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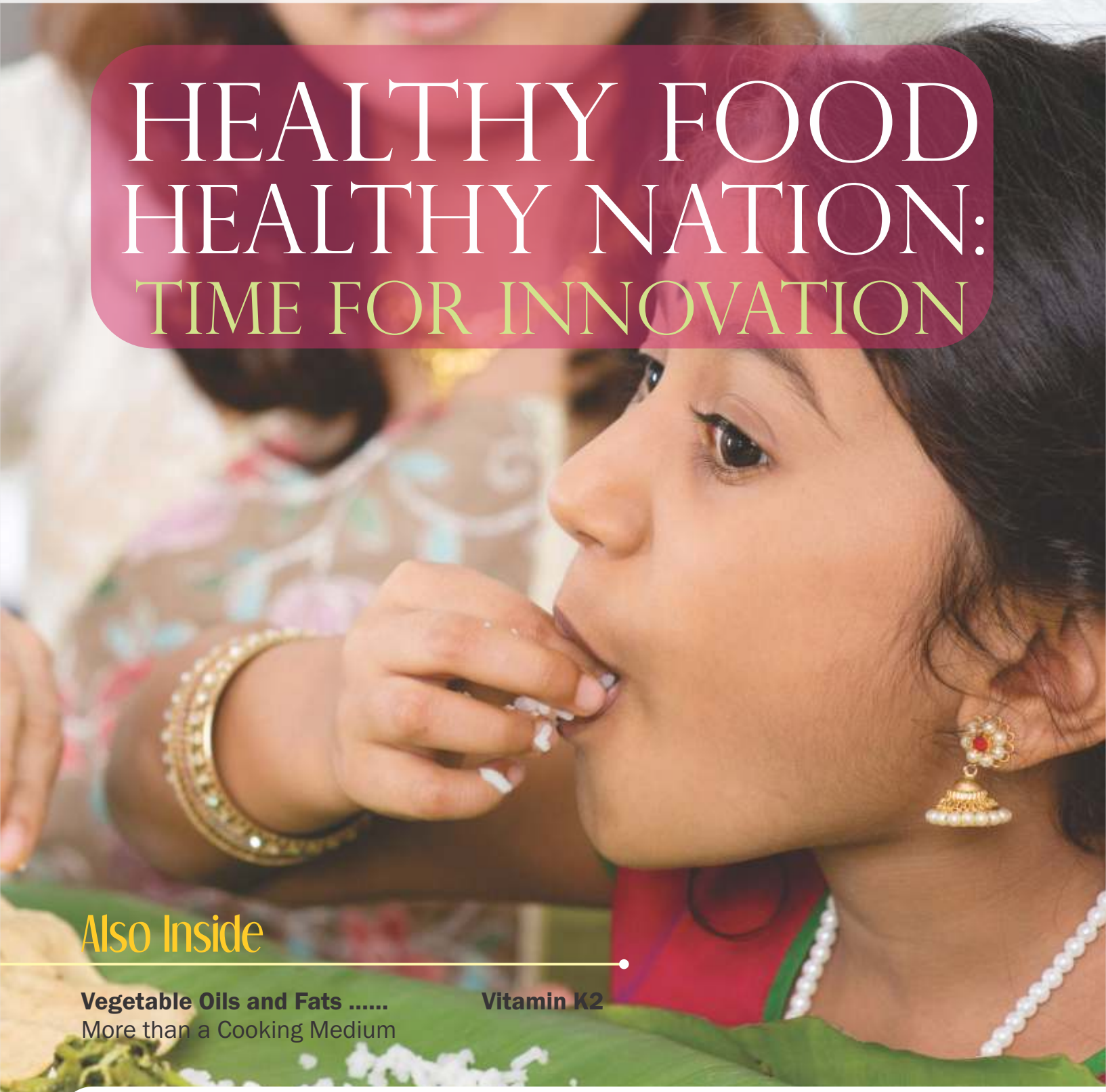

HEALTHY FOOD HEALTHY NATION: TIME FOR INNOVATION

Also Inside

Vegetable Oils and Fats .....
More than a Cooking Medium

Vitamin K2

PROTEIN FOODS AND NUTRITION DEVELOPMENT ASSOCIATION OF INDIA

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INDEX

Editorial 2
Healthy Food Healthy Nation: Time for innovation 3
Coming Events 9
Vegetable Oils and Fats..... More than a Cooking Medium 10
Vitamin K 2 14
Research in Health & Nutrition 20
Food Science and Industry News 33
Regulatory News 43

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EDITORIAL

People globally are going back to pulses not just for their protein content but also many other advantages.

They have been the backbone of Indian diet for ages but there has been a steady decline in their consumption for several reasons. Costs of pulses had gone up tremendously with cost per kg around Rs.200 last year. Fortunately this year the prices have come a bit due to imports as well as bumper crop. Cost has been a major deterrent for the lower consumption of pulses in our diets in last few years.

Another reason has been our changes in eating pattern. Our population has been consuming more of baked goods including bread, cakes and biscuits rather than chapatti, roti and paratha which used to be consumed with vegetables and pulses besides the mainstay of rice and dal. Protein intakes from meat, fish, poultry, egg and milk have gone up but with regards to pulses it has gone down.
Pulses have not just given us good amounts of protein though it was not of very high biological value as those from milk, egg and soya. When consumed along with these proteins as well as those from cereals, the total value of the combinations would be quite high. As people consume large amounts of pulses in their normal diets, it would contribute substantial amount to the total protein.

Some of the other benefits of pulses are low glycemic index because of good proportion of dietary fibre especially the soluble fibre. The soluble fibre slowed down the absorption of sugars in small intestine thus blood glucose would not shoot up when sugar is consumed together with pulses. When Indian traditional sweets such as various types of laddoos, soan papdi, Mysore pak, chikki, jangiri, puran poli, etc. containing pulses were consumed they did not cause the blood glucose to rise sharply due to the soluble fibre in pulses. However, when pulse based sweets are substituted with cereal based sweets such as cakes, cookies, donuts and even some Indian traditional sweets like rawa laddoo, sheera, halwa, petha etc. would not have much protection against glycemic rise. This would certainly cause problems of blood sugar and diabetes.

Pulses need to be adequately consumed to get their protein and fibre benefits. Indians may want to see some newer and tastier foods in their diet, so it is important to offer pulse based products which are quite tasty. Making variations in traditional pulse products as well as including pulse products in newer forms would create some interest. If chickpea flour or besan is used in some of the bakery products, it may not be well accepted due to the flavour but if besan is prepared using technology to reduce that impact or use another bean with less odour may probably be more acceptable.

There is also a possibility of use of ingredients with flavour that helps mask the beany odour in some products. There is a need to do research on flavour development and to develop new products with pulses in order to get consumers interested in pulses. There have been some attempts to develop some recipes through competitions among students.

This will also help as students have a lot of imagination which is necessary for new product development. We should not allow reduction in pulse consumption as most Indians are vegetarians and they need proteins from vegetarian sources which could be available from pulses and other legumes such as soy and peanuts. Let us encourage both development and consumption of pulses by having many delicious products.

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HEALTHY FOOD HEALTHY NATION: TIME FOR INNOVATION

By
Dr. B. Sesikeran, MD, ex-Director, NIN

A report by the World Health Organization in 2013 shows that about one - third (31.3%) of the Indian population lives in urban areas. Of the total population 40.1% of persons are in the age group of 30 to 70 years. When we look at deaths due to different causes, we find that non communicable diseases (NCDs) account for about 60% of the 9,816,000 deaths that occurred during that year.

The distribution by cause of death is:
Cardiovascular diseases – 26%
Cancers – 7%
Chronic respiratory diseases – 13%
Diabetes – 2%
Other NCDs – 12%
Communicable, maternal, perinatal and nutritional conditions – 28%
Injuries-12%

It is projected that globally, deaths due to NCD are likely to increase by 15 percent within one decade between 2010 and 2020. The greatest increases will be in Africa, the Eastern Mediterranean, and South-East Asia, where the WHO estimates indicate that they will increase by over 20%. Age at mortality differs between low – and middle income countries and high income countries. more young people die in low- and middle-income countries, where 29% of NCD deaths occur among people under the age of 60, in contrast to 13% in high income countries. Further, according to WHO, approximately 3.2 million deaths in the world each year are attributable to insufficient physical activity.

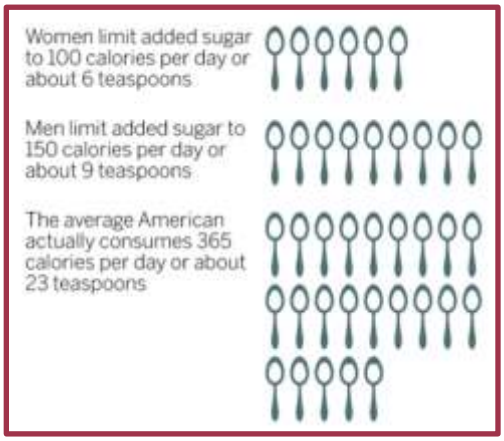
Unhealthy diets contribute considerably to morbidity and mortality. According to the American Institute for Cancer Research (2009) 27–39% of the main cancers can be prevented by improving diet, physical activity and body composition. The WHO has stated that approximately 16 million (1.0%) DALYs and 1.7 million (2.8%) of deaths worldwide are attributable to low fruit and vegetable consumption and adequate consumption of fruit and vegetables reduces the risk for cardiovascular diseases, stomach cancer and colorectal cancer. Simultaneously, it states that there is convincing evidence that the consumption of high levels of high-energy foods, such as processed foods that are high in fats and sugars, promotes obesity compared to low-energy foods such as fruits and vegetables.

One important dietary component linked to risk of cardiovascular disease is salt. The amount of dietary salt consumed is an important determinant of blood pressure levels and overall cardiovascular risk. WHO recommends that the population salt intake should be less than 5 grams per person per day for the prevention of cardiovascular disease. However, data from various countries indicate that most populations are consuming much more salt than this recommended level. It is estimated that decreasing dietary salt intake from the current global levels of 9–12 grams per day – to the recommended level of 5 grams per day – would have a major impact on reducing blood pressure and cardiovascular disease.

Another dietary factor influencing risk of coronary heart disease is dietary fat. There is convincing evidence that saturated fat and trans-fats increase the risk of coronary heart disease and that replacement with mono unsaturated and polyunsaturated fat reduces the risk. There is also evidence that the risk of type 2 diabetes is directly associated with consumption of saturated fat and trans-fat and inversely associated with polyunsaturated fat from vegetable sources.

