. "We are hoping that building evidence for approval of a health claim for pulses will further encourage people to add pulses to their side dishes."

Allergen in red meat linked to heart disease

June 14, 2018 Science Daily

A team of researchers says it has linked sensitivity to an allergen in red meat to the build-up of plaque in the arteries of the heart.

While high saturated fat levels in red meat have long been known to contribute to heart disease for people in general, the new finding suggests that a subgroup of the population may be at heightened risk for a different reason -- a food allergen. The study, which is supported by the National Heart, Lung, and Blood Institute, part of the National Institutes of Health, appears in Arteriosclerosis, Thrombosis, and Vascular Biology (ATVB), a peer-reviewed journal of the American Heart Association.

“This novel finding from a small group of subjects from Virginia raises the intriguing possibility that allergy to red meat may be an under-recognized factor in heart disease," said study leader Coleen McNamara, M.D., a professor of medicine in the Cardiovascular Research Center of the University of Virginia Health System, Charlottesville. "These preliminary findings underscore the need for further clinical studies in larger populations from diverse geographic regions and additional laboratory work."

Image © iStock.com/gilaxia

The number of people with red meat allergies in the United States is unclear, but researchers estimate that it may be 1 percent of the population in some areas. The number of people who develop blood antibodies to the red meat allergen without having full-blown symptoms is much higher -- as much as 20 percent of the population in some areas, the researchers say.

Only in recent years did scientists identify the main allergen in red meat, called galactose-α-1,3-galactose, or alpha-Gal, a type of complex sugar. They also found that a tick -- the Lone Star tick -- sensitizes people to this allergen when it bites them. That is why red meat allergies tend to be more common where these ticks are more prevalent, such as the South-eastern United States, but also extending to other areas, including Long Island, New York.

Researchers have suspected for some time that allergens can trigger certain immunological changes that might be associated with plaque build-up and artery blockages, but no one had identified a specific substance that is responsible for this effect. In the current study, researchers showed for the first time that a specific blood marker for red meat allergy was associated with higher levels of arterial plaque, or fatty deposits on the inner lining of the arteries. The blood marker they identified is a type of antibody (immunoglobulin or IgE) that is specific to the alpha-Gal allergen.

To identify this blood marker, the researchers analyzed blood samples from 118 adults and detected antibodies to alpha-Gal, indicating sensitivity to red meat, in 26 percent of them. Using an imaging procedure, the researchers found that the quantity of plaque was 30 percent higher in the alpha-Gal sensitized patients than in the non-sensitized patients. These plaques, a hallmark of atherosclerosis (hardening of the arteries), also tended to be more structurally unstable, which means that they have an increased likelihood of causing heart attack and stroke.

The evidence for a link between red meat allergens and coronary artery disease is still preliminary, the researchers noted, so they plan to conduct detailed animal and human studies to confirm their initial findings. Currently, the only treatment for red meat allergy once it is diagnosed is strict avoidance of red meat. "While more studies are needed, the current work provides a potential new approach or target for preventing or treating heart disease in a subgroup of people who are sensitized to red meat," said Ahmed Hasan, M.D., Ph.D., a medical officer and program director in NHLBI's Atherothrombosis& Coronary Artery Disease Branch.

For now, consumers are encouraged to follow current recommendations for a heart-healthy lifestyle. This includes adapting a healthy diet, such as eating plenty of vegetables, fruits, whole grains, and other heart-healthy foods. Lean red meats can be part of a heart-healthy diet for those who are not allergic. Other heart-healthy lifestyle changes also include aiming for a healthy weight, managing stress, getting more exercise, and quitting smoking.

Girls with high level of vitamin D have stronger muscles

June 14, 2018 Science Daily

Girls are stronger with higher levels of vitamin D, but the association was not found in boys. These are the results from a new large study from the Odense Child Cohort, recently published in the Journal of Clinical Endocrinology and Metabolism.

According to the study's first author, medical student RadaFaris Al-Jwadi, girls with low vitamin D have a 70 percent increased risk of being among the lowest 10 percent in a test for muscle strength. We also found that girls were stronger if their Vitamin D level was more than 50 nmol/L. The most surprising finding was that this difference was only evident in girls and not in boys. The study shows no association with vitamin D levels in mothers during pregnancy or in the umbilical cord at birth. This leads to the conclusion that there is no prenatal programming effect of muscle strength. We are talking about a more immediate effect of Vitamin D, says RadaFaris Al-Jwadi.

According to HenrikThyboChristesen, Professor at H.C. Andersen children's hospital, Odense University Hospital and University of Southern Denmark, the study offers no explanation for the difference between boys and girls. But other studies on children and adults have shown that vitamin D increases the levels of IGF-I, which is a growth factor that increases muscle strength. Also, the IGF-I level is different in boys and girls which could be part of the explanation. We can't, based on our data, conclude that girls will get stronger muscles if they got more vitamin D through their food, as supplement pills or because of more sun exposure which are some of the most important sources of Vitamin D. Even though, our association could mean exactly that.

Image © iStock.com/greenaperture

In the study, 881 5-year-old children in Odense Child Cohort got their muscle strength measured with a standardized test for hand grip strength meant for children. For 499 of the children, Vitamin D status analyses were done. Low Vitamin D levels were defined as serum 25OH-Vitamin D below 50 nmol/L. The statistical analyses were adjusted for height, weight and body fat percentage and were statistically highly significant. This means that the association wasn't due to being overweight and thereby having lower Vitamin D and lower muscle strength. It also means that it wasn't because girls liked to be more inside and were less physically active. The body fat percentage was calculated based on skin fold measurements.

Greater levels of vitamin D associated with decreasing risk of breast cancer

June 15, 2018 Science Daily

Researchers at University of California San Diego School of Medicine suggest higher levels of vitamin D are associated with decreasing risk of breast cancer.

Their epidemiological study is published in the June 15 online issue of PLOS ONE, in collaboration with Creighton University, Medical University of South Carolina and GrassrootsHealth, an Encinitas-based non-profit organization that promotes vitamin D research and its therapeutic benefits. The scientists pooled data from two randomized clinical trials with 3,325 combined participants and a prospective study involving 1,713 participants to examine the association between risk of female breast cancer and a broad range of serum 25-hydroxyvitamin D (25(OH)D) concentrations, which was chosen as the marker because it is the main form of vitamin D in blood.

All women were age 55 or older. The average age was 63. Data were collected between 2002 and 2017. Participants were free of cancer at enrolment and were followed for a mean period of four years. Vitamin D levels in blood were measured during study visits. Over the course of the combined studies, 77 new cases of breast cancer were diagnosed for an age-adjusted incidence rate of 512 cases per 100,000 person-years.

Researchers identified the minimum healthy level of 25(OH)D in blood plasma to be 60 nanograms per ml, substantially higher than the 20 ng/ml recommended in 2010 by the Institute of Medicine, now the National Academy of Medicine, a health advisory group to the federal government. Some groups, such as GrassrootsHealth, have advocated higher minimums for health blood serum levels of vitamin D, as much as 50 ng/ml. The matter remains hotly debated.

"We found that participants with blood levels of 25(OH)D that were above 60 ng/ml had one-fifth the risk of breast cancer compared to those with less than 20 ng/ml," said principal investigator and co-author Cedric F. Garland, Dr PH, adjunct professor in the UC San Diego Department of Family Medicine and Public Health. Risk of cancer appeared to decline with greater levels of serum vitamin D.

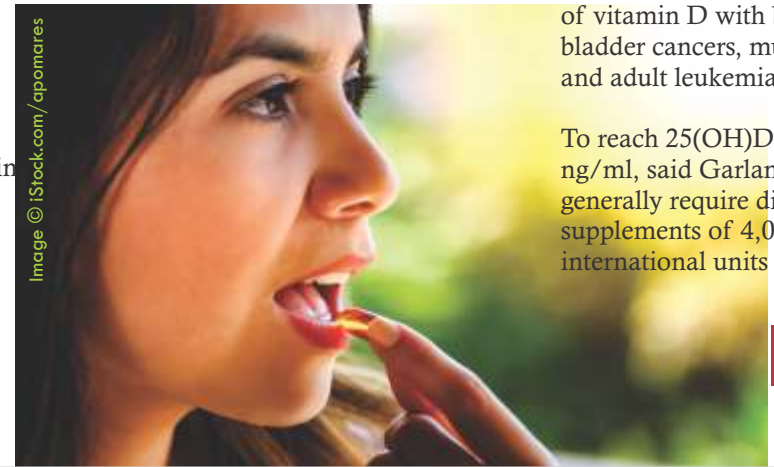
Multivariate regression was used to quantify the association between 25(OH)D and breast cancer risk, with the results adjusted for age, body mass index, cigarette smoking and intake of calcium supplements, said first author Sharon McDonnell, an epidemiologist and biostatistician for GrassrootsHealth. "Increasing vitamin D blood levels substantially above 20 ng/ml appears to be important for the prevention of breast cancer."

Garland, who has previously studied connections between serum vitamin D levels and several types of cancer, said the study builds upon previous epidemiological research linking vitamin D deficiency to a higher risk of breast cancer. Epidemiological studies analyze the distribution and determinants of health and disease, but it has been argued that they do not necessarily prove cause-and-effect.

"This study was limited to postmenopausal breast cancer. Further research is needed on whether high 25(OH)D levels might prevent premenopausal breast cancer," Garland said. The population was also mainly white women so further research is needed on other ethnic groups. Nonetheless, this paper reports the strongest association yet between serum vitamin D and reduction in risk of breast cancer," Garland said.

Garland and others have advocated the health benefits of vitamin D for many years. In 1980, he and his late brother Frank C. Garland, also an epidemiologist, published an influential paper that posited vitamin D (produced by the body through exposure to sunshine) and calcium (which vitamin D helps the body absorb) together reduced the risk of colon cancer. The Garlands and colleagues subsequently found favourable associations of markers of vitamin D with breast, lung and bladder cancers, multiple myeloma and adult leukemia.

To reach 25(OH)D levels of 60 ng/ml, said Garland, would generally require dietary supplements of 4,000 to 6,000 international units (IU) per day,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less with the addition of moderate daily sun exposure wearing very minimal clothing (approximately 10-15 minutes per day outdoors at noon). He said the success of oral supplementation should be determined using a blood test, preferably during winter months. The current recommended average daily amount of vitamin D3 is 400 IU for children up to one year; 600 IU for ages one to 70 years (including pregnant or breastfeeding women) and 800 IU for persons over age 70, according to the National Academy of Medicine.

A 2009 paper published in the Annals of Epidemiology by Garland and colleagues recommended a healthy target level of serum 25(OH)D of 40 to 60 ng/ml, based on an expert consensus panel. This statement was published in Annals of Epidemiology (2009). Oral doses of vitamin D are often not specified since different individuals require different intakes to achieve targeted serum range. Except under medical supervision and monitoring, intake of vitamin D3 must not exceed 10,000 IU per day. Blood serum levels exceeding 125 ng/ml have been linked to adverse side effects, such as nausea, constipation, weight loss, heart rhythm problems and kidney damage.

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Probiotics can protect the skeletons of older women

June 21, 2018 Science Daily

For the first time in the world, researchers at the University of Gothenburg, Sweden, have demonstrated that probiotics, dietary supplements with health-promoting bacteria, can be used to affect the human skeleton.

Image © iStock.com/philipimage

Among older women who received probiotics, bone loss was halved compared to women who received only a placebo. The research opens the door to a new way to prevent fractures among the elderly. Brittleness of the bones, or osteoporosis, is characterized by porous and weak bones, which can cause them to break even when subjected to low loads, such as a fall from standing height. The proportion of the population with osteoporosis increases with age, and a majority of women over 80 years of age have the disease.

"Today there are effective medications administered to treat osteoporosis, but because bone fragility is rarely detected before the first fracture, there is a pressing need for preventive treatments," says Mattias Lorentzon, who is a chief physician and professor of geriatrics at Sahlgrenska Academy, University of Gothenburg. This is the first time that researchers have shown that it is possible to cut age-related bone loss in elderly women in half if they receive health-promoting bacteria, known as probiotics.

Double-blind, randomized study

The study was conducted at Sahlgrenska University Hospital in Mölndal, Sweden, and its results of the study are now being published by the Journal of Internal Medicine. Ninety elderly women, 76 years old on average, ingested a powder that contained either health-promoting bacteria or a placebo every day for a whole year. A random method determined which women received the active treatment with the Lactobacillus reuteri 6475 bacteria and which received powder without bacteria. Neither the researchers nor the women knew who received the active powder during the study.

"When we finished the study after a year, we measured the women's bone loss in their lower legs with a CT scan and compared it with the measurements we made when the study began. The women who received the powder with active bacteria had lost only half as much bone in the skeleton compared with those who received inactive

powders," says Anna Nilsson, a chief physician and associate professor at Sahlgrenska Academy, University of Gothenburg. "Another positive outcome from the study was that the treatment was well tolerated and did not produce more side effects than those experienced by women who received the placebo."

A paradigm shift

Research has shown that intestinal bacteria affect the skeleton in mice, but this is the first study in which probiotics were used to reduce bone loss in older people. The discovery could have important implications in the future: "Older women are the group in society most at risk of osteoporosis and fractures. The fact that we have been able to show that treatment with probiotics can affect bone loss represents a paradigm shift. Treatment with probiotics can be an effective and safe way to prevent the onset of osteoporosis in many older people in the future," says MattiasLorentzon.

Lactobacillus reuteri 6475 is a bacterium believed to have multiple health-promoting properties, and similar bacteria are already used in a variety of supplements on the market. The bacterium is naturally found in the human gastrointestinal tract. Bacteria in the stomach and intestine have received considerable attention in recent years because there is evidence that the composition of our bacterial flora is associated with diseases such as diabetes and obesity. The mechanisms, that is, the ways that the bacteria produce different effects in the body, are not yet clearly understood.

Many older adults are deficient in vitamin B12 and folate

June 26, 2018
Science Daily

A new study by researchers from The Irish Longitudinal Study on Ageing (TILDA) at Trinity College Dublin, Ireland, has shown for the first time that a substantial number of adults over 50 are at risk of deficiency in vitamin B12 and folate (the natural vitamin linked to the dietary supplement, folic acid).