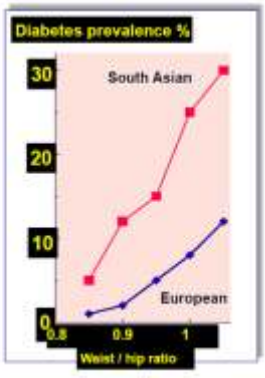
The WHO recommendations are:
☺ A healthy diet helps protect against malnutrition in all its forms, as well as non communicable diseases (NCDs), including diabetes, heart disease, stroke and cancer.
☹ Unhealthy diet and lack of physical activity are leading global risks to health.
☺ Healthy dietary practices start early in life
☺ Limiting intake of free sugars to less than 10% of total energy intake is part of a healthy diet.
☺ A further reduction to less than 5% of total energy intake is suggested for additional health benefits

In case of sugar, the World Health Organization recommended the following in 2015 (Figure 1).



Source: Guideline: Sugars intake for adults and children. Geneva. World Health Organization, 2015

While there is information on the amount of sugar consumed by the average American, information for average intakes by Indians is required.



The risk for NCDs is greater for Asians. As the body mass index exceeds 23.0 Kg/m2, the risk of type 2 diabetes mellitus and CVD increases. Risk for these NCDs shows greater correlation with increasing abdominal circumference / WHR and for the same BMI as Caucasians, Asians have higher percent body fat putting them at risk of metabolic syndrome.
Therefore in relation to obesity, the focus should be on:
decreasing fats and sugars while increasing intakes of fruits and vegetables as well as increasing physical activity.

Table 1 highlights the nutrition transition that has occurred and the shift from traditional diets to present day diets.

Table 1: Shifts from Traditional Diet Patterns to Modern Diet Patterns

TRADITIONAL DIETS	CURRENT DIETS
Bulky low Energy Density	Palatable Energy Dense
Slowly Digested Carbohydrates↑	Rapidly Digested Carbohydrates↑
Fat↓	Fat↑
Unsaturated Fats↑	Saturated Fats↑
Complex Carbohydrates –Fibre ?	Refined Foods↑ Fibre↓
Vitamins / Minerals↑	Vitamins / Minerals↓
Phytonutrients↑	Phytonutrients↓
Glycemic Index↓	Glycemic Index↑
Na / K Ratio↓	Na / K Ratio↑
Calcium↑	Calcium↓

Carbohydrates: The concern in the context of current diet patterns is intake of free sugars. These include monosaccharides (glucose and fructose) and disaccharides (sucrose, lactose and maltose). One or a combination of these sugars is added to foods and beverages by the manufacturer, or by cooks in foods commercially prepared and sold or by consumers at home/household level. However, free sugars are naturally present in honey, syrups, fruit juices and fruit juice concentrates. There is evidence that an increase or decrease in consumption of free sugars is associated with a parallel change in body weights.

Metabolism of sugars: Although fruits naturally contain sugar, the human body metabolizes the sugar in fruit and milk differently from the refined sugar that is added to food. The body converts refined sugar to glucose and fructose rapidly, causing insulin and blood sugar levels to go up rapidly. Also, refined sugar is digested quickly, feeling of fullness does not occur even if large amount of calories are ingested.

The advantage with fruits is that the fibre in fruit slows down metabolism, as fruit in the gut expands to create a feeling of fullness. However, it is worthwhile to remember that once sugar passes through the stomach and reaches the small intestine, it does not matter if it came from an apple or a soft drink. Therefore if one has consumed excessive amount of sugar, regardless of the source and there is already a lot of sugar is in the system, then digested sugar will be converted to either fat or glycogen.

So…… "It doesn't matter if it's junk food or fruit".

Therefore it is advisable to limit one's intake of sugar. Even in individuals with inadequate energy intakes, increasing the free sugar content of their food is not recommended. The only exception to this are the therapeutic diets for Severe Acute Malnutrition(SAM) and Moderate Acute Malnutrition (MAM).

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Reducing sugar in foods and in the diet is aimed at reducing the number of calories people consume. This includes reducing the energy density (calories per gram). Therefore, food and beverage companies are responding to public health policies such as that of the European Commission by reformulating food and drinks and reducing their energy content where technically possible.

However, reducing sugar in foods is not easy because reducing free sugars in foods will greatly impact taste and when a food is less tasty, the lack of taste is the biggest impediment to compliance for reducing energy intakes. Another aspect is that if free sugar intakes have to be brought down, there is a need for artificial sweeteners in order to ensure that taste of sugar-containing foods is not affected. This implies that products more often than not need to be reformulated. However, product reformulation is not always straightforward because (i) sugars are responsible for many properties of food (ii) when the sugar content of a recipe is reduced, in order to compensate, we may need to change the whole recipe, resulting in a different product, (iii) reformulation must respect consumer preferences and the expectations they have from their favourite products and (iv) Sometimes the replacement compound may have the same calories as sugar.

For example sugar in breakfast cereals may be replaced with starch, another carbohydrate, which contains the same amount of calories. Thus reducing sugar content in a food may not necessarily result in fewer calories provided by the food product. This aspect needs to be considered vis-à-vis that consumers may expect foods that are "reduced or low in sugars" or have "no added sugars" to contain fewer calories. Finally, sugars play an important role in food preservation and extending shelf-life. Consequently, care should be taken when reducing or replacing sugars to ensure the reformulation product meets consumer expectations and maintain food safety. (EUFIC-Food Today June 2013).

Fibre: While we should try and not consume excessive amount of free sugars, there are carbohydrates that are "health-friendly" or can be considered as good carbohydrates. Dietary fibre is a good example. The advantages are that fibre provides satiety, is digested slowly, high fibre foods are likely to have a low glycemic index and fibre also slows down absorption of sugars and cholesterol from other foods. Digestible fibre of about 35% adds 50KCals/day. In addition, other benefits of consuming fibre are improvement of gut motility and that they act as substrates for gut bacteria. Examples β Glucan present in oats or galactomannan that is present in fenugreek.

Estimates indicate that fibre intakes are approximately 35 g/d in rural population, whereas among tribal population the intake is about half that of rural population (17 g/day). In the urban high income group, average intake is about 25g/day and 22g/day in the low income group. Thus in India, except for the rural population, intakes are much less than the RDA of 30 g(up to 40 g) given by the World Health Organization.

In the context of carbohydrate intake and the type of carbohydrate consumed, one needs to consider glycemic indicators namely, glycemic index, area under the curve, glycemic load and energy density.

Fats: Another macronutrient of concern today is fat. Diet surveys by the National Nutrition Monitoring Bureau show that daily intake of visible fats in rural India ranges from as little as 6g per day to 22g per day. However, in the urban middle and upper income groups the daily intake of visible fat ranges between 22-45g / d and total fat in their diets furnish about 20-33% of the total energy intake. Besides the total fat intake, the fatty acid content or profile of the fat/oil used as the cooking medium should be considered. Table 2 gives the composition of dietary fats and oils that are commonly consumed in India.

Table 3 gives the recommendations given by the Indian Council of Medical Research regarding the choice and

Table 2: Approximate Fatty Acid Composition of Dietary Fats and Oils Consumed in India (% of total fatty acids)

Fats/ oils	SFAs*	MUFAs**	LA	ALA
High (medium chain) SFAs				
Coconut	92[a, d]	6	2	-
Palm kernel	83[b,d]	15	2	-
Butter/Ghee	68[c,e,f]	29	2	1
High SFAs & MUFAs				
Palmolein	39	46	11	<0.5
High MUFAs & Moderate LA				
Groundnut[i]	19	41	32	<0.5
Rice bran[h]	17	43	38	1
Sesame[h]	16	41	42	<0.5
High LA				
Cottonseed[h]	24	29	48	1
Corn[h]	12	35	50	1
Safflower[h]	9	13	75	-
Sunflower[h]	12	22	62	-
LA & ALA				
Soybean[h]	14	24	53	7
Canola[h]	6	60[j]	22	10
Mustard/rapeseed[h]	4	65[k]	15	14
Flaxseed	10	21	16	53
High TFAs				
Vanaspati[h]	46	49[g]	4	-

RDA-ICMR 2011

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Table 3: Recommendations for Type of Visible Fat

Use correct combination / blend of 2 or more vegetable oils (1:1)##

1. *Oil containing LA + oil containing both LA and ALA**

Groundnut / Sesamea / Rice branb / Cottonseed + Mustard/ Rapeseed **

Groundnut /Sesamea / Ricebranb / Cottonseed + Canola

Groundnut / Sesamea / Rice branb / Cottonseed + Soyabean

Palmoleinc + Soyabean

Safflower / Sunflower + Palm oil/Palmolein[c] + Mustard/ Rapeseed**

Oil containing high LA + oil containing moderate or low LA ***

Sunflower / Safflower + Palmoleinc / Palm oilc / Olive

Safflower / Sunflower + Groundnut / Sesamea / Ricebran[b] / cottonseed

2. **Re Limit use of butter/gheed**

3. **Avoid use of PHVO as medium for cooking / frying**

4. **Replacements for PHVO**

Frying : oils which have higher thermal stability -- palm oil[c] / palmolein[c], sesame[a], ricebran[b], cottonseed -- single / blends (home /commercial)

Bakery fat, shortening, Mithai / Indian sweets etc -- Food applications which require solid fats : coconut oil/ palm kernel oil/ palm oil / palmolein/ palm stearin and / their solid fractions and / their blends

combination of visible fats and oils that can be used by Indians. Present recommendations are that there should be a balance between the intakes of n-3 and n-6 PUFA. However, as seen in Table 4, except for the Eskimo population the ratio of n-6:n-3 PUFA is very high in India.

Table 4: PUFA Intake in different populations (gm/d)

Population	n-6	n-3	n-6/n-3
India	20	0.5	40
USA	14	1.4	10
UK	14	1,9	7
Japan	26	7.0	4
Eskimo	5	5	1

It is important to have adequate intake of n- 3 fatty acids because they (i) reduce the risk of cardiac arrhythmias (ii) reduces platelet adherence and risk of thrombosis (iii) have an anti - inflammatory effect and reduce CRP that is an indicator of inflammation and (iv) inhibit cardiovascular calcification.

Table 5 gives the amount of foods commonly consumed in India, that would supply 0.1 g of n-3 PUFAs, mostly alpha linolenic acid.

Overall, all lines of evidence indicate that:

• Specific dietary fatty acids play important roles in the cause and the prevention of CHD, but total fat as a percent of energy is unimportant.

• Trans fatty acids from partially hydrogenated vegetable oils have clear adverse effects and should be eliminated.