The researchers found that one in eight adults in Ireland are deficient in vitamin B12; one in seven are deficient in folate; and there are variations in deficiency across different provinces in Ireland, in addition to variations dependent on health, lifestyle and the time of year measured. The findings form part of the largest representative study of its kind conducted among older persons in Ireland and have just been published in the journal, British Journal of Nutrition.

Both vitamin B12 and folate are essential for nerve function, brain health and the production of red blood cells and DNA. Numerous studies have shown that low nutritional status of folate and B12 are linked to poor long-term health, especially among older people.

In Ireland, fortification of food products is voluntary and some foods (such as ready-to-eat cereals) are enriched with micronutrients such as folic acid, though this is inconsistent between products fortified and over time, resulting in haphazard exposure. There have been repeated calls for an official policy of mandatory fortification of staple foods such as bread, with folic acid, to reduce the occurrence of neural tube defects in babies. Such a policy would also reduce the prevalence of folate deficiency in older adults who are most at risk. Before this can occur, however, comprehensive information is needed on the prevalence and determinates of deficiency.

Our study suggests that the current custom of voluntary food fortification is ineffective in preventing deficiency or low status of these vitamins among older people. The results are of relevance not just for Ireland but for all countries that do not have mandatory fortification.

Key findings:
• One in eight adults over 50 were low to deficient in vitamin B12 while one in seven were low to deficient in folate
• The prevalence of low or deficient folate increased with age, from 14% among those aged 50-60 years to 23% among people over 80 years old. Low folate status was also more common in smokers, the obese, and those who lived alone
• Low or deficient vitamin B12 was more common in smokers (14%), people who lived alone (14.3%) and those from lower socio-economic backgrounds (13%)
• Use of both vitamin B12 and folic acid supplementation was low, with higher rates among women than men but less than 4% overall taking supplements of either vitamin

Commenting on the significance of the research, lead author of the study and Research Fellow at TILDA, Dr Eamon Laird, said: "This is the largest representative and most comprehensive study of vitamin B12 and folate status in older adults ever conducted in Ireland. There are striking differences in the prevalence of deficiency across different lifestyle factors such as obesity and smoking -- both of which are modifiable risk

factors. Our findings will provide useful data to help inform public health policy -particularly regarding the proposition of mandatory folic acid and/or vitamin B12 fortification. To place our findings in context, in a country such as the United States where mandatory folic acid fortification occurs, rates of low folate status are around 1.2% in older adults compared with 15% in Ireland."

Image © iStock.com/101cats

Professor Anne Molloy, senior author of the study noted:
"This study shows a surprising level of inadequate folate among older persons, despite many years of voluntary folic acid fortification of certain foods on the Irish market. Concerns relating to excessive folic acid intake, particularly in older people, have been at the heart of current debates regarding the risks of population-wide folic acid fortification. However, in countries such as the US, mandatory folic acid food fortification for the past 20 years has prevented millions of cases of folate deficiency without any proven adverse effects. Irish public health authorities need to act on the facts from studies such as ours."

Professor Rose Anne Kenny, Principal Investigator of TILDA, said:
"The high rates of B-vitamin deficiency seen in the older adult population are of concern and, given that this can be easily treated with fortification, this has significant policy and practice implications for Government and health services. TILDA has consistently assisted policy makers by providing strong evidence based data on which to make recommendations but also by assisting with information of most vulnerable people and therefore those who should be targeted."

Compounds found in green tea and red wine may block formation of toxic metabolites

Discovery may pave the way for therapies to treat inborn congenital metabolic disorders

July 2, 2018 Science Daily

A new Tel Aviv University study suggests there is hope of treating certain inborn congenital metabolic diseases -- a hope found in green tea and in red wine.

Most people with inherited metabolic disorders are born with a defective gene that results in a critical enzyme deficiency. In the absence of a cure, many patients with inborn congenital metabolic disorders must adhere to a strict and demanding diet their entire lives. This new research finds that certain compounds found naturally in green tea and red wine may block the formation of toxic metabolites. The research was led by Prof. Ehud Gazit of TAU's Faculty of Life Sciences and his doctoral student Shira Shaham-Niv. It was published in the Nature group journal Communications Chemistry. The researchers considered two compounds: (1) epigallocatechin gallate, known as EGCG, found naturally in green tea, which has attracted attention within the medical community for its potential health benefits; and (2) tannic acid, found in red wine, which is known to prevent the formation of toxic amyloid structures that cause neurodegenerative disorders such as Alzheimer's and Parkinson's disease.

"In the case of inborn congenital metabolic diseases, the body does not produce a vital metabolic enzyme," Shaham-Niv said. "As a result, metabolites -- substances that are, among other things, the building blocks of DNA and proteins -- accumulate in the body. Such uncontrolled accumulation is toxic and can cause severe developmental and mental disorders. Our new study demonstrates once again the ability of nature to produce the best candidate of drugs to treat some of the worst human maladies."

Collectively, this group of disorders constitutes a significant portion of pediatric genetic diseases. The disease phenylketonuria (PKU), which produces the aggregation of the metabolite phenylalanine, is one common inborn metabolic disease. Infants with PKU must adhere to a strict diet free of phenylalanine for the rest of their lives. If they don't, they may face severe debilitating developmental problems.

"But this is an incredibly difficult task, since phenylalanine is found in most of the food products that we consume," Shaham-Niv said. "The avoidance of certain substances is the only way to prevent the debilitating long-term effects of inborn congenital metabolic disorders. We hope that our new approach will facilitate the development of new drugs to treat these disorders."

The new research is based on two previous studies conducted at Prof. Gazit's TAU laboratory. In the first study, phenylalanine was shown to be capable of self-assembly and of forming amyloid structures like those seen in Alzheimer's, Parkinson's and other neurodegenerative diseases. In the second study, by Shaham-Niv, other metabolites that accumulate in other inborn congenital metabolic

diseases were also shown to undergo self-assembly processes and form toxic amyloid aggregates.

"Both studies led to an overhaul in the research community's understanding of metabolic diseases," Shaham-Niv said. "In our new study, we examined whether the molecules identified in past studies on Alzheimer's disease and other amyloid diseases, which are known to inhibit the formation of amyloid aggregates, could also help counteract the amyloid formation process of metabolites in metabolic diseases."

The new research focused on EGCG and tannic acid using test tubes and culture cell systems. The two substances were tested on three metabolites related to three innate metabolic diseases: adenine, cumulative tyrosine and phenylalanine. The results were promising. Both tannic acid and EGCG were effective in blocking the formation of toxic amyloid structures. The researchers also used computer simulations to verify the mechanism driving the compounds.

"We are entering a new era of understanding the role and the importance of metabolites in various diseases, including metabolic diseases, neurodegenerative diseases and even cancer," Shaham-Niv concluded. "The tools we have developed are ground-breaking and have tremendous potential to help a wide range of patients in the future."

Obesity exacerbates effects of aging on the brain and raises risk of Alzheimer's

29 Jun 2018 Nutrition Insight

When a high-fat, high-sugar (HFS) diet that leads to obesity is paired with normal aging, it may contribute to the development of Alzheimer's disease, finds a study published in Physiological Reports.

Also, researchers discovered that certain areas of the brain respond differently to risk factors associated with Alzheimer's, indicating that the pathology is not uniform throughout the brain. "This study provides novel information in relation to the mechanistic link between obesity and the transition from adulthood to middle age and signalling cascades that may be related to [Alzheimer's] pathology later in life," say the researchers. "These results add to our basic understanding of the pathways involved in the early progression of [Alzheimer's] pathogenesis and demonstrate the negative effects of a high fat, high sugar diet on both the prefrontal cortex and hippocampal regions." Alzheimer's disease, the most common form of dementia, is a progressive brain disorder that leads to loss of cognitive skills and memory and causes significant changes in behaviour. Aging is a significant risk factor for Alzheimer's. Previous studies suggest that diet-related obesity is also associated with the development of the disease.

Researchers from Brock University in Ontario, Canada, looked at the effects of an obesity-inducing diet on insulin signalling (the process that tells the body how to use sugar) and markers of inflammation and cellular stress. These factors have been found to be involved in the progression of Alzheimer's disease during the aging process in mice. One group of mice received a high-fat, high-sugar diet, while the control group ate a normal diet. The researchers measured the animals' inflammation and stress levels in the hippocampus and the prefrontal cortex in the brain after 13 weeks on the assigned diets. They compared the brains of aged mice to those of a younger set of baseline mice. The hippocampus is near the center of the brain and is responsible for long-term memory. The prefrontal cortex, at the front of the brain, oversees complex cognitive, emotional and behavioural function.

Compared to the control group, the HFS group had significantly higher markers of inflammation, insulin resistance (altered insulin signalling) and cellular stress in areas of the hippocampus thought to be involved in the progression of Alzheimer's disease. The prefrontal cortex region of the HFS group showed more signs of insulin resistance, but inflammation and cellular stress markers did not change. The "region-specific differences between the prefrontal cortex and hippocampus in response to aging with a HFS diet [indicates] that the disease pathology is not uniform throughout the brain," the researchers wrote. The control group's inflammation levels were also increased after the trial when compared to the baseline readings. These results support the theory that aging alone plays a role in the progression of Alzheimer's disease, and obesity exacerbates the effects of aging on brain function.

NutritionInsight has reported widely on the effects diet can have on brain health and degenerative brain disease. A study published in the journal Brain, Behaviour, and Immunity found that adolescent rats who consumed a diet high in saturated fats are at an increased risk of psychopathology in


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adulthood and the subjects began exhibiting behaviours that mirror post-traumatic stress disorder (PTSD). A common protein found in species of fish, parvalbumin, was found to perhaps prevent the formation of specific protein structures that are closely associated with Parkinson's disease, a Swedish study discovered. The Chalmers researchers discovered that parvalbumin can form amyloid structures that bind together with the alpha-synuclein protein. Parvalbumin effectively "scavenges" the alpha-synuclein proteins, using them for its own purposes, thus preventing them from forming their own potentially harmful amyloids at a later point. Furthermore, strengthening the age-old saying, "we are what we eat," research has detailed that following a low-fat diet in combination with limited caloric consumption could prevent age-related brain dysfunction.

Personalized nutrition: Mindful and aware consumers drive market opportunity

19 Jun 2018 Nutrition Insight

Personalized nutrition has taken its place as a key industry topic, spurring the launch of a number of innovative start-ups using cutting-edge technologies to offer precise nutrition advice to consumers. This growing industry space will be the topic of discussion at the Personalized Nutrition Innovation Summit, which is taking place in San Francisco on June 26-27.

Organized by Kisaco Research, this event will connect tech start-ups; large tech, nutrition, sports and retail companies; pharmaceutical and consumer health companies and consultants, all competing and collaborating to be the leader in the personalized nutrition field. NutritionInsight spoke with a number of companies presenting at the event about their views on the challenges, opportunities and future of this exciting space.

Health areas and consumer trends shaping nutrition

Increasingly mindful and aware consumers are a driving force behind the impressive growth and investments in the personalized nutrition space. "With the chronic disease (particularly diabetes) and obesity epidemic being primarily driven by food choices, and with it skyrocketing unabated for four decades since the first national dietary guidelines, consumers are losing trust with dietitians and official government-sanctioned nutritional advice. Instead, they are turning to alternative sources who distribute their views using books and/or social media," says Shai

Rozen, Co-Founder at Suggestic, which provides real-time, contextually-aware, personalized food recommendations, according to user biology coupled with artificial intelligence.

"There is increasing recognition among consumers, researchers and healthcare professionals that traditional, one-size-fits-all, population-based nutritional recommendations for health promotion are inefficient and often ineffective," explains Ahmed El-Sohemy, Founder of Nutrigenomix, a University of Toronto start-up biotech company dedicated to empowering healthcare professionals and their clients with comprehensive, reliable genomic information, with the ultimate goal of improving health through personalized nutrition.

"Research advances in the field of nutritional genomics have shown that some individuals benefit more by following different dietary recommendations than others, based on their DNA. This field of research is creating a strong demand for commercial tests that can provide this kind of personalized information for improved health. Indeed, personalized nutrition is consistently being identified as one of the top consumer trends in nutrition, and the nutrigenomics market is forecast to grow to over US$17bn by 2023, according to some reports," El-Sohemy notes.

The demand for personalized advice has quickly met with another key area of health interest: the microbiome. "Microbiome testing that allows you to understand what microbiome exists in your gut at the strain level, how active they are and, most importantly, what your microbes are producing [It] is the only way to get to precise and personalized nutrition. You need to make sure that you are not conned into doing microbiome testing based on 16s sequencing but look for testing that does meta-transcriptomics," says Naveen Jain, Founder of microbiome testing company Viome. "Viome is the only company offering this type of service and it makes personalized nutritional recommendations based on your gut," he claims.

Ranjan Sinha, Co-Founder & CEO at 3TandAI, also sees huge potential for the gut microbiome and gene sequencing in empowering consumers. "The plummeting cost of gut biome and gene sequencing will empower consumers with their

bio-individuality, make them realize that almonds are not everyone's superfood or kale can be a significant health risk for a pre-diabetic based on their gut biome composition. They will demand personalized food and nutrition solutions to meet their personal needs based on their body biology," says Sinha, whose company seeks to offer individualized nutrition advice based on a person's DNA and microbiome.

Hurdles for personalized nutrition

Although industry experts seem to be in agreeance of the enormity of the growth potential of personalized nutrition options, there are still some key challenges. "The largest hurdle is underpinning it with science. Nutrition is terribly weak as a science (certainly in relation to the other sciences), mainly relying on observational studies. Proper studies would be too costly. However the potential for smartphones to vastly reduce the cost of such studies is now becoming a real possibility, so proper science is likely to emerge in the not too distant future," says Rozen. "Since nutrition itself is relatively lacking a scientific underpinning, personalized nutrition is even more lacking."

Jain similarly points to gaps in the current technological capabilities to understand the human body. "Technology that will unlock our understandings of the functioning of our body at the molecular level has been missing so we were left to trial and error. This is the reason we see new fad diets emerge every few years," he notes. "Fortunately, RNA sequencing (meta-transcriptomics analysis) and machine learning are now becoming affordable for us to be able to see what's happening inside our body and what nutrition is needed to stay healthy and diseases free. This science is still in its infancy and will only get better as more and more people do the test to get personalized nutritional recommendation because access to more data make artificial intelligence more and more precise."

Untapped potential and avenues for further R&D

"More research needs to be done on how foods cause and reverse various chronic diseases. We need to better understand the impact of how various food are produced, processed and consumed because all of this impacts our health," says Jain. "We also need massive awareness that synthetic drugs are not the solution to chronic diseases and the only way to prevent and reverse chronic diseases is through precise and personalized nutrition." Consequently, he recommends that more people should test their gut starting at an early age regularly and follow recommendations to track and prevent chronic diseases.

According to El-Sohemy, research has shown that individuals who receive personalized, DNA-based dietary recommendations adhere to them more closely than individuals who receive general nutritional advice. "However, one of the knowledge gaps is whether increased adherence to personalized advice results in greater clinically relevant improvements in health," he notes. "When considering the areas of untapped potential, we can consider any area of research involving nutrition. Knowing that individual genetic differences can explain why some people are 'responders' while others are 'non-responders', means we need to revisit all of those previous studies. Some specific areas that we're exploring are nutrition and fertility, athletic performance and women's health (e.g. premenstrual symptoms)."

The Personalized Nutrition Summit Other speakers at the Summit will be covering topics such as using machine learning to provide personalized nutrition plans based on an individual's microbiome and also addressing the regulatory landscape that is evolving around personalized nutrition, as the field becomes more mainstream and established.

"We're excited to launch this Summit at such a pivotal time for the industry, with such an amazing line-up of companies coming together to discuss ground-breaking technologies that will really pave the way for this nascent field. The Innovation Showcase will highlight some of the amazing tech and work being done by small, nimble, exciting brands in the personalized nutrition industry," says Jane Geiger, Conference Director for the Personalized Nutrition Innovation Summit.

By Lucy Gunn

Web-based education program can help kids curb salt consumption

08 Jun 2018 Nutrition Insight

A web-based salt education program can improve salt-related knowledge, self-efficacy and behaviours among children ages 7-10 years, A new study published in the Journal of Nutrition Education and Behavior has found.

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According to the researchers, feelings of empowerment regarding nutrition-related decisions are particularly important in shaping children's behaviours.
"Eating salty foods during early life increases taste preference for foods rich in salt that may lead to greater lifetime intake of salt," says lead author Dr. Carley Grimes from the Institute for Physical Activity and Nutrition at Deakin University, Australia. "Product reformulation of lower-sodium foods is an integral component of population-wide salt reduction efforts, but behavior-based strategies such as reading food labels to select lower-salt foods can be taught to children."

More than 100 children were recruited from six primary schools of varying socioeconomic levels located in Victoria, Australia. Before the start of the study, participants completed a survey on salt-related knowledge, attitudes and behaviours. Additionally, they were instructed on how to collect their urine for a period of 24 hours. Students then took part in a five-week intervention that included web-based interactive education sessions that they completed at home. The 20-minute lessons presented three key messages: stop using the salt shaker, switch to low-salt foods by checking food labels and swap processed salty-foods for healthier low-salt alternatives.

The detective-themed stories included animated comics, interactive activities and video content. Support material included a printed detective logbook and parental resources. Upon completing the lessons, students took an online survey related to dietary salt and completed a second 24-hour urine collection.

After participation there was significant improvement in children's overall knowledge, behaviour and self-efficacy scores and no change in attitude score that measured the importance of using salt to make food tasty. There was a 19 percent reduction in the proportion of children who reported that a salt shaker was placed on the table. When a salt shaker was not present, salt usage by children was reduced 25 percent compared to 70 percent who reported adding salt when a salt shaker was on the table. Improvement was also shown in children's self-reported belief that they could change their behaviours to eat less salt.

Despite the improvements in salt-related behaviours, no change was observed in salt intake as measured by urine collection. This may be due to the small sample size of children completing this portion of the study and the short duration of the intervention (five weeks), which may not have been enough time for significant change in grocery purchasing habits.

L-Carnitine: Strong potential for senior sports nutrition market and novel, combination delivery forms

06 Jun 2018 Nutrition Insight

L-Carnitine supplementation can particularly enhance post-exercise recovery in aging populations at risk from skeletal decline, according to a review conducted by Lonza Consumer Health & Nutrition in conjunction with Tufts University in Boston, US.*

The review sought to collate all relevant scientific trials involving the ingredient from the past few decades. It highlights the extensive evidence on L-Carnitine as a sports nutrition ingredient for enhanced exercise capacity in young athletes and how the ingredient can highly benefit other demographics, such as the elderly.

"The benefits outlined in the review paper for older subjects who used L-Carnitine post-exercise opens up significant market opportunities for manufacturers within this demographic, as well as the overall sports and active nutrition segment. In addition, the ingredient's benefits in wider applications – from weight management to healthy aging – and versatility for use in a range of dosage forms presents manufacturers with the ability to create high-performance combination products," Dr. Aouatef Bellamine, Senior Scientific Manager, Consumer Health & Nutrition at Lonza, tells NutritionInsight.

With a rapidly aging global population increasingly taking part in moderate exercise and given the additional challenges met by older people suffering from the age-related decline in skeletal muscle mass, strength and overall activity, L-Carnitine was found to exert a

Image © iStock.com/ayo888

beneficial effect by maintaining lean muscle mass and reducing muscle degradation and fatigue. This was found to be particularly true regarding people with sarcopenia.

"Most importantly, the review paper concludes with an emerging demographic that may benefit from Carnipure L-Carnitine: people with sarcopenia, a natural condition of muscle deterioration as part of the aging process, which may be mitigated by supplementation with the ingredient. The research summarized in the review shows that Carnipure L-Carnitine alone, or in combination with other amino acids, contributes to the support of muscle mass and function in a healthy aging population," Bellamine adds.

Innovation in delivery systems
"Lonza Consumer Health & Nutrition invests significantly in its research and development program, to ensure that its ingredients and dosage forms are backed by science and to accelerate speed-to-market for new products. With a pressing need to address multiple segments, dosage forms that can pair Carnipure L-Carnitine with other ingredients to deliver diverse benefits have become increasingly important in helping supplement manufacturers' products stand out on the shelf," says Bellamine.

Suitable delivery systems must enable the benefit of combining multiple active ingredients. Following Lonza's acquisition of capsugel last year, the company have positioned themselves as being able to combine "active ingredients along with delivery systems and finished dosage forms," which in turn brings "a unique offering to the market," Beth Tormey, Head of Global Business Unit at Lonza tells NutritionInsight at this year's Vitafoods Europe.

The synergies of the company have allowed for the combination of active ingredients that do not usually work together, Tormey explains, being delivered in one single form and dose, bringing the benefit of other health ingredients that are desired for sports nutrition, such as omega 3, being coupled with L-Carnitine, for example. This includes the combination of dry and liquid forms together.

"For example, Lonza Consumer Health & Nutrition's Duocap capsule-in-capsule technology enables Carnipure L-Carnitine to be combined with nutrients that have different release profiles, such as omega 3 or probiotics, in a single nutritional supplement . While Carnipure L-Carnitine is held in the outer capsule and released immediatel y, probiotics can be housed within the inner capsule and dissolved later in the digestive tract, offering potential opportunities for sports recovery and weight management applications."

Lonza is also able to deliver clean label solutions with their, "vegetarian Licaps liquid-filled capsules [which] enable Carnipure L-Carnitine to be formulated in combination with other health ingredients, such as with choline and vitamin B12, to offer a clean label solution and meet demand from millennials and baby boomers for supplements that address mental fatigue." These capsules address clean label issues in supplementation: They are colored using food (with no E-numbers) or other natural colorants. They are vegetarian, non-GMO, "free from" and they have a gelatin-like dissolution profile.

The company is also addressing the growing demand for functional foods, with a line of gummies that delivery 10mg of Carnipure per piece. Lonza's Carnipure is a high-quality grade of L-Carnitine, with over 30 clinical studies to support its versatility and broad usage, according to the company. NutritionInsight has previously hosted a webinar on the new market opportunities for L-Carnitine. A key highlight from this was the "unquestionable"room for market growth of L-Carnitine, including infant food applications and energy drinks.

By Laxmi Haigh

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Mangos more effective in promoting gut health than fibre powder: study

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Nutrition Insight

Eating mangos is more effective in improving gut health than eating a comparable amount of dietary psyllium fibre supplement, suggests a new Texas A & M University pilot study, published in the journal Molecular Nutrition and Food Research.

The researchers found that mango, which contains a combination of polyphenols and fibre, was effective in reducing intestinal inflammation and relieving constipation; a chronic digestive condition that affects an estimated 20 percent of Americans.

"Our findings suggest that mango offers an advantage over fibre supplements because of the bioactive polyphenols contained in mangos that helped reduce markers of inflammation and change the make-up of the microbiome, which includes trillions of bacteria and other microbes living in our

digestive tract," says corresponding author Susanne U. Mertens-Talcott, an Associate Professor in the Department of Nutrition and Food Science at Texas A & M University. "Fibre supplements and laxatives may aid in the treatment of constipation, but they may not fully address all symptoms, such as intestinal inflammation."

For the four-week study, supported in part by the US National Mango Board, 36 adult men and women with chronic constipation were randomly divided into two groups: the mango group ate about 300 grams of mango a day (equivalent to about 2 cups or 1 mango), while the fibre group consumed the equivalent amount of fibre powder into their daily diet (1 teaspoon or 5 grams of dietary psyllium fibre supplement).

Throughout the study, the participants' food intake was assessed by a food questionnaire to ensure that their eating habits did not change. The food intake analysis revealed that the mango and fibre groups consumed equivalent amounts of calories, carbohydrates, fibre, protein and fat.

Measures of constipation severity were taken at the beginning and end of four weeks and both the mango and fibre groups improved over the course of the study. However, mangos were found to be more effective in reducing the symptoms of constipation in the participants than fibre alone. Mango supplementation significantly improved constipation status (stool frequency, consistency and shape) and increased short-chain fatty acids levels, which indicate improvement of intestinal microbial composition. Mango consumption also helped to reduce certain biomarkers of inflammation.

The researchers conclude that more research is needed to determine the mechanism of action involved in the mango protective effect in constipation and which role mango polyphenols may play in supporting the beneficial effects of fibre.

Older adults turn to food to protect heart, muscles

IFT Weekly June 13, 2018

More than two-thirds of older adults are managing more than one chronic disease. Despite this rising trend, adults today are tuning into their health and turning to nutrition to do so.

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A new study, conducted by the International Food Information Council (IFIC) and supported by Abbott, found that heart and muscle health were the top two health topics that adults aged 50+ are paying attention to—at 80% and 75%, respectively. Brain health and having enough energy were equally important health topics for adults at 74%.

The survey asked more than 1,000 adults aged 50+ how they make decisions on their eating habits, if they understand their dietary needs, and what is motivating them to make positive changes. While people in general tend to think of food in relation to weight management or weight loss, the survey reveals that adult eating habits and health priorities may change with age.

The survey results showed that the vast majority of adults are making at least some effort to eat the right amount of certain nutrients and food groups. Roughly 6 in 10 adults said they had better diet and lifestyle behaviours compared to their habits 20 years ago. In addition, 86% are making an effort to replace less-healthy foods and beverages with more nutrient-dense options, while 87% are trying to eat the right amount and variety of protein.

The data reveal a lack of understanding about what foods can help achieve desired health outcomes. Nearly one-third (32%) couldn't name a specific food or nutrient that they would avoid to help achieve their prioritized health outcome.

Similarly, 26% of respondents can't name a food or nutrient they would seek out to help with their most important health outcome. Vegetables top the list of specific foods or components to seek out for all health topics (28%), with protein (18%) and fruit (17%) coming in second and third. Whole grains (5%) and dairy (3%) were less likely to be named as foods that adults seek out.

The survey also examined what factors make it easier to eat a healthy diet and what stands in the way. Knowledge (41%), accessibility (37%), and physical ability (32%) are the top three facilitators that make it easier to have a healthy diet. Conversely, cost (44%) and time (23%) were the top barriers cited by adults aged 50+ that made it harder to eat healthier.

Green tea compound may protect heart health

Medical News Today 2 June 2018 By Tim Newman

According to a new study, a molecule found in green tea might help to protect against atherosclerosis, which is a common cause of heart attacks and stroke.

Atherosclerosis is a build-up of plaque within the arteries. Starting as fatty streaks on the walls of blood vessels, they slowly grow in size to become hardened plaques; this makes the arteries narrower, reducing blood flow. As the vessels become clogged, certain regions of the body receive less of the oxygen-rich blood that keeps them healthy. As atherosclerosis slowly develops, there are few symptoms. But, over the years, problems can begin to surface.

Depending on the site of the affected arteries, atherosclerosis could lead to a plethora of problems, such as coronary artery disease, which is a reduction of blood flow to the heart's muscles, and stroke, which is characterized by reduced blood flow in part of the brain. Some risk factors for atherosclerosis are well known; they include being overweight, diabetes, and high blood pressure or cholesterol levels. Because some of these factors are increasing in prevalence, there is a push to find innovative ways to tackle atherosclerosis and stop it in its tracks.

Enter green tea

The list of purported health benefits of green tea is virtually unending. From cancer-fighting powers to weight loss wonders, green tea has been deemed the elixir of life. However, the research doesn't back up many of these claims. When speaking with the British National Health Service (NHS) about the health benefits of green tea, Alison Hornby — of the British Dietetic Association in Birmingham, in the United Kingdom — puts it succinctly, saying, "[T]he evidence for the majority of these conditions is weak or lacking." However, because green tea contains so many compounds, scientists are still dissecting the drink's components to tease out any potentially bioactive molecules.

One such chemical is epigallocatechin-3-gallate (EGCG). It is found in green, black, and white tea, but it is most abundant in the dried leaves of green tea. Scientists have demonstrated that this compound binds to apolipoprotein A-1 (apoA-1), a protein that behaves similarly to the amyloid plaques found in the brains of people with Alzheimer's disease. Due to this, studies have explored the potential use of EGCG against Alzheimer's.

More recently, a team of researchers from Lancaster University and the University of Leeds, both in the U.K., wondered whether EGCG might also be able to help against atherosclerosis. In atherosclerosis, apoA-1 sticks to plaques, making them larger and restricting blood flow further. If it could be dissolved, it might ease the condition.

As hoped, they found that EGCG breaks down apoA-1 when in the presence of heparin, a naturally occurring anticoagulant. The combination of molecules converted apoA-1 into smaller and more soluble molecules that are less likely to restrict blood flow. These results were published recently in the Journal of Biological Chemistry.