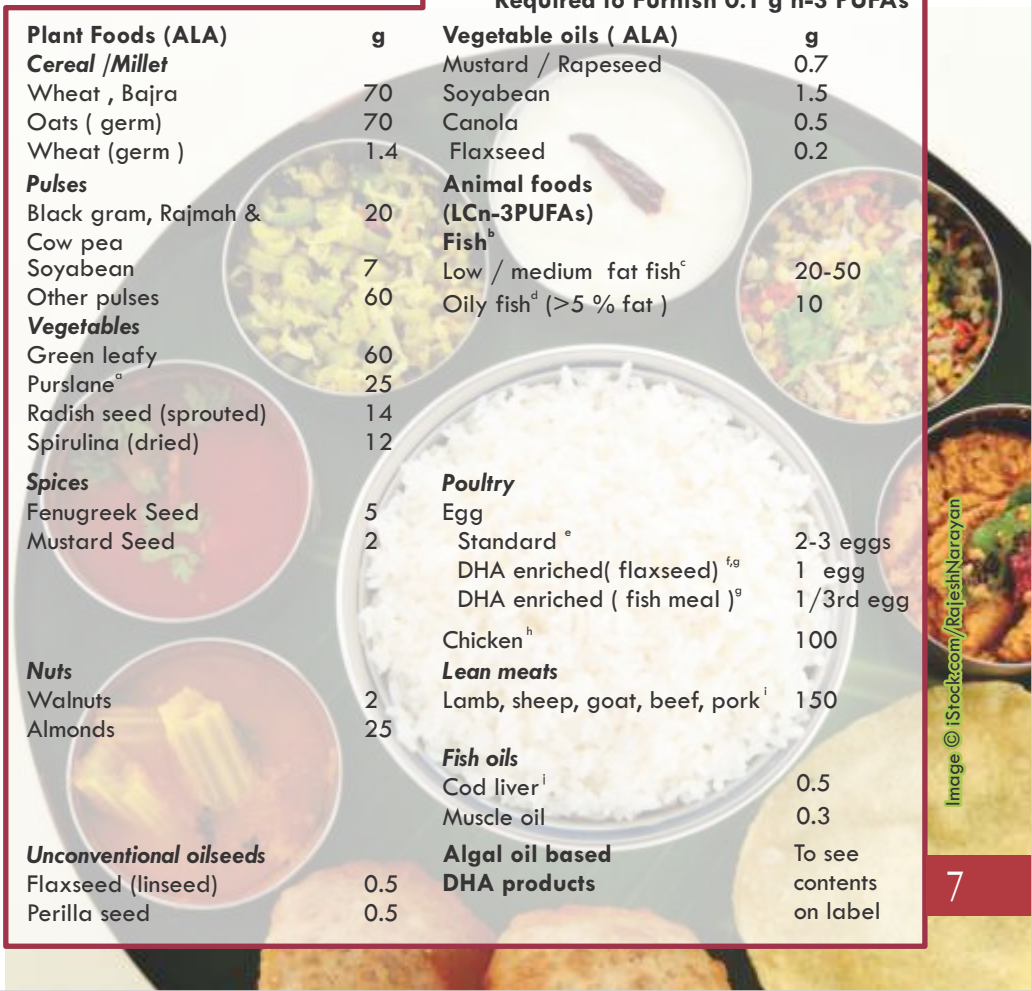
• Modest reductions in CHD rates by further decreases in saturated fat are possible if saturated fat is replaced by a combination of poly- and monounsaturated fat, and the benefits of polyunsaturated fat appear to be strongest.

Protein: Protein intakes in India appear to be high but this presents a deceptive picture because most of the dietary protein in Indian diets is from cereals, the protein quality of cereal protein is well known to be poor. Protein quality depends on digestibility and amino acid scores. Protein digestibility corrected amino acid score (PDCAAS) was used to assess protein quality. Milk and egg protein have PDCAAS of 100. PDCAAS of pulses is generally

Table 5: Approximate Quantity of Foods Required to Furnish 0.1 g n-3 PUFAs

Plant Foods (ALA)	g
Cereal /Millet	
Wheat , Bajra	70
Oats (germ)	70
Wheat (germ)	1.4
Pulses	
Black gram, Rajmah & Cow pea	20
Soyabean	7
Other pulses	60
Vegetables	
Green leafy	60
Purslane[a]	25
Radish seed (sprouted)	14
Spirulina (dried)	12
Spices	
Fenugreek Seed	5
Mustard Seed	2
Nuts	
Walnuts	2
Almonds	25
Unconventional oilseeds	
Flaxseed (linseed)	0.5
Perilla seed	0.5

Vegetable oils (ALA)	g
Mustard / Rapeseed	0.7
Soyabean	1.5
Canola	0.5
Flaxseed	0.2
Animal foods (LCn-3PUFAs)	
Fish[b]	
Low / medium fat fish[c]	20-50
Oily fish[d] (>5 % fat)	10
Poultry	
Egg	
Standard [e]	2-3 eggs
DHA enriched(flaxseed) [f,g]	1 egg
DHA enriched (fish meal)[g]	1/3rd egg
Chicken[h]	100
Lean meats	
Lamb, sheep, goat, beef, pork[i]	150
Fish oils	
Cod liver[i]	0.5
Muscle oil	0.3
Algal oil based DHA products	To see contents on label



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in the range of 50 to 67, wheat flour has a PDCAAS of 43 and rice flour has a score of 50. This is because cereal and pulse proteins are less digestible and they both have some limiting amino acids- Lysine in case of cereals and Methionine in pulses. Combining cereals with pulses in a ratio of about 5:1 increases the PDCAAS to approximately 65 but still do not match to the PDCAAS of milk or egg. One reason is that the dietary fibre in the pulses decreases protein digestibility. PDCAAS of vegetarian diets is 85%.

Micronutrients: One –third of the population suffers from malnutrition and "hidden hunger" is a problem. Hidden hunger has been defined as deficiencies in essential micronutrients i.e. vitamins & minerals in individuals or populations which negatively impact on health, cognition, function, survival, and economic development (Sight and Life Expert Panel, 2009). These micronutrient deficiencies that are public health problems can be tackled either through supplementation or fortification.

Comparison of the two strategies shows that each has its merits and limitations as summarized in Table 6.

Table 6: Comparison of Supplementation and Fortification as Strategies for Tackling Micronutrient Deficiencies

Supplementation	Fortification
• Temporary approach	• Medium-to-long-term approach
• Requires an exhaustive supply chain process	• Suitable food vehicle and organized processing facilities
• May not be sustainable for large populations	• Sustainable for large populations
• Low compliance	• High compliance

Food fortification has been used successfully in several countries. It has a long history for successful control of deficiencies of vitamins A, D, several B vitamins, iodine and iron. Some examples are:

• Mandatory iodization of salt in Switzerland and USA in 1923and is now available in most countries; mandatory fortification of flour with Vitamin B1 in Canada in 1933 resulting in virtual elimination of Beriberi.

• In the early 1940's fortification of cereal products with thiamin, riboflavin and niacin became a common practice in many countries.

• In 1954, in Chile flour was fortified with B-vitamins and iron. This country now has a very low prevalence for anaemia.

• In 1974Guatemala began fortifying sugar with vitamin A so that prevalence of deficiency was reduced to one-third the pre-fortification levels.

• Venezuela began fortification of wheat and maize flour with vitamin A in 1992, leading to Vitamin A sufficiency in the general population and an important reduction in anemia in children.

• In 1998, folic Acid fortification was mandated in the USA and folic acid fortification is now implemented in 60 countries. In 2009, 51 countries had regulations written for mandatory wheat flour fortification programs that included folic acid.

• Fortification of milk and dairy products with vitamin D started in 2000 in the US and Canada.

Fortification of flour with folic acid has been a success story for many countries as there has been a decline in the incidence of neural tube defects. Country-wise declines range from 26% in USA and Australia, 31%in South Africa, to 43% in Chile, 54% in Canada and as much as 60% in Saudi Arabia.

One tremendous advantage of fortification of staples is that the the price of the added vitamins and minerals is so low that there is no need to increase the sales price of the staple food.

• There are opportunities for innovations in food fortification. In case of sugar, a novel vitamin A palmitate formulation is attached to the surface of sugar crystals that ensures a fortification level of 50,000 IU/g of vitamin A. NutriRice is rice fortified with micro-encapsulated vitamins in re-constituted rice kernels via extrusion. The concentrated vitamin/mineral rice premix can be mixed with natural rice grains (1:100). This rice has good organoleptic properties in terms of shape, taste, colour and retention of the vitamins is high during cooking.

Fetal Origins of Non-Communicable Diseases:

Epigenetic mechanisms are affected by several factors among which diet and nutrition play an important role, especially in DNA methylation and histone modification. The first two years of life besides intrauterine life i.e. the first 1000 days are critical because brain volume doubles during the first year of life and reaches 80%–90% of adult volume by age two. Environmental and nutritional insults during this sensitive period alter neurodevelopment. Development of language and sensory pathways (vision and hearing) occurs during the first year of life and higher cognitive functions begin to peak around the second year and through the preschool years.


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Thus, nutritional status and early experiences can mediate motor, cognitive, and socioeconomic development. Improving nutritional status may in turn improve children's experiences and environmental stimulation. Undernutrition negatively impacts physical growth and activity, and motor development, which may in turn influence brain development through caregiver behaviour and child exploration of the environment. Some evidence suggests that these mechanisms contribute to delayed motor and cognitive development in infants and children with iron deficiency anaemia.

Use of Biotechnology for nutritional enhancement of food crops: Biotechnology can be used successfully to improve nutrient content of food crops especially staples in order to tackle micronutrient deficiencies in sustainable manner. Some examples are maize and cassava expressing high β carotene, golden rice that expresses 35 ug/ g of rice of β carotene. such staples can provide considerable amount of vitamin A and help meet the requirement for this vitamin. GE rice has been developed which has more iron storage protein . Use of phytase gene can reduce the phytate content of the grain e.g. corn that iron absorption is enhanced. Other developments include a rice expressing high lysine using RNAi technology and gene silencing. Similarly rice with high folic acid content has been developed. It must be highlighted that GM crops are safe. They are thoroughly tested, have been subjected to proper risk assessment and to date there is not a single report of any genetically engineered crop causing harm. such new technology when accepted will lead to new crops and help to address many of our domestic needs and combat nutritional problems.

COMING EVENTS

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Agricon 2017
Conference on Precision Agriculture Technologies
March 10, 2017
Hotel Hilton, Chennai
T: 044-42444555/530
E: raghunathan.r@cii.in

International Conference on Nutrition & Food Sciences 2017
May 10-12, 2017
NARIC Food Science Research Institute
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Recent Amendments & Regulations
Regulatory Affairs Meeting
March 23, 2017
The Orchid Hotel
Near Mumbai Domestic Airport
Protein Foods & Nutrition Development Association of India
PFNDAI
Contact: Nutritionist:
nutritionist@pfndai.org
T: 022-2353 8858/8998

Conference on Rice Emerging Trends & Future Prospects
March 27, 2017
Sheraton Grand, Pune
T: 022-24931790 ex 406
E: prasad.parte@cii.in

National Conference on Food Regulation in India
Current Status & Way Forward
March 27 & 28, 2017
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IFT17: Go With Purpose
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VEGETABLE OILS AND FATS.....
MORE THAN A COOKING MEDIUM

By Mr. Prakash Chawla, CEO, AAK Kamani Pvt Ltd

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Indian Consumer is changing .....