More work needed

It is important to note that, to get adequate levels of EGCG into the bloodstream, one would have to drink an enormous and probably dangerous amount of green tea. The researchers are keen to study EGCG further; they hope to find a way to increase its levels in circulation. Prof. Jeremy Pearson, the associate medical director at the British Heart Foundation, explains, "Our bodies are very good at breaking down EGCG, so swapping your cuppa for green tea is unlikely to make a big difference with respect to your heart health."

"But," he adds, "by engineering the molecule slightly, we might be able to make new medicines to treat heart attack and stroke." "The findings of this round of studies are very encouraging. We now need to apply the best scientific techniques to find how we can take the molecular EGCG element from green tea, and turn it into a functioning tool to combat life-limiting health issues." Co-author Prof. Sheena Radford. These are early days in green tea's battle against atherosclerosis, but the researchers are excited about the future possibilities of EGCG.

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FOOD SCIENCE & INDUSTRY NEWS

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Clear role for industry in educating mothers on supplement benefits, strategist says

07 Jun 2018 Nutrition Insight

Despite high awareness of the importance of nutrition for new and expectant mothers and infants, there is very low understanding of the actual benefits of dietary supplements, pointing to a clear role for industry to offer guidance and support.

This is according to Isobel Smyth, Managing Partner at The Leading Edge, who spoke during the Passionate About Kids' Nutrition event hosted by DSM in Amsterdam yesterday. In 2017, The Leading Edge conducted a study for the Early Life Nutrition team at DSM, looking at maternal and infant health and nutrition across the globe. Spanning five continents and 12 different countries, the study included nearly 12,000 women who were either trying to conceive, pregnant, nursing or weaning.

"[We] talked to them about their health, but we also about their infant's health, at pre-weaning stage, weaning and slightly older children, Smyth tells NutritionInsight. "The one thing that really stands out in the study's results is that when you talk about dietary supplements, women are overwhelmed by the amount of information and their understanding about which sources they can trust and where they should go to, seems to be [lacking]."

Speaking about women trying to conceive, Smyth notes that the pressure of everyday healthy lifestyles can be overwhelming for some as they become more aware of the factors that may negatively impact their health. According to the study's findings, women in this stage are significantly more likely to worry about managing their stress levels. As a result, 43 percent of women trying to conceive are looking for general nutritional support for mother and baby from dietary supplements.

Further findings showed that pregnant women are the most active in taking supplements, and specifically those for baby, with 62 percent of respondents in this segment taking folic acid, and 49 percent claiming the usage of a prenatal specific dietary supplement. However, pregnant women are only marginally more aware of the actual benefits of supplementing their diet, despite the high use.

Speaking about the use of folic acid, Smyth notes that many women in this stage focus on promoting general good nutrition and support for brain development, with 92 percent of pregnant women aware of the micronutrient, but only 15 percent aware of its benefits for reducing the risk for neural defects. For young infants, The Leading Edge's research shows that developing a strong immune system is the number one priority for mums, with 40 percent of those interviewed mentioning this as a concern. Other key areas of concern are healthy brain development in APAC and China, as well as maintaining a healthy

"We saw a desire across the world for quality reassurances played back to us through many attributes – from official approval and recommendation through to best quality ingredients," Smyth notes.

"'Approved by…' claims are especially important in Germany (39 percent) and Spain (36 percent), compared to 26 percent global – but this is of least importance in China, where the focus is on trust, in terms of country of manufacture (47 percent) and trusted brand (38 percent)."

Across the board, the study points to opportunities for manufacturers to help support and reassure women at this time, by providing clear information on the benefits of supplements and dietary tools.

"We have done other research in this area which also suggests that there is so much conflicting advice that comes through to women and at different stages they have different levels of interaction with healthcare professionals to give them that solid guidance. They tend not to fully understand what the benefits of certain supplements may be," Smyth says.

"Manufacturers have a clear role [in improving understanding and communication around supplements], by ensuring that they really understand women and their anxieties and what they are worried about in different stages.

Being able to give them support and advice and being a beacon in the sea of information that is out there is really something they could do better at."

"But also by partnering with other parties, such as governmental bodies, where women might go to for advice, will give companies credibility in this space as well and create a sense of trust for women and mothers. This also puts women and children back at the heart of what manufacturers are doing," she concludes.

As the average age at which women are becoming a mother for the first time increases, health aspects such as energy levels and stress (both physical and mental) are likely to become more prominent.

This could point to a larger role for targeted supplements and dietary guidance, leaving the industry with the task of creating products that resonate with women during this exciting stage in their lives.
By Lucy Gunn

Packaging for nutraceuticals: Targeting safety and stability of active ingredients

01 Jun 2018 Nutrition Insight

Bormioli Pharma is responding to the expanding nutraceutical market with an innovative packaging delivery system, AccuRec, that aims to minimize human error, ensure correct dosage levels, keep active ingredients stable and allow consumers to reconstitute oral supplements in a few steps.

Nutraceutical ingredients typically require delivery systems that keep their active ingredients unchanged and safe and therefore bring a host of unique R&D challenges for packaging formulators. "Innovative delivery systems are becoming more desirable in the nutraceutical sector, with companies wanting to distinguish themselves from the rest while ensuring maximum nutritional benefits are achieved," says Elena Piazza, Business Development and Marketing Manager, Bormioli Pharma.

Bormioli Pharma's AccuRec is a "high-tech" packaging solution that offers precise reconstitution for oral products, including food supplements.

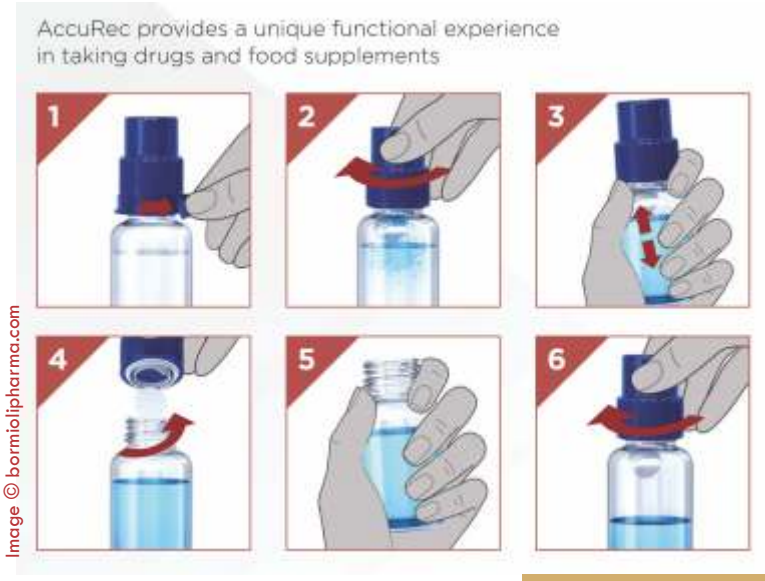
The dual chamber system is said to guarantee safety while keeping the ingredient properties unchanged.

According to Bormioli Pharma, the technology hits some of the key requirements for nutraceutical companies, including:
• Guaranteed safety of use, with the ingredient properties remaining unchanged and stable.

• System allows consumers to reconstitute oral food supplements in a few simple steps.

• It is reusable, giving consumers the flexibility to take the reconstituted product at any time.

• Oral food supplements using AccuRec retain their freshness as the ingredients are not pre-mixed but instead are mixed together immediately before consumption.



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The concept of reconstitution is crucial to nutraceuticals. "The basic idea behind reconstitution is keeping active ingredients – typically lyophilized powder and solvent (often water, but occasionally another liquid) – separate until the moment of consumption. With traditional reconstitution, active ingredients are provided in a container, and the consumer adds the solvent themselves," Anna Malori, Business Development Manager, Bormioli Pharma, tells NutritionInsight. "Shortly before consumption, the active ingredients and solvent are mixed together to reconstitute the oral liquid product. This way, the lyophilized product maintains its stability and effectiveness over time, extending its shelf-life for prolonged storage."

Key challenges in designing delivery systems for nutraceuticals

Regarding R&D processes to achieve safe and stable reconstitution, formulating packaging solutions is not without complications, Malori explains:"Designing an effective system for reconstituting oral products means taking several factors into account. To ensure the protection of product formulation, we worked hard on the packaging system configuration and material choice."

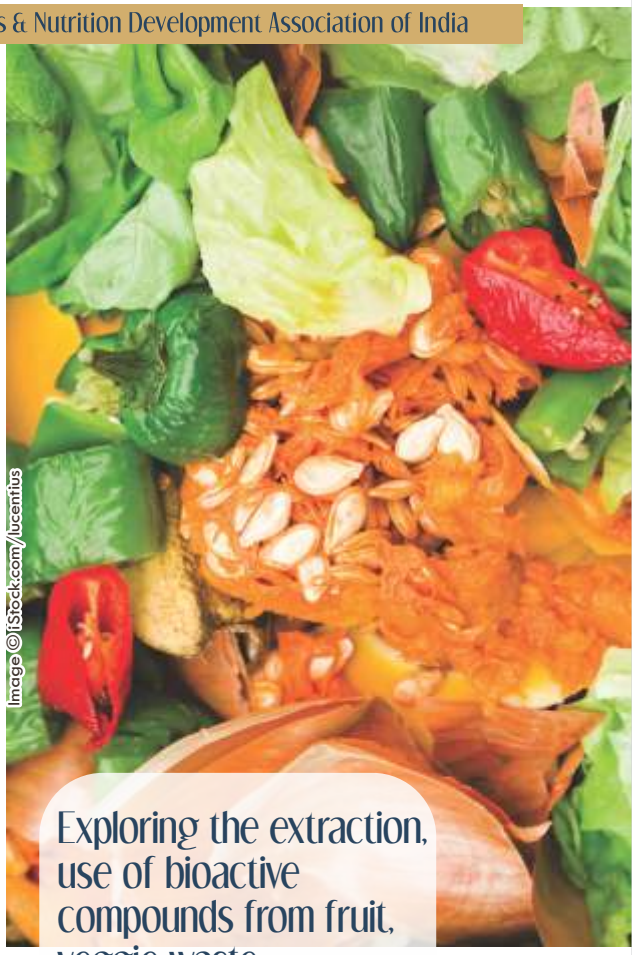
"For optimal ease of use, we studied how to minimize the number of steps needed to complete the reconstitution process. To be sure that the consumer correctly reconstitutes the product, we included some specific safety features in our packaging, such as a tamper-evident ring." Furthermore, another fundamental challenge included formulating a product that was not merely a transport packaging but a delivery system. "A transport packaging merely stores the product, whereas a delivery system has an active role in making the correct product administration possible. Alongside this, while developing packaging for nutraceuticals, you always need to prioritize maintaining the freshness of active ingredients as they are often plant-based. The need for easy-to-use packaging is, therefore, an increasingly important feature in this market."

Previously, nutraceutical products were typically packaged in pouches, and in order to be reconstituted, consumers would have to open them up and mix them with water using a glass or bottle. However, "this operation could lead to errors in dosing and it is not very handy when you are not at home." The benefit that AccuRec offers is "more precise dosing and it is more user-friendly for the consumer. Everything the consumer needs to reconstitute the product is provided inside the packaging. Furthermore, as AccuRec provides the solvent inside the packaging, it allows for nutraceutical companies to have greater flexibility in product formulation, as they can decide to use a solvent different from water," Malori adds.

The nutraceutical market

The most common distribution channel in Europe for dietary supplements is usually through pharmacy and the company states that AccuRec is perfect for nutraceutical firms that want to sell through this channel. Bormioli Pharma originally designed AccuRec as a pharmaceutical packaging solution, resulting in a delivery system that not only promotes the efficacy of nutrients but is safer and more reliable than mass-market products. The nutraceutical market is experiencing huge growth and with this growth come changing demands, for example, within packaging solutions that offer safety and consumer ease.

By Laxmi Haigh



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Exploring the extraction, use of bioactive compounds from fruit, veggie waste

IFT Weekly June 6, 2018

The United Nations' Food and Agriculture Organization (FAO) has estimated that losses and waste in fruits and vegetables are the highest among all types of foods, and may reach up to 60%.

The waste is composed mainly of seed, skin, rind, and pomace, containing good sources of potentially valuable bioactive compounds, such as carotenoids, polyphenols, dietary fibers, vitamins, enzymes, and oils, among others.

An article published in Comprehensive Reviews in Food Science and Food Safety explores the types and nature of the waste that originates from fruits and vegetables, the bioactive components in the waste, their extraction techniques, and the potential utilization of the obtained bioactive compounds.

In most fruits and vegetables, only the flesh or pulp is consumed, but studies have revealed that significant amounts of phytochemicals and essential nutrients are present in the seeds, peels, and other components of fruits and vegetables not commonly eaten. For example, the peels of lemons, grapes, and oranges, and the seeds of avocados, jackfruits, longans, and mangoes contain more than 15% higher phenolic concentrations than that found in the fruit pulp.

This review article demonstrates the huge amount of losses and waste, not only the significant amount of nonedible materials, but also the huge amount lost and wasted due to lack of adequate handling operations such as inadequate field management, harvest, classification, transportation, storage (temperature and relative humidity) and marketing, and industry infrastructure, as well as waste generated due to discarding significant amounts for diverse reasons. These significant amounts of lost and wasted fruits and vegetables, and their components, represent not only losses of edible food materials but also the wasting of by–products including bioactive compounds of great potential benefits for various industries and uses.

The authors describe extraction techniques—both conventional and nonconventional—and explain that more novel techniques are needed to achieve high retrieval rates of bioactive compounds from waste materials. These phytochemicals can be utilized in different industries, including the food industry, for the development of functional or enriched foods, the health industry for medicines and pharmaceuticals, and the textile industry, among others. The use of waste to produce various crucial bioactive components is an important step toward sustainable development.

Researchers genetically modify rice to have higher iron, zinc

IFT Weekly June 13, 2018

A team of researchers led by Navreet Bhullar from the Institute of Molecular Plant Biology at ETH Zurich has genetically modified one of the most commonly grown varieties of rice.

Image © iStock.com/Matthew de Lange

The results of their work are published in Plant Technology Journal. The genetically modified variety of rice is better at mobilizing its cellular stores of zinc and iron and depositing in the white part of the rice grain (known as endosperm).

This means that the micronutrients are transported and concentrate there. To achieve this enrichment, Bhullar and her team incorporated a genetic construct expressing a combination of three additional genes into the rice plants.

One of these genes facilitates mobilization of iron stored in the plant vacuoles, another encodes for an iron-storing protein Ferritin, and the third promotes efficient iron and zinc uptake by the roots. By doing this, the researchers were able to develop rice lines with iron increases equaling more than 90% of the recommended iron content and up to 170% of the recommended content for zinc in rice grains.

These plants have been tested in the lab and greenhouse conditions, and will be tested in field experiments in the near future. "First we have to confirm that the plants retain similar levels of zinc and iron in the grains under the field conditions. Once we've done that, we should assess the bioavailability of these increased nutrients for humans. It can take years before these modified varieties of rice may reach to the public," said Bhullar.

2018 World Food Prize goes to two childhood nutrition champions

IFT Weekly June 27, 2018

Lawrence Haddad and David Nabarro were announced as the 2018 World Food Prize Laureates during a ceremony on June 25 at the U.S. Dept. of Agriculture (USDA).

The Prize rewards their individual but complementary global leadership in elevating maternal and child undernutrition within the food security and development dialogue

Image © worldfoodpriize.org

at national and international levels with the result of reducing the world's number of stunted children by 10 million between 2012 and 2017.

"Like Dr. Norman Borlaug before them, Drs. Haddad and Nabarro have dedicated their careers to reducing hunger and malnutrition," said Bill Gates, co-chair of the Bill & Melinda Gates Foundation. "Their work has deepened our understanding of nutrition's impact not only on individual health, but on human capital and economic growth—compelling leaders in countries across the world to invest in evidence-based solutions."

The World Food Prize is the most prominent global award for individuals whose breakthrough achievements alleviate hunger and promote global food security. This year's $250,000 prize will be divided equally between the two recipients.

"For their extraordinary intellectual and policy leadership in bringing maternal and child nutrition to the forefront of the global food security agenda and thereby significantly reducing childhood stunting, it is truly most fitting that Dr. Lawrence Haddad and Dr. David Nabarro join the list of illustrious scientists, policy officials, and hunger fighters who have been named World Food Prize Laureates over the past 32 years," said World Food Prize President Amb. Kenneth M. Quinn.

A pioneer in food policy research, Haddad brought the issue of nutrition to the forefront by using both economic and medical research to convince development leaders to make child nutrition an urgent priority in the global food security agenda while serving as head of the Institute of Development Studies (IDS) in the United Kingdom from 2004 to 2014.

From 2014 to 2016, Haddad prompted further investment in nutrition by co-chairing the "Global Nutrition Report," an annual review of the state of the world's progress on nutrition that encouraged greater transparency and accountability among more than 100 stakeholders who had pledged $23 billion to the fight against malnutrition. Haddad now serves as executive director of the Global Alliance for Improved Nutrition (GAIN), where he continues to lead private and public sector partners in improving nutrition outcomes.

As head of the United Nation's High Level Task Force on Global Food Security from 2008 to 2014 and coordinator of the UN's Scaling Up Nutrition (SUN) Movement from 2010 to 2014, Nabarro united 54 countries and one Indian state under the SUN Movement to implement evidence-based policies and fight child malnutrition in South Asia and Africa. Many participating countries reported a significant decline in the number of stunted children after adopting SUN guidelines. Nabarro continues to oversee SUN through his service on its advisory Lead Group.

Haddad and Nabarro will receive the World Food Prize at a ceremony in the Iowa State Capitol building in Des Moines on Oct. 18, 2018.

Australia still leading the way with low-GI products but hopes are high that Asia can follow suit

By Lester Wan 19-Jun-2018
NutraIngredients Asia

Experts from Australia are hopeful that Asian manufacturers and consumers can learn from their experiences in leading the fight against diabetes by formulating low-GI foods.

Kathy Usic, CEO, Glycemic Index Foundation, told participants of the inaugural Healthy Ageing APAC Summit organised by FoodNavigator-Asia and NutraIngredients Asia, that Australia's GI Symbol Programme could be further adopted internationally, particularly across the Asian region. Currently, aside from Australia, the countries that have registered the GI symbol and are using it include New Zealand, Canada, the US, the EU, Singapore, Malaysia, Japan and India. It is pending in China and Taiwan.

GI is a measure of the effect of carbohydrates on blood glucose levels over a two-hour period, expressed on a scale of 1 to 100. Carbohydrates measuring 55 or less are considered low GI and are digested and released slowly. They raise blood glucose levels and insulin levels more gradually and provide sustained energy. Carbohydrates measuring 70 and above are considered high GI and break down quickly during digestion, and cause blood glucose levels to rise higher, longer.

Development of GI in Australia
In the 1980s, Professor Jennie Brand-Miller of the University of Sydney started testing foods for clinical trials. "Fortunately, Australia adopted GI as a quality carbohydrate indicator rather than going the low-carb route," said Usic. Using the catchphrase "Swap it, don't stop it", she said they took

Image © iStock.com/designer491

a complex scientific concept about GI and made it very simple for consumers. Usic said it was important that they partnered with health promotion bodies, particularly Diabetes Australia, "because they recognised the importance and utility of GI being used for people in managing diabetes".

In 2001, the GI Foundation, a not-for-profit health promotion charity, was established by the University of Sydney and Diabetes Australia New South Wales (NSW) - Australian Capital Territories (ACT). Its mission is to assist food suppliers to provide, and consumers to select, healthy and nutritious food using the GI system. Soon after, in 2002, the Low-GI Symbol — a world-first front-of-pack labelling programme that helps consumers identify low-GI foods when shopping — was launched.

Usic explained that the Low-GI Symbol Programme comprises "three anchors" : Raising awareness and understanding of GI; helping consumers choose low-GI products, including using the symbol to identify low-GI products and encouraging the development of new low-GI products by food manufacturers; and investing in research, whether in terms of the local market or global collaborative research. In 2007, the GI Foundation worked closely with industry regulator Food Standards Australia New Zealand (FSANZ) to set a standard in the Food Standards Code. Furthermore, from around 2011 to 2013, testing for GI as well as labelling for low GI has been gazetted in the Food Standards Code.

Usic said they undertook a sub-analysis of the Australian Health Survey, a dietary survey of the population. When they did a comparison of the 1995 data to that of 2012, they found that the average dietary GI decreased by 5% from 56.5 to 53.9 in that period. The decrease was primarily due to a reduction in added sugars (primarily sucrose in Australia), honey and syrups, sweetened beverages, juices and potatoes, and an increase in wholegrain cereals, cereal-based dishes, beans, peas and pulses. Awareness of GI in 2001 was less than 28% but since 2011 it has been above 75%.

Overseas markets

Australian-developed food in collaboration with the GI Foundation and the Low-GI Symbol Programme has increasingly been "translating to international markets", said Usic. One example is Coles' low-GI Carisma Potatoes, a special variety of potatoes with a GI of 55, compared to an average potato with a GI of 77. It is 100% natural and has 20% less carbohydrate. Sales have grown 20% year-on-year since its launch November 2010 launch, in a declining Australian potato market. "That, we felt, really proved the 'proof of the pudding' was in low-GI, particularly the low-GI symbol," said Usic. She said, in relation to the popularity of the product in overseas markets, Diabetes Canada approached the GI Foundation to look into commercialising and launching the Low-GI Symbol in Canada.

Another successful Australian low-GI food product is SunRiceDoongara Low-GI Rice, now available in Hong Kong and Singapore in 2kg white rice packs, under Kangaroo Brand. It is being targeted at other Asian countries. "If you are a rice-loving country as we are, we need to make an impact on those products that people may be eating in their diets," she said. This could, for instance, aid Indonesia, which has been cutting down on rice due to concerns about carbohydrates and health. Usic said, currently, the GI Foundation is continuing to work with international partners to further the cause. "We need a global food and nutrition strategy to address the diabetes pandemic," said Usic. "Decreasing the average dietary GI and glycemic load can be part of that strategy. It is possible to identify and promote healthy low-GI foods to the general population."

Could computationally designed sweet proteins revolutionise sugar replacement sector

By TingminKoe
19-Jun-2018 Food Navigator Asia

Image © iStock.com/petrenkod

Israeli firm Amai Proteins has developed computerised 'designer' sweet proteins as it seeks to tap into the sugar replacement market.

In an interview with FoodNavigator-Asia, Dr Ilan Samish, founder and CEO, said that sweet proteins exist naturally in fruits and are hundreds to a thousand times sweeter than sugar, fulfilling both health and taste requirements.

Currently, Thaumatin (E957) is the only sweet protein used globally. It is 2,000 to 3,000 times sweeter than sugar by weight. The firm is currently creating sweet proteins which can be used to sweeten dairy products, beverages, diabetic and sports nutrition, functional food, vitamin supplements and high-end confectionery.

Located in the south of Tel Aviv, Amai Proteins biotechnology laboratory was opened in July last year. The firm itself was established in December 2016.The firm uses Agile Integrative Computational Protein Design (AI-CPD) to design

proteins that are 70% to 100% identical to sweet proteins found in nature.The proteins are then produced via fermentation using regulatory-approved microorganisms. "CPD has proven to enable a very large increase in stability and yield when expressing the protein in microorganisms." Dr Samish said that there are half a million different sweet protein sequences in their database. The firm is planning to produce and sell their first novel sweet protein in the next two years.


Image © iStock.com/petrenkod

To do so, they are checking on existing sequences, recombining different sequences to find out which one has the best expression, highest yield, taste profile and stability."We are checking many different sequences, and will decide on the best protein for each application. Such as one with the cheapest price, best taste, low value, high fat, good shelf life, high stability We also need to make sure we have good scalability." To date, Amai Proteins has produced two sweet proteins based on existing protein sequences. Dr Samish revealed that the firm has managed to produce 10 sweet proteins made from novel protein sequences, which is still on small-scale production currently.

Commercial aspects

Amai Proteins has been partnering with big firms such as Danone, PepsiCo and SodaStream in experimenting on the taste of different sugar and sweet protein combinations for a range of products.This includes lemon soda (with SodaStream), strawberry drink (with Danone), yoghurt, whipped cream and whey proteins.

In the case of yogurt, they sweetened it with 50% artificial sugar and 50% sweet proteins, and found out that "most could not differentiate between this and yoghurt sweetened with artificial sugar, which shows that such sugar-sweet protein combination is a good t for yoghurt."

Sometimes, the firm will also mix sweet protein with other sugar alternatives (such as stevia) as part of its taste analysis. With SodaStream, it produced two types of lemon-soda (Sprite 7-up), one with 50% sweet proteins and 50% artificial sugar, the other one with 50% sweet proteins and 50% stevia, another type of sugar alternative.

Dr Samish shared, in this case, consumers were able to differentiate between the two versions, preferring the one sweetened with sugar and sweet protein.Amai Proteins will work with clients to sort out the combinations that produce the best taste, and the ultimate decision lies with the clients."We are talking with food and beverage companies, big companies who are interested in sugar reduction, and some are waiting for us to have more products."

Dr Samish said that making a novel sweet protein product is expected to take two years. After which, the product could be put on sale in countries that allow self-armed regulatory clearance.Since the firm is expecting to go global, it will also go through full regulatory clearance in countries that do not approve self-armed regulatory clearance. The process is expected to take two years."We will go into whichever market that allows us to go in at the earliest date and produce which types of application fits our product best."

Challenges

Usage of sweet proteins is hampered by high price, lack of supply, imperfect taste-profile and lack of sufficient shelf-life and stability in some applications.Dr Samish said, currently, sweet proteins can only withstand temperatures of up to 85 degrees Celsius and, as such, cannot be used in bakery, product caramelising and other high heat applications. "From my experience, I believe we can produce sweet proteins that can withstand temperature of degrees and more, but not over. Our number one aim is beverage, dairy, functional and premium markets which do not involve high heat." As for improving shelf-life, Dr Samish added that AI CPD technology has the ability to extending product shelf life and improve protein stability.

From academia to business frontier Dr Samish shared that he does not have a bachelor degree, but spent three years studying in seven faculties, including the sciences and business administration at University of Tel Aviv. The programme was aimed to equip students with a wide-ranging knowledge for venturing into new scientific fields. After which, he completed his masters and PhD at the Weizmann Institute and post-doctorate at the University of Pennsylvania, under the tutelage of Bill DeGrado, an expert in protein design.

Samish decided to move to the industry frontier when he observed that there was a lack of good sugar-alternative products, despite global interest in sugar reduction. "The sweetener market is worth hundred billions, but less than of the sweetening market uses sugar substitute," he said. In 2016, the high-intensity sweetener (sugar alternatives) market was worth 3 billion, a small fraction of the sweetener market, which reached 90 billion last year. The bulk of this came from beverages (47%), followed by snacks and sweets (31%), according to a report by Mordor Intelligence.


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FoodProfiler app shines light onto European's eating habits

By Niamh Michail 05-Jun-2018 Food Navigator

Which vegetable do Brits eat the most? When do Belgian girls eat yoghurt? And do Dutch men prefer dessert or fruit? An app that gathers insights into European's eating habits could help fine-tune new product development.

Developed by Wageningen Economic Research scientists, the aim of the app, called FoodProfiler, is to develop a reliable method to collect data on consumer dietary patterns. This will help them find out more about underlying motives of consumer choices, consumer segmentation, and differences across cultures.

The team of researchers, led by Marleen Onwezen, has collected data on users age, sex, location and health objectives, and have already gleaned a few insights for the Belgian, German and U markets. "Based on descriptive analyses, we see that in the Netherlands men eat dessert more often than women, and Dutch women eat more fruit per day than men," they say. "Young people and the elderly also seem to eat small quantities of vegetables compared with the other age groups. Between the ages of 24 and 79, we are seeing a trend of increasing vegetable consumption; the older the person, the more vegetables they eat."

National preferences for certain foods is influenced by a range of factors, including cultural habits, food availability and traditions, Onwezentold FoodNavigator, and the findings would be useful for the food industry. "Understanding consumer consumption and detailed insights into when, how and with what other foods products are consumed is very useful in developing strategies for product development and positioning." The app tracks detailed information on fresh products as well as processed products, although the latter is in a more aggregated manner", she said.