In today's health conscious world, consumers are constantly demanding healthier, albeit tasty foods. With the penetration of internet and social media, the purchasing behaviour of Indian consumer has changed drastically. Urbanization, changing lifestyle, higher disposable incomes are the factors influencing the buying behaviour of the consumers. Eating practices have changed over the last few decades due to lifestyle changes and advances in technology and the segment that values convenience has grown. This growth is fuelled mainly due to emerging markets, rise in Quick service restaurants (QSRs), ready to eat foods, modern retail formats. Etc.

Knowing who your customers are ……is great, but knowing how they behave….. is even better- Jon Miller

Vegetable oils and fats add value to the entire food chain

Vegetable oils and fats have always remained an integral part of any Indian diet. They are used in foods for several reasons. Primarily, it is the major source of energy and a carrier of essential nutrients which are vital for growth and metabolism. They also have a strong influence on the palatability and consumer acceptance of finished products.

The demand of oils and fats has also changed over the years. Earlier the demand was region and application specific, but now age, lifestyle and health conditions also influence the demand. The consumption of edible oils is increasing at the rate of 3% per annum with current per capita consumption levels (at about 14 Kg/year) being higher than previous years [global average is 24 kg/year]. Increased health risks have influenced the consumers to opt for healthier options when it comes to fats and oils and their products.

Oil is not just a cooking medium; it is also looked upon as a medium for lifestyle correction due to rising health concerns

Consumer is looking at affordability, health and taste. This requires high-end technology and R& D for a good quality and healthy product. There is also demand for sustainable products due to the increasing environmental concerns. Thus it is very important to provide quality product as per the customer demands.

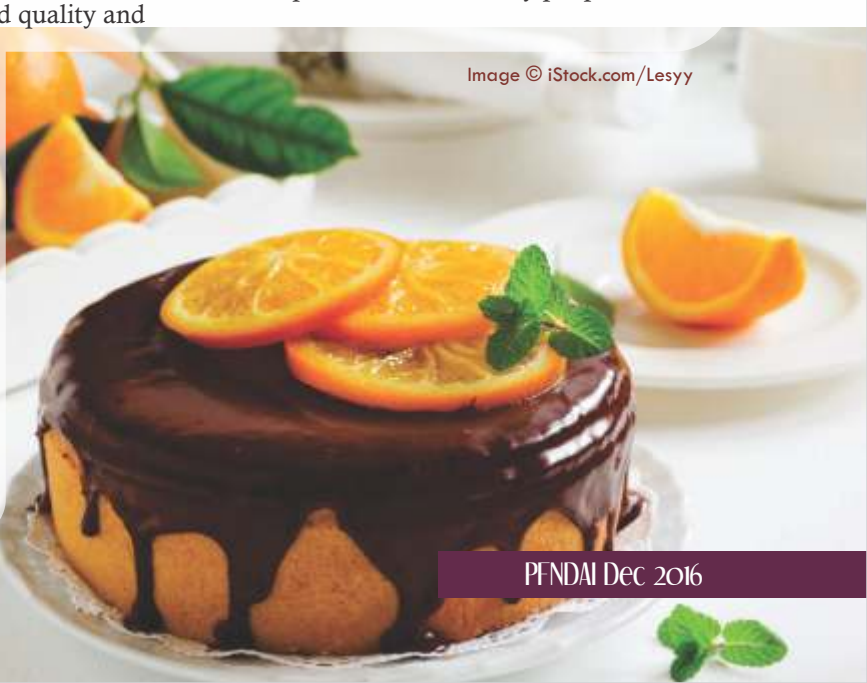
Specialty Oils and Fats in food applications

Speciality fats and oils are tailor made fats that cater to the specific needs of the food application. They provide functional properties and health benefit. A profound study of molecular chemistry of oils with advanced processing techniques is required for the manufacture of speciality fat and oils.

Speciality fats and oils provide a wide spread of healthy and affordable products and enhance the joy of eating for millions of consumers

Confectionery

Confectionery products include Chocolates, toffees, candies, jellies etc. which has a huge market in India. Chocolate is a universal product consumed by people of all



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age groups. Cocoa butter is the prime ingredient which gives chocolate its taste and texture. Cocoa butter is a very expensive commodity making the chocolate expensive. Cocoa Butter Substitute (CBS) is a vegetable fat with similar melt profile, hardness, shine and flavour release as that of cocoa butter.

CBS fats thus make chocolate economical and widely available and affordable to the consumers. CBS fat is lauric based and is not compatible with cocoa butter. According to FSSAI (Food safety and Standards Act of India), chocolates are products obtained from cocoa butter only and no other vegetable fat. Chocolates made from these CBS are called compound (imitation) chocolates.

These chocolates are chocolate-like but cannot be termed pure chocolate by definition and fall under proprietary foods. There are specialty fats available which are non lauric based like CBR (Cocoa butter replacer) and CBE (cocoa butter equivalent). CBR which is gaining prominence in India has limited compatibility with cocoa butter and CBE fats derived from exotic fats like shea, illipe, sal, mango kernel etc. is fully compatible with cocoa butter.

Bakery

Bakery includes a huge range of products spanning different categories- Cakes, cookies, biscuits, khari, puff, rusk, butter are the major products widely consumed. Bakery products have gained popularity among masses especially the kids. Vegetable fats / shortenings and margarines are mainly used for bakery applications which are hydrogenated fats.

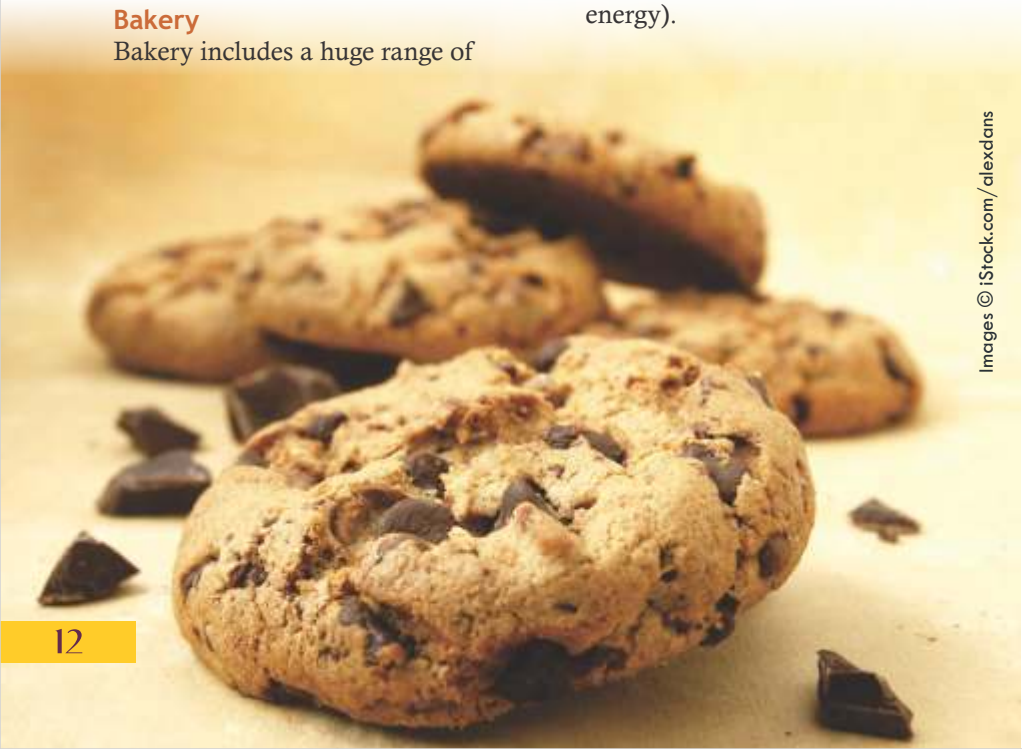
Trans fatty acids have been a major concern and are widely available in the bakery products which are consumed by children as well as adults. The American Heart Association and the World health Organization recommend limiting the amount of trans fats in-take to less than 1 percent of total daily calories intake (and fat intake should be 20-30% of the total energy).

Recently The Food Safety Standards Act of India (FSSAI) has reduced the limit of trans fats to 5% maximum in Vanaspati, Bakery Shortening and Margarine. Trans free vegetable fats and fortified fats have now replaced the regular fats which contain the unhealthy trans fats.

Vegetable fats are now available in the market which are low trans or zero trans, low in saturates and are fortified with vitamins, minerals, and specialty ingredients like omega 3 fats, phytosterols, natural anti-oxidants etc. There is a move to promote the addition of Vitamins A & D in vegetable oils and fats (fortification) for effective stress management and overcome hidden hunger of micronutrients.

Culinary

Oils are widely used for culinary and frying purpose. Snack food and fried food require oils with good stability, high smoke point, colourless, odourless and good shelf-life. Fortified oil with natural antioxidants, phytonutrients and vitamins are available for this purpose along with specialty culinary oil blends. Emerging trend of fortifying oils with natural ingredients like spices and herbs which are infused to add on flavour and aroma with enhanced natural antioxidant levels (natural flavourings) is the way forward.



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Ice-cream/Frozen Desserts

Ice-creams are manufactured using sugars, flavours and dairy fat like milk or milk fat which provides the appropriate texture, setting property and flavour release. Dairy fat or Milk fat is an expensive ingredient in many developing countries and vegetable fats provide an inexpensive high quality alternative. The use of vegetable fats results in lower costs and higher production output. It also makes it possible to give the frozen dessert a better nutritional profile.

Frozen desserts taste good and at times consumers often don't realize the difference between ice cream and frozen desserts which contain little or no milk fat. Moreover frozen desserts made from vegetable fats don't contain cholesterol or trans fats whereas in milk or milk fat both are naturally present. Frozen desserts may also contain milk solids which are a good source of calcium and proteins. Some of the specialty oils find application in the manufacture of chocolate coating also called ice-cream couvertures which have excellent taste profiles.

The frozen desserts market in India will witness a steady growth and will also be open to innovation primarily focusing on health and nutrition for e.g. Frozen desserts fortified with omega3 oils, vitamins, probiotics, calcium, artificial sweeteners etc. seem to be the next big trend.

Nutrition

'Let your food be your medicine' is catching up and urging consumers to switch to more natural and healthier dietary options. There is an increase in health awareness and also inclusion of new and different varieties of oil in the diet. Specialty oils and fats are available for the various segments in the nutrition category

- Infant nutrition - Human milk fat replacer, MCT, Omega 3 DHA (veg source)
- Geriatric Nutrition – Omega 3 (ALA, EPA, DHA), Coconut oil, GLA
- Sports Nutrition – MCT, CLA
- Targeted Nutrition – as per physiological needs

Emerging new technologies in field of oils and fats

New processing techniques and technologies along with novel ingredients are now being developed in the field of oils and fats. For e.g. Nanotechnology in oil processing improves yield and saves water. Vegetable oils in a powder format (Fat powder or flakes) offer convenience and can be used as an ingredient in ready to use/eat dietary supplements. Technologies like minimally processed vegetable oils to retain maximum micronutrients are going to be the focus area.

Changes in the offing.....

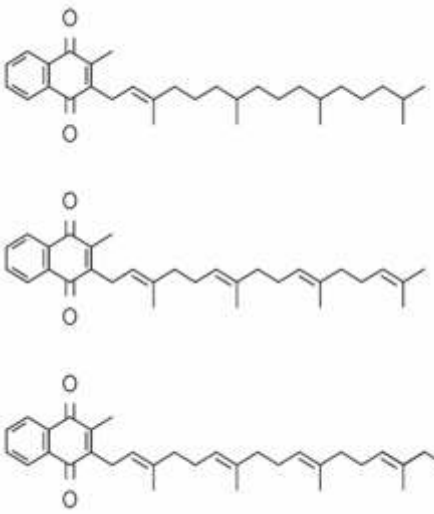
India needs to be self-reliant in terms of oilseed production since we are the world's biggest consumer of edible oils. The need of the hour is to boost the domestic oilseeds' production and manufacture of edible oils to meet the growing demand. This needs policy change not only from the states but also from the central government. We need to give incentives to the farmers to undertake oilseed cultivation, increasing the farm productivity and providing value additions within the framework and move towards sustainable farming.

The Make-in-India/Start-up India campaign announced by our PM is aimed at boosting entrepreneurship, encouraging start-ups with job creation and reducing reliability of imports. Participation of research institutes, Government and Industry in providing right opportunities, skilled manpower development and appropriate technologies to create more self-employment and encash on emerging prospects wherein small entrepreneurs can produce many value added products to cater to our ever growing population.

VITAMIN K2

By
Dr. Shobha A. Udipi, Sr. Nutritionist, PFNDAI

was believed to be important only for blood clotting. Today we know that vitamin K is actually a group of vitamins, consisting of Vitamin K1-Phylloquinone, vitamin K2 – Menaquinones and vitamin K3-Menadione.



The K family contains a wide spectrum of isoprenologs consisting of a 2-methyl-1,4-naphthoquinone ring and share the same 2-methyl-1, 4-naphthoquinone backbone, and their side chains comprises a polymer of repeating prenyl units. Vitamin K2 is a group of menaquinones (MKs) with individual forms differing in the length of the isoprenyl side chain and degree of saturation. MKs are named according to the number of prenyl units. K1 or phylloquinone occurs mainly in plants. Vitamin K3 is the synthetic form and it does not have a side chain as do phylloquinone and menaquinones.

The menaquinones (MK) are mostly formed by bacteria. The major bacterial MKs in human large intestine occur in the following order: MK-10, MK-11,>MK-8, MK-7, and MK-6.Among these, MK-4 is unique because the body converts it from phylloquinone by a process not involving bacterial action. Dietary sources for vitamin K2 are generally fermented foods i.e. foods prepared bacterial fermentation but not those using yeast. Natto a Japanese food is the richest known source of K2 which may also be obtained from curd cheese and some traditionally fermented cheeses like Swiss Emmental and Norwegian Jarlsberg. Modest amounts of MKs are present in meat, dairy foods, and eggs. Meat and organ meat are good sources because animals (but not humans) have the unique ability to convert the vitamin K1 in grass into K2. Therefore, meat of grass-fed animals is likely to have more K2 than will grain-fed animals.

MK-10 and MK-11 are poorly absorbed and do not have much vitamin K activity.
Vitamin K1 is present in green leafy vegetables and most of our dietary intake is K1 with K2 intakes being very small, -10-25% of the total vitamin K intake. In Western diets, MK-4 constitutes about 30 to 40% of total MK. Nearly all of the K2 in Natto is MK-7.

Absorption and Bioefficacy: K bioavailability depends on the food matrix and dietary lipid improves absorption as vitamin K is lipid soluble. Vitamin K is incorporated into mixed micelles with bile salts, products of pancreatic lipolysis, and other dietary lipids. These mixed micelles are taken up by small intestinal enterocytes and are incorporated into nascent chylomicrons (CM). CM are secreted from within the intestinal villi into lymphatic capillaries, which join larger lymphatic vessels and empty into blood circulation via the thoracic duct. In the bloodstream, triglycerides are removed by lipoprotein lipase from CM.

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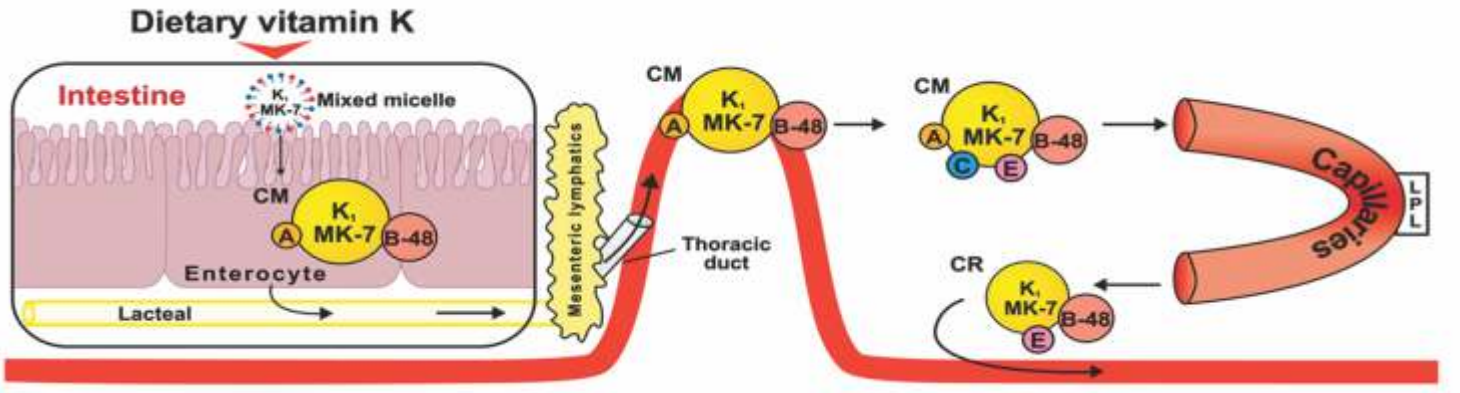


The body handles K1 differently from K2. MK-4 and MK-9 are redistributed from the CM to low density lipoproteins with MK-4 also being incorporated into high density lipoproteins. MK-9 has been detected in human plasma up to 48 hours after administration whereas K1 and M4 are cleared rapidly. After ingestion of 1mg each of K1 and K2, K2 had a half-life 8 times that of K1. MKs are stored in liver and may comprise about 90% of the total K content. K4 may be concentrated in brain, kidney and pancreas.

K2 is more bioeffective than K1in some functions e.g. osteocalcin carboxylation, arterial health. Also, the human body requires smaller amounts of K2.Among K2 menaquinones, MK-7 is more bioactive, the dose may be approximately 1/1000th the dose of MK-4.

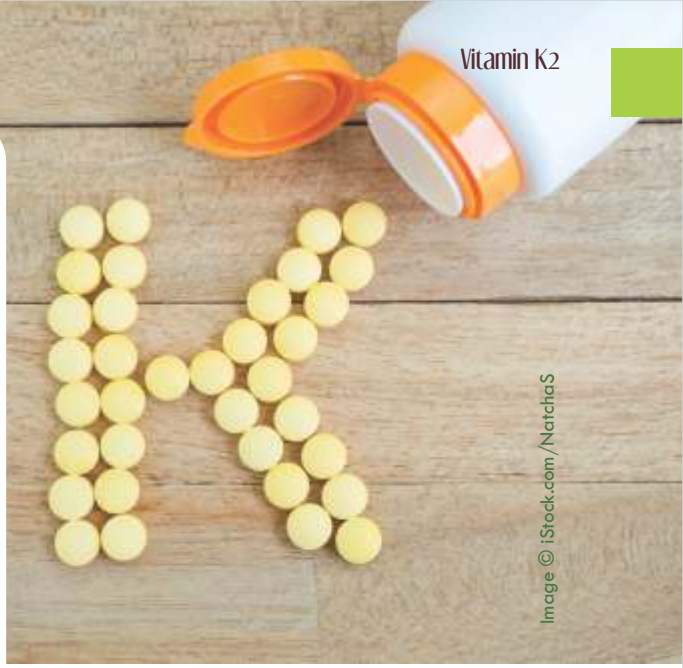
Functions: Research evidence indicates that vitamin K2's role extends to protection from heart disease, ensuring healthy skin, forming strong bones, preventing inflammation, promoting brain function, supporting growth and development and possibly preventing cancer.

The human body has limited capacity to store vitamin K. Therefore it recycles the vitamin through an oxidation-reduction cycle. The reduced form of vitamin K donates a pair of electrons to the enzyme γ-glutamyl carboxylase which is vitamin K - dependent and carboxylates glutamic acid residues in specific proteins, known as vitamin K dependent proteins. These proteins are: osteocalcin/ bone Gla protein, anticoagulation factor protein S, matrix γ-carboxylated glutamate (Gla) protein (MGP), Gla-rich protein (GRP).Table 1summarizesthe functions of these proteins.

Table 1: Vitamin K dependent Proteins and their Functions

Vitamin K dependent proteins	Functions
Osteocalcin	Calcium – regulating protein needed for growth and maturation of hydroxyl-apatite crystals in bone In vit K deficiency calcium resorption/removal from bone is uncontrolled/unregulated and can result in osteoporosis.
Protein S	May be important for bone breakdown mediated by osteoclasts Persons with inherited protein S deficiency are prone to increased blood clotting and osteonecrosis. Can bind and activate TAM receptors *
Matrix Gla protein (MGP)	Found in cartilage, bone, and soft tissue Synthesized, secreted by smooth muscle cells (SMC) in blood vessel walls. Regulates calcium accumulation in arterial SMC Inhibits calcification in cartilage, blood vessel walls, skin elastic fibres, human eye. Prevents vascular calcification in arteries, skin, kidneys, eyes.
GRP and Perisotin	Synthesized in bone tissue, expressed in human skin, vascular tissues Present along with abnormal mineral deposits in calcified arteries/calcified skin lesions
Periostin	Associated with cell adhesion, migration May promote angiogenesis during cardiac valve degeneration, tumour growth
Growth arrest-specific gene 6 protein (GAS 6)	Present throughout nervous system, heart, lungs, stomach, kidney cartilage. Cellular growth regulation factor, has cell signalling activities Involved in phagocytosis, cell adhesion and proliferation, protects against apoptosis May be important in developing and aging nervous system May regulate platelet signalling, vascular hemostasis. Linked to many pathological conditions -thrombogenesis /clot formation, chronic inflammation, atherosclerosis, cancer.