"For example not all kinds of yoghurts are included we just aggregated skinny low-fat and whole full-fat yoghurt. In this way, we get insights in consumption patterns, and it remains easy for consumers to ll out their dietary pattern." The app is free and available to download by the general public from online appstores. However, the project is still at the research stage and the app will be developed further as part of the Dutch project Market Intelligence Voedingstuinbouw 2.0, which will run until 2020.

Green caffeine: Can a broccoli latte boost veggie intake

By Lester Wan 07-Jun-2018 Food Navigator Asia

Consumers struggling to get their daily intake of veggies have a new option — a broccoli latte.

The nutrient-rich powder developed by Hort Innovation and the Commonwealth Scientific and Industrial Research Organisation (CSIRO), Australia's national science agency, is made from imperfect-looking broccoli that would have otherwise been wasted. The product packs a healthy punch with approximately one serving of broccoli in every two tablespoons of the powder.


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To improve diet

John Lloyd, chief executive of Hort Innovation, said the powder could be used for smoothies, soups, baking, and even as a way to hide broccoli in meals from fussy kids."With a rising trend in healthy eating across the board, Australian growers are always looking at ways to diversify their products and cut waste while meeting consumer demand," said Lloyd.

He added that despite the increasing popularity of 'superfoods' and health and wellness, Australian diets are still poor."Research shows the average Australian is still not eating the recommended daily intake of vegetables a day, and options such as broccoli powder will help address this," he said.

Highly-nutritious ingredient

The 100% broccoli powder is made from whole broccoli, and is produced using a combination of selected pre-treatment and drying processes to retain the natural colour, flavour and nutrient composition of fresh broccoli.

Dr Mary Ann Augustin, chief research scientist, CSIRO, said broccoli is high in protein, fibre and health promoting bioactive phytochemicals, making it ideal to be developed into powdered form."The powders are an option for farmers who want to produce value-added vegetable ingredients for the lucrative functional food markets," said Dr Augustin. She said the broccoli powder had already been experimented in the production of extruded snacks with high vegetable content.

"Prototype extruded snacks with 20% to 100% vegetable content were displayed during National Science Week at the Queen Victoria Market last year and were well-received by parents and even by kids," she said. The broccoli powder and associated extruded snacks are being developed as part of a larger research and development project that aims to reduce vegetable waste by creating healthy food products from ugly produce.

Next green steps
The next steps, said Dr Augustin, are to take the powder into further product development and consumer sensory evaluation trials.The CSIRO team and ort innovation are discussing potential commercial applications with produce growers and grower groups across Australia who are interested in getting the powder on the market," she said. John Said, managing director of Fresh Select, a leading broccoli producer, is excited by the commercial opportunities available through the development of the value-added broccoli ingredients and products. "I see this project as the emerging new food trend," he said. "Australians don't eat enough vegetables and farmers across Australia will have access to an alternative market whilst improving farm yields and sustainability."

Hemp milk the latest product innovation finding favour with Aussie consumers

By Lester Wan 19-Jun-2018 Food Navigator Asia

Hemp milk is the latest product to be launched in Australia after the ingredient was permitted for use by regulators at the end of last year. The product was first available in Western Australia and "will be heading to the East Coast soon" , Refresh Juice + Cleanse founder Liam O'Neil told FoodNavigator-Asia.

Following a trend of nut milks such as almond milk, his new non-nut, non-dairy milk product's key ingredient is hemp seeds. O'Neil said Refresh's hemp milk contains "just dates, sea salt, hemp and water". The hemp hearts, date paste, sea salt and filtered water are blended together and strained with a fine-mesh bag to get hemp milk."This milk is for everyday use as a nut- and dairy-free milk alternative," said O'Neil.

He said the business has been growing rapidly and so has the response to the novel hemp milk."The people of Perth have been very supportive and open to such a new and interesting product," he said. According to him, a pop-up store will be planned in the East of the country within a few weeks' time. Following that, he said his hemp milk will be available in supermarkets. He declined to say more about the plan. "We have more flavoured products on their way," he did reveal.

The company currently obtains its hemp seeds from the US, simply because the industry is very new in Australia. According to the local 9 News, in Western Australia, only 21 licensees are cultivating hemp crop this year. O'Neil said he believes the industry in Australia would grow fast, and "then we can support our local farmers". He said, being a cold-pressed juice business, the company makes various other "healthy and tasty" juices made from farm-direct produce and ingredients native to Australia. Refresh was founded in June 2015 and currently has eight employees.


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Recent ruling
Just in November last year, the Australia and New Zealand Ministerial Forum on Food Regulation, backed by Food Standards Australia New Zealand (FSANZ), made changes to the Food Standards Code to permit the sale of hemp seed as a food .Since then, a wave of food products containing hemp has been growing across Australia. These have so far included hemp chocolate, brownies, cereal, honey and even beer.

Je Clements, marketing manager of Hemp Foods Australia, had told us in December: "Australia can expect to see hemp cookies, cereals, beer, butter, breads, burgers, dips, spreads and milk." His words have since proven prophetic with many of these products already in the Australia and New Zealand markets in the last half a year. Hemp Foods currently has about an 80% market share of the industry, mainly selling hemp our, hulled hemp seeds, hemp protein powder and hemp oil through its online store.

Hemp nutrition and caution
O'Neil said that hemp is naturally high in protein, and Omega-3 and Omega-6."Hemp seed hearts are rich in oils, with a ratio of Omega-6 to Omega-3 polyunsaturated fats of around 3:1," concurred Carl Gibson, CEO of Complementary Medicines Australia (CMA). "Hemp seeds contain around 25% protein and is one of the original 'superfoods', up there with soybean and even better than quinoa. Most of the essential amino acids are present, plus valuable minerals and amounts of vitamin E. In a 250ml glass of hemp milk, there is roughly 48% of your daily calcium intake," added O'Neil.

Nonetheless, while the Dietitians Association of Australia (DAA) agreed that Omega-3 and Omega-6 have been shown to decrease bad LDL cholesterol levels and to decrease the risk of heart disease, it also advised caution about hemp food products. "There are a number of health-related claims put forth by marketers of this product that suggest that the consumption of hemp seeds can decrease food cravings, food intolerances, inflammation, cholesterol and blood pressure and improve digestion, cellular health, circulation, immunity, weight loss and energy levels. However, while hemp seeds have similar nutritional composition of other nuts and seeds, no clinical research has been conducted on humans that supports these claims," said Natasha Murray, spokesperson for the DAA.

Furthermore, she said that there is currently no evidence that hemp seeds are more beneficial or superior to other edible nuts and seeds, and there are a number of other foods that also contain good amounts of healthy fats and protein."One small, short-term human study showed an improvement in dry skin when 30ml of hemp oil was consumed on a daily basis. Larger, long-term studies are needed," she said.

CMA estimates that the international market for hemp foods is around $1b annually. Derived from the cannabis sativa plant, hemp permitted for food use has an especially low level of tetrahydrocannabinol (THC), which eliminates psychoactive effects known to be in the drug strain of cannabis. Industry regulator FSANZ made it clear that any association between hemp products and the drug strain must be avoided. Hemp product packaging cannot use an image or representation of the plant or leaf, and the word "cannabis" cannot be used.


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IAG seeks to patent dairy-free yogurt made from green banana flour

By Elaine Watson 05-Jun-2018 Food Navigator USA

International Agriculture Group (IAG) is seeking to patent a dairy-free yogurt made from high starch fruits such as green bananas or unripe breadfruit, promising "improved taste, texture and sensory characteristics compared to commercial non-dairy yogurts currently on the market."

In US patent application 15/699,842, led in September 2017 and published in March 2018, IAG (best-known for its resistant-starch packed 'NuBana' green banana ingredients) explains: "The present disclosure is directed towards retail, branded and foodservice yogurt as a prepared food for direct consumption, or as an ingredient in a food product, and to broaden the consumption of yogurt products to the growing lactose intolerant, healthy focused, consumer base."

One production method outlined involves dispersing pre-gelatinized green banana flour (i.e. milled unripe banana powder) in water, followed by an optional step of adding enzymes to convert the starch portion of the green banana to sugars, followed by a step of heating the mixture sufficiently to stop the enzyme activity, followed by a step of adding tricalcium phosphate and a yogurt culture to the mixture to lower the pH, followed by a cooling step.

Additional ingredients could then be added such as soy, almond, buckwheat, flax, oat, potato, amaranth, barley, wheat, rice, banana puree or banana our to increase the amount of resistant starch in the final product, said IAG, while further ingredients could then be added such as fats, sugars, fruits, flavours or proteins.

Israeli start-up aims to make splash with fermentation technology

By Hank Schultz 31-May-2018 Nutra Ingredients USA

A group of Israeli veterans of the dietary ingredient wars have come together to form a new company focused on cutting edge fermentation technologies.

Called NextFerm, the company brings together many of the former leading lights of Enzymotec, a lipid ingredients specialty firm. Included in the executive suite are Boaz Noy, former VP of bioactive ingredients, and ElzaphanHotam, VP of global marketing for the new firm who was once CEO of Enzymotec USA.

"I have the privilege of working with people I respect and know well," Hotam told NutraIngredients-USA. "We are all 10 or 15 years older, with more


Image © iStock.com/xijian

experience, so I think this could be the foundation of something that could be even greater than Enzymotec was."

Unique platform

Hotam said NextFerm would focus on developing new ingredients from fermentation. The company, which started up in 2015, is focusing on two different kinds of yeasts as its fermenting organisms. Hotam said the expertise comes in with how the organisms are manipulated to produce the desired bio-actives. This amounts to a carefully calibrated program of subjecting the organisms to stressful conditions and selecting the best performing individuals from successive generations.

"At the core we have the ability to select the in this case yeast from nature, and perform some environmental stressors that would allow the selection of the right offspring. The way we do this is unique to us," Hotam said. "We don't do genetic manipulations other than what would still qualify us as non GM," he said.

Experience and vision sets startup apart

Hotam said the company is still keeping much under wraps for proprietary reasons and hopes to have more of a story to tell in time for the Expo West Trade Show in the fall in Las Vegas.In the meantime, Hotam said the story of the company, which now has as many as 24 employees, tells investors that this is not just any startup. "The organizing idea is to create and develop novel or better-than ingredients, all coming from a unique process of fermentation. And we have all the science and regulatory compliance expertise necessary to achieve those goals," he said.
"We don't think the established fermentation players see their job to become innovators in the market. They see their role as one of meeting demand for established ingredients. This is something that sets us apart. We don't see ourselves as another generic player," Hotam said. "We come from a background of a team that has done real stuff," he said. "We aren't just telling a story to get some venture capitalists excited about whatever."

Japanese food firms strive to remove trans fats from products following USFDA and WHO recommend-ations

By TingminKoe
11-Jun-2018 Food Navigator Asia

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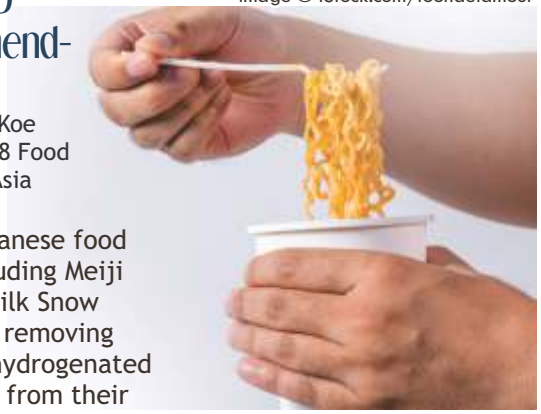


Major Japanese food firms including Meiji and Megmilk Snow Brand are removing partially hydrogenated oils (PHO) from their products in view of the US Food and Drug Administration's (FDA) directive which will prohibit manufacturers from adding them to food products after June 18.

PHOs contain trans-fats, which are thought to be more harmful than saturated fats. The two companies told FoodNavigator-Asia the products affected are mainly margarine and shortening for home use. Jun Furuta, general manager of public relations and investor relations department at Meiji, said that Meiji has stopped using PHO for 10 margarine products, while Megmilk Snow Brand has done so for 14 margarines and one shortening product.

To distinguish these products, Meiji has pasted logos such as "non-use of partially hydrogenated fats and oils" and "reduction of trans-fatty acids" on the products. On the other hand, Megmilk said that their flagship product "Neo Soft" spread will contain 0.08g of trans-fat in every 10g of the product after the reduction of trans-fats. It declined to comment on the percentage decrease. It added that it has succeeded in removing PHOs and maintaining the amount of saturated fat. For instance, the amount of saturated fat in "Neo Soft" is 2.4 g per 10g. Both firms said the move is a response to directives and recommendations from FDA and WHO.

Last month, the WHO called on governments to eliminate industrially produced trans-fatty acids from food supply by 2023. On the other hand, the US FDA announced in 201 that PHOs will be removed in the list of ingredients generally recognised as safe (GRAS) and said that manufacturers are not allowed to include non-petitioned used of PHOs in their products after June 18 this year. However, in order to allow for an orderly transition in the marketplace, the FDA is extending the compliance date for foods manufactured with non-petitioned uses of PHOs before June 18 to January 1, 2020.

Drop in margarine sales

Megmilk said that since FDA's announcement, the Japanese media has widely reported about the use of PHO and margarine is often portrayed as containing a high amount of trans-fats. As a result, the demand for margarine type products has dropped. Sales of butter and margarine declined in Japan by 4% in retail current value terms, to reach JPY 83.9bn last year, according to Euromonitor. "Butter and margarine in Japan is expected to continue to record a decline over the forecast period, with a negative value CA of

at constant 2017 prices, to reach JPY 75.2bn in 2022," the Euromonitor report said. In view of the decline, Megmilk thus decided to reformulate margarine products and remove PHOs in their products. Meiji also added that Japanese consumers have high awareness of trans-fatty acid in food products. "The trans-fatty acid intake in Japan is extremely low than in Europe and the United States, but the recognition rate of trans-fatty acid in Japan is as high as or more, and the consumers interest are high as well." Both firms said that the removal of PHO did not affect the taste or texture of products, and in fact are "almost equal to that of conventional product".

Next-gen nutrition: How new Korean 3-D food printer can meet individual dietary needs

By Lester Wan 04-Jun-2018
NutraIngredients Asia

A new 3-D food printer that can create food items to meet an individual's nutritional needs at the push of a button has been unveiled in South Korea.