*these receptors are homeostatic regulators in immune, reproductive, hematopoietic, vascular, and nervous systems



Bone Health: Osteocalcin, after it undergoes carboxylation by γ-glutamyl-carboxylase, helps to make bone stronger. Without this modification, osteocalcin is under-carboxylated and lacks is unable to bind to hydroxyapatite. K2 is probably about three times more effective than vitamin K1 at activating proteins related to skeletal metabolism. Babies who were born to pregnant women taking the potent blood-thinning agent warfarin, an antagonist of vitamin K, had severe bone abnormalities.

Osteoporosis affects approximately 200 million women worldwide, is a major cause of disability and accounts for more days spent in hospital than diabetes, heart attacks or breast cancer. It is estimated that one in three women and one in five men ≥50 years, will experience an osteoporotic fracture.

Not many studies have focussed on the association between dietary K2 intake and bone health, possibly because there are few dietary sources of K2. A prospective study with 944 Japanese women followed up for three years, showed that natto (a good source) was positively associated with total hip bone mineral density in postmenopausal women. Rate of bone mineral loss at the femoral neck was lower among women who consumed >200 μgMK-7/day in contrast to women who did not consume as much. Similarly, in about 2000 Japanese men aged ≥65years, total hip, femoral bone mineral density was higher among regular natto consumers, contributing ≥350 μgMK-7/day compared to low natto consumers(<50 μgMK-7/day). However, as natto is soy-based, it would also have provided soy isoflavones that are beneficial for skeletal health.

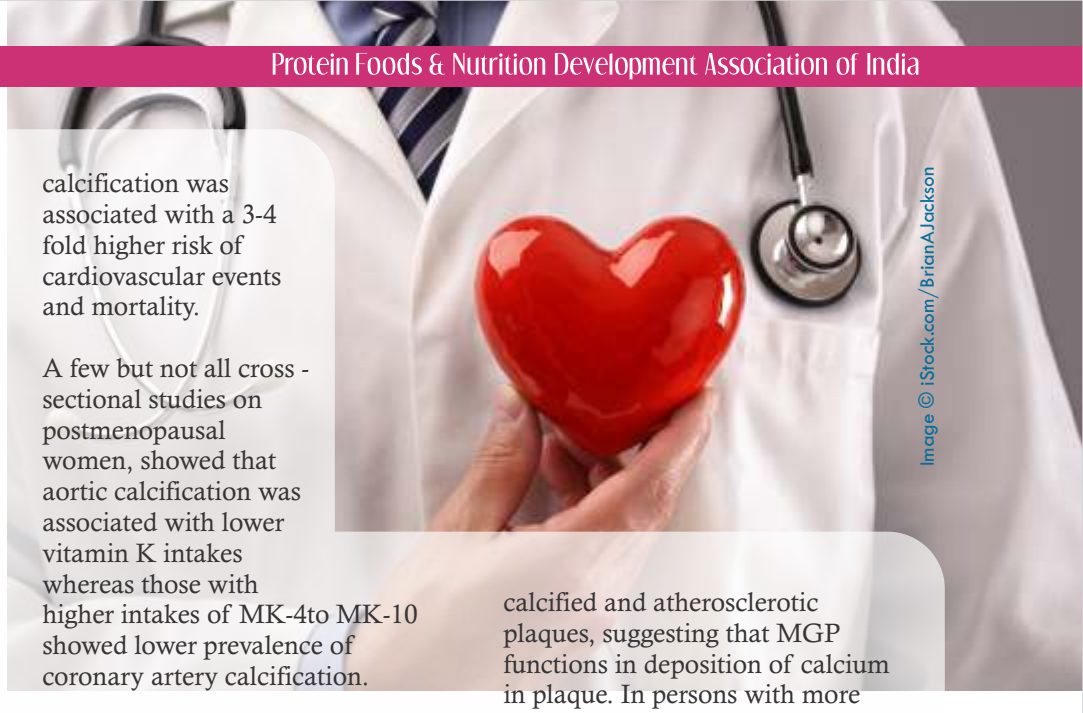
Intervention studies using K2 have shown benefits. In postmenopausal women, hip bone strength reduced after 3 years in the control group, but was unchanged in intervention group suggesting that K2 helped to conserve bone. In stroke patients, osteopenia occurs due to immobilization, with significant loss of bone mineral density. K2 effectively prevented disuse bone loss in 54 hemiplegic stroke victims treated with 45 mg vitamin K2 daily for 12 months and compared to 54 controls. Similarly K2 given either as a supplement (45 mg/day) or in the form of natto, substantially improved bone density. A meta-analysis of randomized control trials show that pharmacological doses of MK-4 (45 mg/d) increase bone mineral density and reduced fracture incidence:hip (77%), vertebral (60%) and all non-vertebral fractures (81%). Another randomized study with >4,000 postmenopausal Japanese women who received either calcium alone or with 45 mgMK-4 /day for three-four years, showed a small reduction in incidence of new clinical vertebral fractures among those taking combined treatment among women who were at high risk compared to women who took only calcium supplements. Other intervention studies conducted in Europe and USA show improvement in bone strength in women given 45 mg MK-4/day.

However, a randomized, double-blind, placebo-controlled study in 334 healthy postmenopausal women (1 to 5 years after menopause) found no effect of 360 MK-7 μg/day on bone mineral density. Similarly, postmenopausal women given a supplement of 180 μgMK-7 /day for three years, showed no change in bone density at most sites except that bone loss was significantly limited at the femoral neck.

Hence studies showing positive effects must be viewed with caution as the dose used for supplementation is approximately 500 times the recommended intake, sample sizes were small, placebo was not used in some studies and some researchers used calcium and vitamin D concurrently. Also in observational studies, circulating MK-7 /Mk-4 levels have not been found to be linked to fracture risk.

The combined effects of K2 and vitamin D have been examined. Both vitamins may have additive effects on bone health. Vitamin D promotes intestinal absorption of calcium, reduces serum parathyroid hormone levels so that bone resorption is reduced and is needed for osteocalcin synthesis. In limited trials with varying duration(two weeks to three years), giving vitamin D along with K supplement helped attenuate bone loss in post menopausal women and improved the percentage of carboxylated osteocalcin.

Menaquinone may also have a synergistic effect with hormone replacement therapy advised to postmenopausal women for increasing / maintaining bone mineral density.



Cardiovascular health: In the third US National Family and Health Survey, adequate vitamin K intakes were associated with lower risk of cardiovascular disease (CVD) and all-cause mortality. A follow up of about 16000 women aged 49-70 years, for approximately 8 years showed that for every 10 μg/day increase in menaquinone intake, there was 9% reduced risk for coronary heart disease (CHD). Also, among ~ 4800 men and women aged ≥55 years, risk of CHD, all - cause mortality was lowest with intakes >32.7 μg/day, compared to intakes < 21.6 μg/day.

However, a prospective study of about 7000 older adults did not show any protective effect withK2 intakes. Similar observations have been reported from a follow up of >35,000 healthy Dutch men and women for approximately 12 years.

Vascular calcification: Vascular calcification occurs in several diseases- familial hypercholesterolemia, end-stage renal disease, hemodialysis, diabetes. Calcification of arteries develops early in the pathogenesis of atherosclerosis, and is a strong, independent risk marker of cardiovascular complications. A meta analysis of 30 prospective cohort studies involving ~ 200000 participants, showed that vascular calcification was associated with a 3-4 fold higher risk of cardiovascular events and mortality.

A few but not all cross - sectional studies on postmenopausal women, showed that aortic calcification was associated with lower vitamin K intakes whereas those with higher intakes of MK-4to MK-10 showed lower prevalence of coronary artery calcification.

Animal studies show reversal of arterial calcification with K2 supplements, although K1 also reduced coronary calcification at high intake levels, probably through conversion to K2.

K2 inhibits calcification through matrix Gla protein (MGP) and Gla-rich protein (GRP).MGP when appropriately carboxylated inhibits soft tissue calcification, by probably binding to calcium crystals and inhibiting bone morphogenetic proteins. Suboptimal K status leads to biologically inactive MGP that has been associated with increased risk of developing atherosclerosis and vascular calcification.

Unusually MGP high concentrations have been found in calcified and atherosclerotic plaques, suggesting that MGP functions in deposition of calcium in plaque. In persons with more advanced atherosclerotic plaque, the level of carboxylated/ activated MGP was reduced. A polymorphism of MGP has been found to be linked to progression of coronary artery calcification in subjects followed up for a decade. Carriers of the genotype had higher risk of calcification of the femoral artery and myocardial infarction.

In contrast, the innermost lining of the carotid arteries of healthy persons did not have undercarboxylated MGP, and undercarboxylated MGP levels were associated with 2-3 times greater risk of CVD. Thus, undercarboxylated MGP levels may help predict risk of mortality in persons with overt vascular disease.

Another line of evidence comes from cross-sectional studies on chronic users of vitamin K antagonists. Persons prescribed warfarin therapy have been found to have more vascular calcification. In mice bred for genetic deficiency of a K2- dependent protein; there was uncontrolled deposition of calcium in the aorta and coronary artery, followed by death within a few weeks after birth. Similarly, a mutation in the human gene that controls vitamin K production, doubles the likelihood of atherosclerotic diseases.

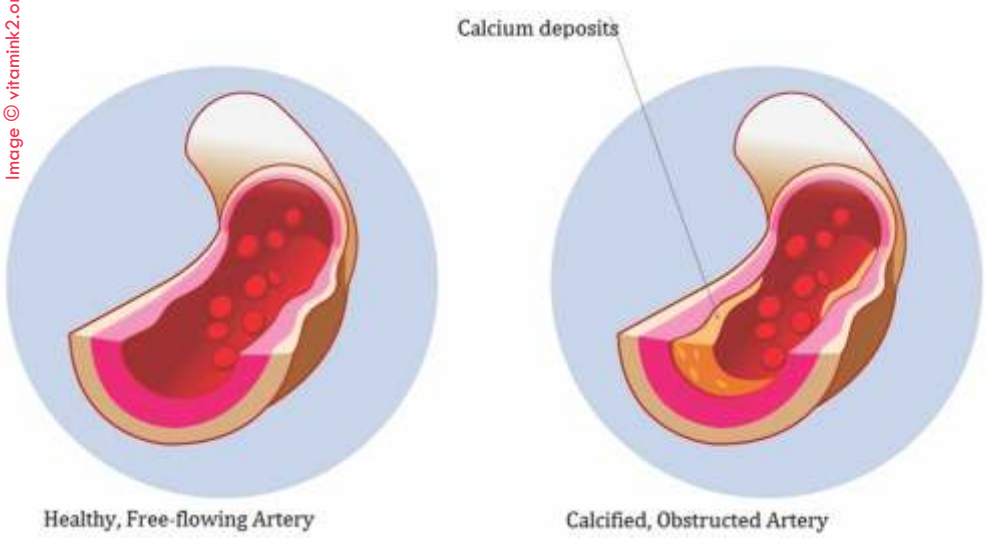


Image © vitamink2.org

Evidence from a large epidemiological study in Rotterdam on 4807 participants aged > 55 yrs, showed that an intake of > 32 µg /day was associated with50% reduction in deaths from cardiovascular issues related to arterial calcification and 25% reduction in all-cause mortality. In Europe, similar trends were observed with a cohort of 16000 men and women. Also, MK-7 supplement improved arterial stiffness and arterial elastic properties. In postmenopausal Dutch women,K2's protective effect was seen only after 2 years of supplementation.

Other favourable effects on lipid profile, lipid peroxidation, HDL and total cholesterol have been observed in animals.
Well - designed studies are required to evaluate the effect of vitamin K2 supplements on CVD risk and vascular calcification. Also, the role of other K dependent proteins in atherosclerosis and plaque calcification requires study.

Cancer: K2 has been shown to inhibit growth of several human cancer cell lines including liver, colon, leukemia, lung, stomach, lymphocyte, nasopharynx, breast, oral epidermoid. Several mechanisms have been suggested for the cancer preventive activity: activation of growth-inhibiting proteins requiring vitamin K2and growth arrest genes, arylation pathways, reduced invasion by cancer cells, cell cycle arrest and apoptosis as well as production of specific molecules involved in gene expression /transcription/mRNA expression. In leukemia cell lines resistant to apoptosis, addition of K2 induced cell differentiation.

A study on 11000 men showed that increased intake of K2 may reduce risk of prostate cancer by 35 %, with more pronounced benefits in cases with advanced cancer. There are case reports where K2 was beneficially used for treatment of myeloid leukemia resulting in cytogenic remission, based on which a multi-centric trial has been undertaken in Japan.

Insulin sensitivity: Vitamin K is involved in pancreatic β-cell proliferation, production of adiponectin, insulin sensitivity, and glucose tolerance. In a randomized control trial with 355 patients, K2 supplementation significantly improved insulin sensitivity.

Nervous System: Gas6 is associated with cell signalling actions in the central and peripheral nervous system. Gas 6 with Protein S, may influence cognition. K2 may also play a role in sphingolipid metabolism. Exposure of human foetuses to warfarin in the first trimester of pregnancy results in warfarin embryopathy that includes optic atrophy, dilation of the cerebral ventricles, blindness, microencephaly, and mental retardation.

K4 may limit brain inflammation and so may be important in conditions associated with inflammation eg in aging. It has been observed that persons with low vitamin K levels had dysregulated calcium in their brains and this dysregulated calcium may be responsible for some of the brain damage occurring in Alzheimer's disease.

Also, persons diagnosed with early stage of Alzheimer's were found to be consuming much less vitamin K compared to healthy controls.K1 and K4 were found to inhibit in vitro oxidative cell death of precursors of oligodendrocytes and immature fetal cortical neurons. Further studies will reveal the importance of K2 for brain health.

Requirements:

Unlike animals, humans required preformed K2 in the diet. The acceptable intake for vitamin K is set at 90 -120µg per day. However, this is based on the requirements for blood clotting and probably needs to be review in terms of K2 requirements for other functions, as well as during periods of growth etc. Available information suggests a dose response relationship between carboxylated osteocalcin and vitamin K intakes.

For supplements, the optimum dose has not yet been established. It is suggested that supplemental intakes can be between 50 and 1000µg per day, and, even 50 µg daily may help ensure healthy bone density and prevent vascular calcification. In Japan, vitamin K2 supplements have received approval for treatment of osteoporosis, although more studies would be desirable in order to confirm the use of this vitamin for bone health. Currently available data suggests that K2 is safe even at high doses that have been studied since no side effects have been identified.

RESEARCH IN HEALTH & NUTRITION

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Carotenoid-Rich Tomato Extract Benefits Heart Health

06 Oct 2016 Nutrition Insight

New research has shown that taking the carotenoid-rich tomato extract (CRTE), Cardiomato, supplement for only two weeks inhibits the oxidation of Low-Density Lipoprotein (LDL), the cholesterol most often associated with heart disease. The study was published in the international peer-reviewed journal, Food & Nutrition Research.

The research carried out by scientists at Naturalpha Clinical Nutrition Center at Hôpital Saint Vincent de Paul, furthers the assertion that whole food extracts are more effective than single, standalone ingredients, such as lycopene.

The study builds upon a growing body of research elucidating the role tomatoes play in cardiovascular health. Specifically, the paper sheds light on a particular niche within this field of research: how a specifically standardized tomato extract can support cardiovascular health, by helping to regulate the stress response that naturally occurs after one eats, which is something that can benefit everyone's health.

"The use of a whole food extract from the tomato as a method of addressing the oxidation of LDL, the most dangerous form of cholesterol, and improving the metabolic picture following a meal, is a new concept," said Dr. Karin Hermoni, category manager at Lycored.

The concept was tested in a double-blind, randomized, placebo-controlled study that involved 146 healthy, normal weight adults. Over a two-week period, study participants were randomly given either the placebo, or a proprietary carotenoid-rich tomato extract for heart developed by Lycored, which comprised of a standardized ratio of several phytonutrients that work together to improve cardiovascular health. These included phytosterols, tocopherols, as well as several tomato carotenoids.

Measurements of the participants' oxidized LDL, glucose, insulin and triglyceride responses were performed for eight hours after ingestion of a high-fat meal, before, and at the end of the intervention. Results showed ingestion of the standardized tomato extract significantly improved changes in oxidized LDL response of a high-fat meal, as compared to the placebo, after two weeks.

"Lycored has been involved in multiple studies examining the relationship between tomato extracts and cardiovascular health over the past two decades," said Hermoni. "We've discovered that our standardized tomato extract for heart, Cardiomato can affect multiple parameters affecting cardiovascular health, such as blood pressure and endothelial function, but there is a particular amount of enthusiasm around this latest research. The fact that this study shows a CTRE can effectively reduce LDL oxidation and manage the stress response we are all experiencing almost every day of our lives is great news."

Reward Points Can Promote Healthy Eating

04 Oct 2016 Nutrition Insight

New research has found that the best way to get customers to make healthy choices is to offer rewards points that can be redeemed when making future healthy purchases.

The research from Cornell University School of Hotel Administration and Food and Brand Lab suggests that marketers can use various promotional strategies to nudge a selection of featured, healthier foods.

The study looked at 178 undergraduate students who were asked to indicate whether they would be more likely to buy healthy foods when given a discount at the time of purchase or when given rewards points to use towards healthy items in the future.

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This product is not an infant milk substitute or infant food for less than 2 years old.

1. World Health Organization and Food and Agriculture Organization of the United Nations. Diet, nutrition and the prevention of chronic diseases. Report of a Joint WHO/FAO Expert Consultation. World Health Organization, Geneva. 2003.
2. Food and Agriculture Organization of the United Nations. Fats and fatty acids in human nutrition. Report of an expert consultation. Food and Agriculture Organization of the United Nations, Rome. 2010.

Mead Johnson Nutrition
NOURISHING THE BEST START IN LIFE

The results showed that rewards points are most likely to result in healthy food selection because they align with long-term health goals. "For many of us, our short term desire for indulgent food often wins out over long term health goals like weight loss, eating healthier and exercising more," explains lead author Elisa Chan, a PhD candidate in Cornell University's School of Hotel Administration. "However, we found that rewards points can counteract our impulse to indulge by appealing to the part of us that wants to make better choices in the future."

The researchers also tested their findings on 243 actual customers in a corporate cafeteria and found again that offering rewards points resulted in more salad sales than offering discounts on salads. This was especially true for people with a higher BMI. "Not only do rewards points get customers to eat healthier, they are good for the bottom line. They help to build a returning customer base who feel good about the meals they buy," says Brian Wansink, PhD, Director of the Cornell Food and Brand Lab and author of Slim by Design.

Analyzing picture books for nutrition education

Medical News Today 7 October 2016

Image © iStock.com/yaruta

Recommended books must be reviewed carefully, according to a new study published in the Journal of Nutrition Education and Behaviour.

Feeding children can be a challenging process for many parents. A previous study found 46% of preschoolers were picky eaters and 40% of picky eaters remained picky for two or more years. Nutrition education and recommended feeding practices may help parents deal with feeding problems and shorten their duration. Books may be used as resources to help teach children to overcome poor eating habits. Thus, a content analysis was conducted to assess messages about dietary behaviours and feeding strategies in a set of picture books.

For the analysis, Oksana Matvienko, PhD, of the School of Kinesiology, Allied Health and Human Services, University of Northern Iowa, Cedar Falls, IA, selected picture books that were fiction, published between 2000 and 2016, accessible in the United States, in print format, and appropriate for children 4 to 8 years old. The study included books found in children's literature and publishing industry databases as well as retail and book-oriented websites. The books were then coded to capture themes and patterns presented in the stories. The selection process revealed 104 books that portrayed dietary behaviours. "The books had positive messages about good eating habits that were communicated in creative, clever, believable, child-friendly, non-preachy, and non-forceful manners, which is what parents prefer," said Matvienko. "But many books delivered interesting, diverse, yet improbable ideas that did not align with science-supported nutritional guidelines."

Of the books evaluated, 50% featured a specific eating behaviour, 21% lifestyle or eating patterns, 20% food-related sensations and emotions, and 9% table manners. Some books had clear, direct messages whereas others could be vague, sophisticated, unconvincing, unresolved, or conflicting. The messages in the books were open to misinterpretation depending on many factors. Response actions and problem-solving approaches in books generally did not align with scientific consensus. Although the responsive feeding model, whereby children should be allowed to control their own food intake in the context of structured meals provided by adults, has been advocated for several decades by nutrition professionals, it did not find its way into fictional picture books.

"Picture books are a promising tool for improving children's eating habits, but practitioners should evaluate the book's clarity, accuracy, and strength before making recommendations," said Matvienko. Because books are convenient, they may be a useful tool for parents to help children overcome poor eating habits. However, future research needs to be done examining picture books about dietary behaviour alone and combined with other strategies for attaining optimal influence on children's food habits.