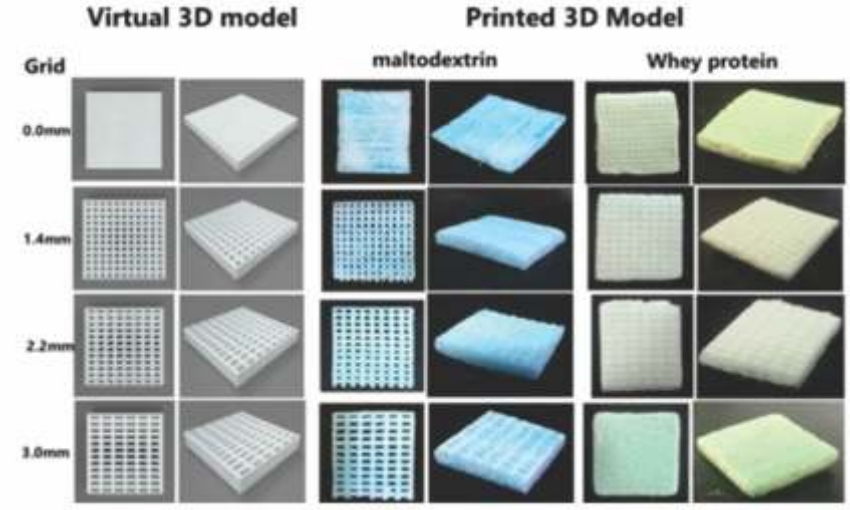
Researchers from Ewha Woman's University have created a prototype 3-D printer to create food with micro-structures that replicate the physical properties and nano-scale texture they have observed in actual food samples. Associate Professor Rhee Jin-Kyu, who leads this revolutionary research and project, said the cartridges' food ingredients (essentially carbohydrate and protein powders) are dispensed then structured by following digital 'recipes' based on personal health data.

Rhee said this makes it able to "supply food to satisfy special needs like low-GI and allergies". The impact of this could firstly be, for example, food that meets the separate, individual nutrition needs of each person in a household — all at the push of a button. Rhee also said customised absorption would enable nutritional or other properties of food to be optimised to be better than in those of regular food. This would especially come in useful in applications such as preparing food for the "aged generation". He added that its functionality also allows it to suit personal preference in texture and flavour. The capability to 3-D print (customised) food on a large scale could also greatly reduce food waste and the costs involved in storage and transportation.

How it works
The process begins with food materials being pulverised under ultra-low temperatures close to -100 degrees Celsius. The micro-sized food materials are then reconstructed into a porous lm-shaped material by jetting bonding an agent under optimised water content and heat conditions. Like in the 3-D printing of other materials, a lm-type material is deposited layer by layer to build up a three-dimensional food block. "The exterior and internal micro-structure of a food block with specific porosity is designed to give texture with controlled human body absorption while eating and ingesting," Rhee stated in his plans.

Rhee said the team is still in discussions with some food companies on possible collaboration and commercialisation of the 3-D printer. He believes this "will be determined soon". Currently, they are working with hardware developer Linc Solution on the 3-D food printer and its elements, and on processing and supply chain for the food cartridge. A "database" designer will also come on board to structure and coordinate "digital recipes" — food ingredients and formulations together with the structure and shape of food to be printed. "We are still open to meet with investors and collaborators," said Rhee. He said once the 3-D food printing technology is finalised, they will proceed further in their research on the food 'inks', especially in the powdered ingredients and types of (edible) ink, as well as on the algorithm for constructing food micro-structure.

Next level
"We are only in early stages, but we believe our research will move 3-D food printing to the next level," he said. "By the end of this year, a very practical and realistic (new) prototype of this 3D food printer, with food cartridges, will be available." He believes the 3-D food printer together with various types of cartridges will be available in the market within three to five years.



The research project was designed and lead by Rhee, the principal investigator, and has been ongoing since 2015. The team has been collaborating with other researchers from the Catholic University and Hoseo University, as well as companies such as Linc Solution and Quantum Solution.

The project has received aid through a government-issued fund mainly from the Ministry of Agriculture, Food and Rural Affairs, and the Korean Food & Drug administration (KFDA), for developing "high value added food technology".

Omega-3 in sports nutrition: Science is 'exciting and promising but still emerging'

By Adi Menayang 1-Jun-2018
NutraIngredients Asia

Omega-3 supplements positioned specifically for sports nutrition lag behind ingredients like protein powder or amino acids in terms of product development and sales but scientific literature backing the fatty acid's benefits for athletes continue to build.

"I would classify the science supporting omega-3s (EPA/DHA) sports nutrition benefits as exciting and promising, albeit still emerging," Harry Rice, PhD, vice president of regulatory and scientific affairs at the Global Organization for EPA and DHA mega-3s (GOED), told us. "The reality is that, while omega-3s may help increase certain types of performance, for example cycling, running, and so on, or provide some other sports-related benefit like recovery, it's really too early to draw any conclusions," he added."The research is in its infancy and any benefits may be specific to a particular population, like elite athletes versus weekend warriors."

Evidence builds from priming skeletal muscle to recovery

Dr. Hector L. Lopez, an expert in sports nutrition and CMO for The Center for Applied Health Sciences, told us that "as a category, I've seen omega-3 fats becoming part of the base or foundation of the sports nutrition supplementation pyramid over the last decade." His work offers him a front-seat view of studies on omega-3s linking it to sports nutrition benefits. "Evidence has accumulated on their use for everything from priming skeletal muscle anabolism (gains in muscle mass), to supporting an optimal change in body composition (fat to muscle ratio), to augmenting recovery from intense exercise, to enhancing skeletal muscle strength and neuromuscular function," he said.

Among the recent studies on performance and recovery similar to what Dr. Lopez described is one by Aker BioMarine, which found a positive relationship between omega-3 supplementation, thigh strength during cycling, and recovery among triathletes. "Moreover, recent data has even demonstrated improvements in choice reaction time, exercise efficiency with respect to oxygen utilisation and respiratory health function in exercise-induced asthma," Dr. Lopez added.

Omega-3 in sports nutrition more for its role as an essential nutrient
Irrespective of the maturity of studies on omega-3 and sports, the experts we spoke with say that omega-3 supplementation among athletes or weekend warriors mainly target general wellbeing. "The broad benefits for athletes and beyond stems from the essential nature of omega-3 fatty acids, as the body lacks the capacity to synthesise omega-3 fats, and must therefore consume them from their diet," Dr. Lopez said. Echoing his sentiments, Dr. Rice said "regardless of the potential sports-nutrition-related benefits, everyone should get at least 500 mg/day of EPA+DHA through their diet or supplementation."

That mindset also seems to be what drives omega-3 supplement sales in the sports category—according to Andy Swanson, manager of regulatory compliance at Bodybuilding.com, the most popular claims around omega-3 is in general wellness, "many of which are based around heart health." He also added that "some brands choose to let the essential fatty acids speak for themselves and not use claims with their product."

Product development still low but rising
In the sports space, omega-3 isn't a superstar ingredient like protein powder or pre-workout blends. Data shared by Bodybuilding.com indicated that omega-3s are 8th in terms of sales, making up roughly 1.4.In terms of units in its inventory, omega-3 products rank 9th, making up 2.2%. Similarly, data from Label Insight, a Chicago-based tech firm that collects data from labels, revealed that omega-3 is more easily found in products like cereal or bakery items. When it comes to performance nutrition, omega-3 in protein and recovery bars ranked the highest (5th) in terms of product development. As the science continues to build, more manufacturers are developing omega-3 products positioned for performance.

An example of a recent product launch is Coromega's high omega-3 packets, CoromegaMax, which COO Andrew Aussie described as a "fresh new direction for our brand and really speaks to the athletic and active audience." Aussie told us that the product is positioned for muscle recovery and inflammation reduction, especially among high-endurance athletes. The delivery format—squeeze packets of creamy, sweet omega-3 oil—is a main differentiator for them.

"We've had many athletes tell us that they don't enjoy taking the levels of omega-3s they know they need to be taking because of the way its packaged, usually in soft gels which tend leave a bad aftertaste and oxidise quickly."

Self-sustaining 'future food city' likely to be off coast of Singapore

By Lester Wan 31-May-2018 Food Navigator Asia

A self-sustaining 'future food city', featuring a mixed crop cultivation of vegetables, seaweed and fish, could be established o the coast of Singapore. Oceanus Group Ltd has been in talks with Singapore government entities on the likelihood of the new self-sustainable Oceanus Aquapolis City being located there.

Recently, Oceanus, Shaw Investment Holdings Pte Ltd and China Construction Seventh Engineering Division Corp Ltd (CSCEC7) announced the signing of a memorandum of understanding (MOU) to collaborate on global aquaculture-related investments and development projects worth US$500m.

"Food security is increasingly a key concern for many governments around the world. With our expertise in aquaculture, China Construction's deep knowledge in construction and infrastructure and Shaw's proven track record in investments, we believe this tripartite collaboration is well-positioned to capitalise on the bourgeoning aquaculture opportunities globally," Peter Koh, executive director and CEO of Oceanus Group had said.

Part of this agreement is the development of the proposed Oceanus Aquapolis City, a sea-based high-tech aquaponics farm that will integrate the farming with renewable technology and sustainable resources such as rainwater collection and solar energy. The recent discussions have been with government bodies such as the Agri-Food and Veterinary Authority of Singapore (AVA), the Economic Development Board (EDB) and Enterprise SG.

Daphne Lin, Operations, Oceanus, said the government has to be invested in such a project due to its scale and scope, as well as that they are "asking for a space in the sea of Singapore". Should the points of discussion be confirmed, the Oceanus Aquapolis City will be located offshore in the South of the island. Furthermore, Duane Ho, CFO, Oceanus Group, said that the firm is currently conducting feasibility studies for the project, in Singapore and other countries in the region such as Brunei and China.

Sustainability urgent

A projection by the Food and Agriculture Organisation (FAO) of the United Nations (UN) for the period between 2017 and 2026 states that global aquaculture production is set to exceed the 100-million-tonne mark for the first time in 2025, and to reach 102 million tonnes by 2026.According to the FAO, aquaculture continues to be one of the fastest-growing food sectors and world fish consumption is expected to grow 19% by 2026.

Ho added that wild-caught ocean fish for food will be depleted by 2050 and, in the last 10 years, fish supply has been depleted by about 90% in the South China Sea.This growing global food security problem is also impacting Singapore.

Ho said the island nation imports 90% of its food supply and barely grows anything, let alone enough to sustain itself. He said, in order for the country to be sustainable, production needs to increase by 70%, and about 40% of land needs to be set aside for food production. This is improbable in land-scarce Singapore. If the status quo remains, there is no real possibility of the country achieving self-sustainability.

Self-sustaining mixed-crop floating city

Enter Aquapolis City, where Oceanus engineers will deploy advanced farming techniques to create a self-sustaining future food city, featuring a mixed crop cultivation of vegetables, seaweed and fish."As one of the world's largest land-based aquaculture farms, we have been incubating and exploring various farming and business models as well as cutting-edge ideas that we believe will shape the future of aquaculture, with a strong focus on food security," said Koh.

Combining hydroponics and aquaculture farming technologies, the Oceanus Aquapolis City is an environmentally-friendly, multi-storey floating and closed-contained farming platform. The project is highly scalable, portable, and more energy efficient than land-based farms. It also requires minimal manpower with the use of Internet of Things (IoT) and Artificial Intelligence (AI).It further capitalises on unused sea space, becoming a solution to land-intensive farming.


Image © iStock.com/tawatchaiprakobkit

According to the firm, the Oceanus Aquapolis City project will be worth several hundred millions of dollars. It is expected to be launched within five to seven years. Oceanus Group is a global premium seafood value chain manager that harnesses synergies across the aquaculture value chain — farming (upstream), processing (mid-stream), distribution (downstream) and consultancy (R&D). Ho said the firm has the largest land-based farm in Fotan, China, near Xiamen, where they primarily spawn abalone juveniles and premium seafood such as prawn.

CSCEC7, the largest construction company in the world by revenue, brings its experience in building, infrastructure, architecture and offshore, sea-based commercial building to the project."Together with China Construction (and Oceanus), we believe that this is the right time that we can work together on projects that will make a difference not just in Singapore but around the world," said Ivan Lew, CEO of Shaw.

Why India needs a food-supply rethink to stave off food crisis: academics

By Lester Wan 31-May-2018 Food Navigator Asia

India needs to change how it sources food supplies in order to avoid severe dietary shortages in the coming years, said researchers from the University of Edinburgh.

India has previously been described as a "sleeping giant" but the Scottish researchers said that the South Asian nation needs to wake up to its major food problems that could bring about severe food-related crises down the road, in future decades. According to the research, India's self-sufficiency model for securing food dependent on increases in domestic crop yield and reduction of food loss and waste will come up short, especially in meeting the nutritional needs of the country in the future.

"Our analysis suggests that India's current agricultural policies will be insufficient to fully address malnutrition," said Hannah Ritchie, School of Geosciences, University of Edinburgh. "To meet the N goal of zero hunger by, India will need to adopt intervention strategies that encourage dietary diversification and boost micronutrient availability."

Multiple measures required

Based on the study and its findings, the researchers suggest a two-pronged approach of optimising domestic production as well as increasing global trade links to enable the South Asian nation to meet the United Nations (UN) Sustainable Development Goal (SDG) of zero hunger by 2030. The researchers further found that closing the gap between India's food and nutrition supplies and its burgeoning population growth will require a combination of measures. Among the researchers suggestions include a nationwide programme to optimise crop selection, which is critical to maximise the production and supply of dietary energy, protein and micronutrients for the nation and its citizens.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Furthermore, they add that India needs to boost its international agricultural trade as well as lift restrictions on food imports to diversify, improve and safeguard the country's food supplies. "The country will need to further develop food processing and fortification methods, but domestic production alone will be insufficient to close the nutritional gap. Therefore India will also need to increase its levels of global trade," said Ritchie.

State of the nation

The University of Edinburgh researchers analysed the domestic capacity of India's food system and made projections for 2030 and 2050. Their research maps the entire Indian food system for the first time, from crop production to household-level availability and studied levels of calories, protein, fat and micronutrients. They found that an increase in population coupled with environmental and dietary pressures could lead to nutritional shortages across 60 of the Indian population.

Globally, it is estimated that more than 2 billion people suffer from micronutrient deficiencies, with nearly half of them living in India. Deficiency, also known as hidden hunger, occurs when the intake of essential vitamins and minerals falls below the levels needed for children to develop and adults to function. The health and productivity costs of such micronutrient deficiencies could also result in severe economic losses, totalling about 2.4 of India's gross domestic product (GDP).

Moreover, India is one of the most at-risk countries in terms of climate change impacts, water scarcity and declining soil fertility due to land degradation. The study indicates that improvements in crop yields alone would fall short of keeping pace with India's population growth by 2030. According to the researchers, studies suggest that India will need to diversify its traditional forms of food production to address the availability of all the nutrients necessary for adequate nourishment of its population.

REGULATORY NEWS

Image © iStock.com/a_namenko

Expert calls warnings about high protein intake 'nonsense'

By Hank Schultz 18-Jun-2018
NutraIngredients Asia

The myths surrounding high protein intake are hard to dispel, according to one of the field's foremost experts.

At the recent meeting of the International Society of Sports Nutrition, Jose Antonio, PhD spoke on the topic of protein misconceptions. Antonio is one of the founders of the society and is a professor of exercise and sports science at Nova Southeastern University in Ft. Lauderdale, FL. "There is so much bad news about protein and it is not hard to find," Antonio told the audience at the meeting, which was held earlier this month in Clearwater Beach, FL."It's as if protein and carbohydrates are mutually exclusive."

Strength athletes consume high dosages

High- and ultra-high protein dosages have been the norm for Antonio's target audience—primarily but not exclusively strength athletes—for years.The DRI for protein intake as set by health authorities is 0.8 grams per kilo of bodyweight per day. For a sedentary 80 kg person that would work out to 64 grams. Most nutritionists advocate that people who are actively exercising consume more, with a standard recommendation for our 80 kg example coming in at around 145 grams. Athletes concerned with increasing strength or muscle size frequently have consumed far more protein. Higher dosages start at 2.2g/kg or and go up from there, which would equate to about a 175 gram dose for our 80 kg body weight example. Antonio said these high dosages have been viewed with suspicion for years. Too much protein, like too much of anything, just has to be bad for you, right?"We've heard for years that too much protein puts a strain on kidneys, leads to bloating or weight gain, causes nausea or osteoporosis," Antonio said. "It's just made up. It's nonsense."

Little data to support warnings

Antonio said there is in fact little data on protein overfeeding, and that which does exist tends not to support the protein doom and gloom hypotheses. Antonio did one study, for example, that looked at recreational bodybuilders consuming 4.4g/kg of protein. The results were revelatory, he said. "If you overeat on protein, it turns out it's hard to get fat," he said. "The second study we did we dropped the dose to 3g/kg, because the participants complained about the 4.4g/kg dose. We put them on a standard split bodybuilding routine. We found that the high protein group lost more fat, while there was not a difference in lean body mass between the groups," Antonio said.

Antonio also cast doubt on the notion that high protein dosages interfere with calcium uptake into the bones."A lot of the data on protein and bones are from acute studies, but to look at bone density you need long term data. In a one year study on trained women with high protein intakes there was no change," he said. Antonio said that while anyone consuming high amounts of protein of course needs a full suite of micronutrients, the protein itself won't cause weight gain or lead to other deleterious effects. And it can provide some ancillary benefits, such as enhanced muscle protein synthesis, thermogenic effects and satiety promoting benefits."No one ever got fat from whey protein," he said.

Golden Rice gains third safety approval, further paving way for Asian adoption

By Lester Wan 07-Jun-2018 Food Navigator Asia

GR2E Golden Rice, which is genetically engineered to biosynthesise beta-carotene — a precursor of vitamin A — has obtained its third positive food safety evaluation in recent months, this time from the United States Food and Drug Administration (US FDA), further paving the way for Asian adoption. Applications for its use are currently being assessed in both Bangladesh and the Philippines.

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The International Rice Research Institute (IRRI) has developed Golden Rice to be cultivated for humanitarian purpose in developing countries such as Bangladesh, Indonesia and the Philippines, to mitigate Vitamin A deficiency (VAD) there. The US FDA agreement follows the safety and nutrition approvals from Food Standards Australia New Zealand (FSANZ) and Health Canada in February and March this year. "Each regulatory application that Golden Rice completes with national regulatory agencies takes us one step closer to bringing Golden Rice to the people who need it the most," said Matthew Morell, director general of IRRI.

These regulatory agencies carry out assessments based on principles in line with the World Health Organization (WHO), the Food and Agriculture Organization (FAO) of the United Nations (UN), the Organisation for Economic Co-operation and Development (OECD) and the Codex Alimentarius Commission. "The rigorous safety standards observed by the US FDA and other agencies provide a model for decision-making in all countries wishing to reap the benefits of Golden Rice," added Morell.

A step closer

This latest development is a step closer to making rice available to those who struggle with VAD, especially in South and South East Asia. An estimated 250 million preschool-age children alone suffer from the deficiency. According to IRRI, once Golden Rice receives all the necessary national approvals, a sustainable deployment programme will ensure that Golden Rice is acceptable and accessible to the target communities. Worldwide, VAD remains a pervasive public health problem. The WHO estimates, alongside children under five years old, a substantial number of pregnant and lactating women are afflicted with VAD.South and South East Asia rank high among VAD-prevalent regions.

Complementary solution

IRRI is further working with national research partners in the development and deployment of healthier rice varieties that have more iron, zinc, and beta-carotene content to improve the nutritional status of vulnerable populations with limited access to diverse diets. Because rice is already widely grown and consumed in these areas — making up an estimated 30% to 70% of energy intake — these bio-fortified rice varieties have the potential to reach and help many vulnerable people.

Further Asian developments

In Bangladesh and the Philippines, the Bangladesh Rice Research Institute (BRRI) and Philippine Rice Research Institute (PhilRice) are developing high-yielding inbred local rice varieties with the beta-carotene producing GR2E Golden Rice trait. Golden Rice applications with the appropriate national regulatory agencies have been made by BRRI in Bangladesh, and a joint IRRI/PhilRice application has been submitted in the Philippines. Both were lodged in 2017.

However, these developments and approvals have not been without opposition. In the Philippines, as recent as April, activists gathered at the Department of Agriculture Central Office in Quezon City to protest the cultivation of the variety in the country. Dr Tan Siang Hee, executive director of industry body CropLife Asia, had released a statement decrying their actions. "Make no mistake — this agricultural innovation is not a game-changer, it's a life-changer. Golden Rice has the potential to address critical Vitamin A deficiencies here in Asia and around the world. Trying once again to hold this technology hostage and out of the grasp of those who need it most is a shameful act," he had said.

India's draft 'red light' food labelling regulations in need of "massive strengthening"

By Lester Wan 20-Jun-2018 Food Navigator Asia

India's proposed new Food Safety and Standards (Labelling and Display) Regulations been dubbed a 'good start' but in urgent need of amendments to be truly effective in tackling obesity and diabetes.

The draft Regulations released by the FSSAI in April includes new mandatory front-of-pack labelling for packaged food products, including a 'red light' label for high fat, sugar and salt (HFSS) foods.In late May, the authority said it would finalise it within the next two to three months. However, the Centre for Science and Environment (CSE), a public interest research and advocacy organisation, has submitted a list of recommendations on the draft to the FSSAI. In a letter to Pawan Kumar Agarwal, CEO of FSSAI, Chandra Bhushan, deputy director general of CSE, said: "We would like to mention that this is a good beginning considering the state of our existing labelling laws but the draft regulations need massive strengthening across several aspects to ensure appropriate food labelling framework that contributes in retarding the growth of obesity and non-communicable diseases in this country."

Possible shortcomings

CSE states, one of the significant gaps is that the draft does not provide for the labelling of crucial aspects such as added sugar and dietary fibres."Public health and nutrition experts recommend that it is best to avoid added sugar in food items. It can be measured and controlled and, therefore, must be labelled," said Amit Khurana, programme director, food safety and toxins unit, CSE. "Also, dietary fibre is a key beneficial component of our diet and must also be labelled. This will help consumers make informed and healthy food choices." The draft Regulation simply states that HFSS food products shall not be advertised to children in any form. The CSE researchers highlight that this is insufficient.

Children are key consumers of HFSS food items and the burden of childhood obesity is rising. The FSSAI needs to adopt a detailed framework to regulate advertisement of HFSS foods," said SonamTaneja, programme manager, food safety and toxins unit, CSE. "Celebrities should not be allowed to endorse them and there should be no advertisement of certain food categories such as soft drinks. Broadcasting regulations should be developed to limit the exposure of children to food advertisements during primetime programmes."

Devil in the detail?

The draft Regulation also emphasises providing nutrition information for each serving of a food item. It further lays down that consumers should be made aware of the contribution of each serving to one's daily quota of salt, sugar or fat. Nevertheless, the Regulation does not standardise serving sizes. "Determination of serving sizes has been left to the industry — this is a big loophole. We have seen that the food industry often claims very small serving sizes, which are far from the reality and manipulates food labels," said Bhushan. "Serving sizes must be set by the FSSAI based on how much is customarily consumed by people in the Indian scenario." Regarding genetically modified (GM) food, CSE has recommended that through the Regulation the FSSAI must aim to regulate illegal GM food in India and should set a stricter bar for exemption from GM labelling. It says the bar set in the draft is very weak.

"The FSSAI has a crucial role in ensuring food safety and a strong labelling regulation is a must to full this mandate," said Bhushan. The Delhi-based CSE researches, lobbies for and communicates the urgency of development that is sustainable and equitable. It has been working on issues relating to HFSS food with regard to nutritional analysis, promotion and marketing targeted at children, and links to non-communicable diseases. Earlier, the FSSAI had also proposed introducing a traffic light labelling scheme for foods sold in school canteens and vending machines, to curb the consumption of sugary drinks, heavily processed foods and confectionery by young children.

New supplement advertising rules in Australia: TGA outlines education and enforcement plans

By Cheryl Tay 30-May-2018
NutraIngredients Asia

Australian regulatory body the Therapeutic Goods Administration (TGA) will focus on education and detailed penalties for supplement advertisers who breach the rules as it implements new regulations.

To support the former, there will be a new advertising hub on the TGA website featuring educational resources, including three interactive e-learning modules currently being developed.

This follows changes in advertising rules under the recently passed Review of Medicines and Medical Devices Regulation. These include:
- enhanced sanctions and penalties for addressing non-compliant advertising from March 2018
- an amended Therapeutic Goods Advertising Code from 1 July 2018
- a streamlined complaint-handling system from 1 July 2018
- the abolition of the requirement for certain advertisements to be pre-approved from 1 July 2020, allowing for a transition period

During a recent webinar, Leanne McCauley, a representative from the TGA's advertising compliance unit, said, "We will support advertisers by ensuring they have access to the required information and educational materials to be able to generate and issue compliant advertising." She added that there had been two recent consultations (the latest closed on 27 April), for which the TGA received a generous number of submissions. "The next step will be to brief the Therapeutic Goods Advertising Code Council, and finalise arrangements relating to transition, which includes which code we'll apply and when. One of the common themes from the submissions was the need for a formal transition arrangement.


Image © iStock.com/ PeopleImages

We're currently working through the best way to do that — we hope to be able to update you in the near future on the transition arrangements that we'll put in place."

Consumer consideration

The Australian government has agreed to the pre-approval requirement for certain products being scrapped in 2020 to make way for a complaints-based model, whereby consumers will be better equipped to provide feedback on advertising in the supplement industry. To this end, the TGA will include consumer-specific materials on its website, such as fact sheets on identifying non-compliant adverts and lodging complaints, as well as inquiry forms and complaint forms. McCauley said: "As recently as last week, we did some user testing with consumers on our hub and complaint form, and we received some really positive and constructive feedback. We're trying to address that because we want this hub to be the best that it can be for our stakeholders."

Penalty primer

In addition to educating advertisers and empowering consumers, the TGA has also proposed detailed penalties for offenders, to varying degrees.McCauley said, "We're working to implement a range of reforms — this includes a new advertising code, a single complaints body with a new framework for complaint management, the development and roll-out of formal education materials and programmes, and new and enhanced sanctions and penalties." She added that an expert review had acknowledged the need to update the current code to improve clarity for stakeholders and provide objective tests to support stronger sanctions and penalties.

One of the areas of focus is improving the clarity and reducing the complexity of mandatory warning statements for advertisements, on which McCauley said she hoped to provide updates soon. Eric McIntosh, also from the advertising compliance unit, said the regulatory action taken against offenders would depend on the nature of the advertising breach, with breaches classified as 'low', 'medium', 'high' or 'critical'.For example, an isolated or unintentional breach that does not result in consumers being misled as to the contents, usage or identification of the goods involved is considered a 'low' level offence.

The advertiser will be issued a compliance notice that outlines the available regulatory tools to address other possible instances of non-compliance, as well as guidance tools and education training.On the other hand, extensive or targeted advertising directed at vulnerable groups, or advertising likely to result in harm if consumers rely on the claims therein is considered a 'critical' offence. The advertiser will be contacted and instructed to address the issue immediately, and be subject to a court injunction, public warning notice, civil or criminal investigation, and cancellation or suspension of the advertised goods.Depending on the severity of the breach, offenders may even be imprisoned for a minimum of one year to a maximum of five years.

Complaint control

Under the new code, the TGA's complaints resolution panel will also be abolished, with a new process tentatively scheduled for 1 July.McIntosh said: "There's a current consultation open for the proposed complaint-handling model. It closes on 4 June, and we've had some submissions. "The proposed model we're looking at is based on prioritisation of the nature of the alleged breach of advertising, and any likely public health impact that could result from the advertising or reliance on the information supplied in the advertisement." He added that 'an educated approach' would be used for first-time offenders, and that the possible consequences of advertising non-compliance would be based on that priority, with the inclusion of sanctions or penalties.

Regarding ongoing cases, he said: "We're working to close most complaints before the new complaint-handling model starts. There may be more serious matters that will remain unresolved, and those will be subject to the new model. "Under the new model, education or consultation will often be the first step when a complaint is received, to assist advertisers to meet their regulatory obligations." The government has also approved the establishment of an advertising committee, which will consist of the TGA's external stakeholder representatives to provide an oversight of the regulatory body's performance in relation to advertising and dealing with compliance matters.

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