Soy protein early in life may help prevent bone loss in adulthood

Medical News Today 17 October 2016

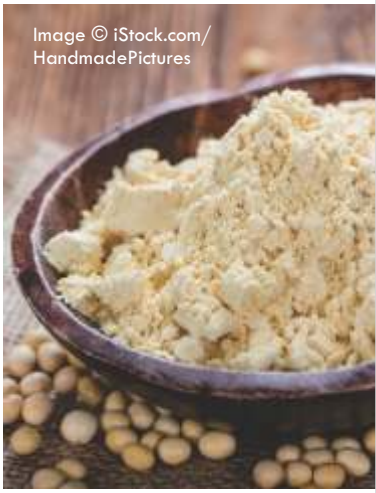

Image © iStock.com/ HandmadePictures

Move over milk, soy protein early in life might be what's needed for strong, healthy bones in adulthood.

New research, published online in The FASEB Journal, reports that early dietary nutrition heavy in soy protein isolate can protect against

serious bone loss during adulthood. This also is the first time that scientists have used an animal model to show concrete evidence of a protective effect of an early-life soy protein isolate diet on adult bone loss.

"Appropriate early-life nutrition can optimize peak bone mass," said Jin-Ran Chen, M.D., Ph.D., a researcher involved in the work from the Skeletal Development Laboratory at Arkansas Children's Nutrition Center at the University of Arkansas for Medical Sciences in Little Rock, Arkansas. "Consumption of soy foods has a variety of health benefits, including amelioration of bone loss during adulthood."

To make their discovery, Chen and colleagues used a very young female rat model. One group of rats was fed a soy protein isolate diet for 30 days (from postnatal day 24 to 55), and then was switched to a regular standard rodent diet until 6 months of age. The rats were altered to mimic postmenopausal bone loss in women to determine the amount of bone loss. The second group of rats was fed a regular standard rodent diet throughout life. This group was also altered to mimic postmenopausal bone loss and analyzed to determine bone loss. The researchers found that the first group of rats s compared to the second group of rats.

"The centuries-old mantra that children need milk to 'grow strong bones' remains true, but here we have evidence that the protein components of soy 'milk' have key osteogenic effects," said Thoru Pederson, Ph.D., Editor-in-Chief of The FASEB Journal. "This finding could ultimately have major pediatric health impacts throughout various parts of the world."

Dietary intake of arginine can enhance the immune response against cancer

Medical News Today 14 October 2016

A study led by researchers from the Institute for Research in Biomedicine (IRB) affiliated to the Università della Svizzera Italiana (USI), shows that L-arginine, an amino acid that is consumed through diet, can boost the activity of a particular type of immune cells, so called T cells.

When the levels of L-arginine are increased the metabolism of these cells is re-organized and the cells survive longer and are more effective in fighting tumours. These findings are published in the renowned scientific journal Cell and open up new ways to improve T cell therapies against cancer.

T cells play crucial roles in the immune defence against viruses, bacteria and cancer cells. A long sought-after goal of immunologists is to tailor the activity and effectiveness of T cells to modulate the immune response. To explore the possibility that the activity of T cells can be regulated by components of our diet, the researchers systematically analyzed fluctuations of metabolic pathways in T cells following activation. For this, Roger Geiger, a postdoctoral fellow in the laboratory of Antonio Lanzavecchia (IRB Bellinzona) teamed up with the research groups of Nicola Zamboni (ETH Zürich) and Matthias Mann (MPI Munich) that are specialized in mass spectrometry-based technologies for the analysis of hundreds of metabolites and thousands of proteins within a cell. Based on this high-resolution analysis, the arginine metabolism was identified as a potential point for therapeutic intervention.

This possibility was tested in the laboratory of Federica Sallusto (IRB Bellinzona) and led to the discovery that orally administered L-arginine endowed T cells with a higher survival capacity and a better effectiveness against tumours. To understand the underlying molecular mechanism, the researchers collaborated with another team headed by Paola Picotti (ETH Zürich) that developed a method for the identification of proteins that interact with metabolites. Using this approach three proteins were identified that sense increased L-arginine levels and participate in the remodelling of T cells toward increased survival.

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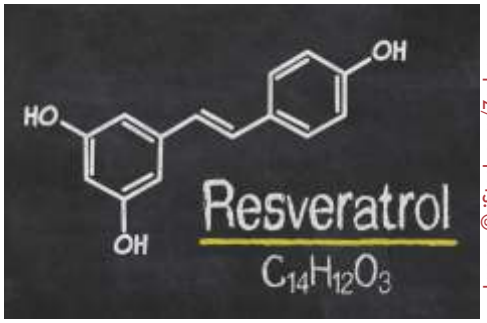


Image © iStock.com/Zerbor

Resveratrol may suppress pathogen that causes inflammatory diseases

IFT Weekly October 19, 2016

A study published in Scientific Reports shows that resveratrol—a component of red wine and grapes—may help control inflammation induced by a bacterial pathogen that is linked to upper respiratory tract inflammatory diseases.

"It has been shown that resveratrol can suppress inflammation, but how it regulates inflammation

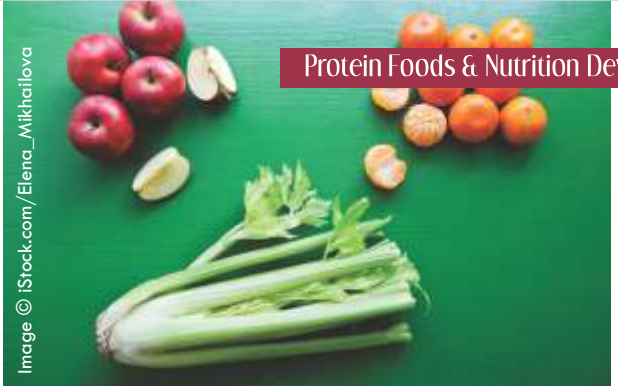


Image © iStock.com/Elena_Mikhailova

still remains largely unknown," said Jian-Dong Li, a senior author of the study, director of the Institute for Biomedical Sciences at Georgia State, and a Georgia Research Alliance Eminent Scholar. "We found that resveratrol suppresses a major bacterial pathogen causing otitis media and chronic obstructive pulmonary diseases (COPD) by up-regulating or increasing the production of a negative regulator called MyD88 short."

Resveratrol belongs to a group of compounds called polyphenols that are thought to act like antioxidants and protect the body against damage. It has long been considered a therapeutic agent for various diseases, including inflammatory diseases. In the study, resveratrol was effective against inflammation caused by non-typeable Haemophilus influenzae (NTHi), a major respiratory pathogen.

This study found for the first time that resveratrol decreases NTHi-induced expression of pro-inflammatory mediators in airway epithelial cells and in the lungs of mice by enhancing MyD88 short, a negative regulator of inflammatory signalling pathways. MyD88 short is considered a "brake pedal protein" because it can tightly control inflammation induced by this respiratory pathogen. It could be a critical target with significant therapeutic potential for suppressing inflammation associated with chronic airway disease.
The researchers also found that resveratrol has anti-inflammatory effects after NTHi infection, which demonstrates its therapeutic potential.

Flavonoids Could Fight Depression in Later Life

Nutrition Insight 13 Oct 2016

A new study into the long-term effects of a flavonoid-rich diet claims the compounds in plant foods may interrupt the patho-physiology of depression.

As depression is the leading cause of disability around the world, many sufferers do not necessarily respond fully to the treatments available and so, preventing depression has the potential to improve the health and quality of life of millions of people.
New research published in the American Journal of Clinical Nutrition looked into diet as a way of addressing depression risk and it found the potential of dietary flavonoids to reduce risk of the condition. It particular, the study examined dietary flavonoid intake and risk of incident depression in midlife and older women.
The study investigated whether long-term intake of the different subclass of flavonoids such as flavonols, flavones, flavanones, anthocyanins, flavan-3-ols, polymeric flavonoids and proanthocyanidins were connected to depression incidence. Flavonoids have been shown to combat neuro-inflammation and neuronal cell death. In addition, some flavonoids seem to improve blood flow, and that may help prevent age-related depression, which is influenced by vascular health.

The researchers also examined the connection between specific flavonoid-rich foods and depression risk. More than 80,000 women were followed for this study and around 10,000 cases of depression were noted at the ten-year follow up.

By analyzing food frequency questionnaires and other data, the researchers found inverse associations between depression risk and flavonol, flavone, and flavanone intake. The women who consumed more citrus fruits or juices had a lower incidence of depression.
In women aged 65 and over, all subclasses of flavonoids except flavan-3-ols were associated with significantly lower risk of depression. The strongest associations were seen with flavones with good dietary sources coming from oranges, apples and celery and and proanthocyanidins via apples, chocolate and grapes.

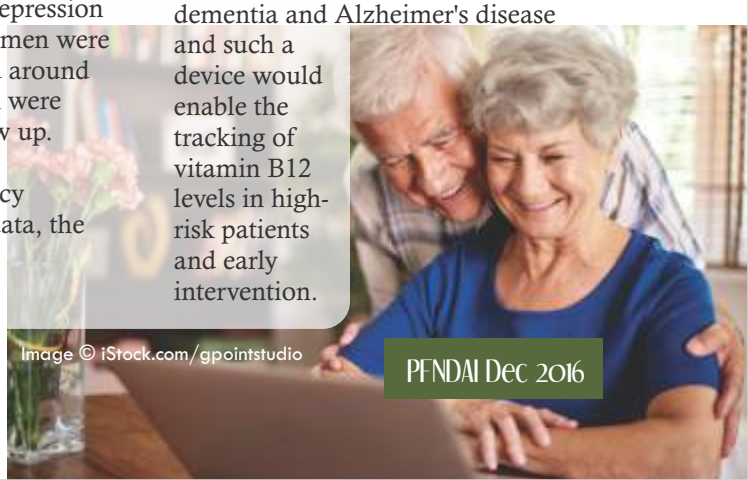
The conclusion of the study says that further studies are needed to confirm these associations and that higher flavonoid intake may be linked with reducing the risk of developing depression, especially later on in life.

'World-first' rapid Vitamin B12 deficiency test could boost fight against cognitive decline

By Gary Scattergood, 18 Oct 2016 NutraIngredients Asia

Australian researchers have developed a world-first optical sensor that can detect vitamin B12 in diluted human blood – something they believe is a first step towards a low-cost and portable, vitamin B12 deficiency test.

Vitamin B12 deficiency is associated with an increased risk of dementia and Alzheimer's disease and such a device would enable the tracking of vitamin B12 levels in high-risk patients and early intervention.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Now every dish will be healthy.

Nutrela
LIVE HEALTHY. LIVE HAPPY.

52% PROTEIN

99% FAT FREE

Nutrela Soya Cutlets

Ingredients:

- 30 ml refined oil for saute.
- Chopped 100g onion, 50g capsicum, 50g carrot, 50g cauliflower, 15g coriander Leaves.
- 1 teaspoon chopped ginger, garlic & green chilly.
- 1 teaspoon chilly, coriander, jeera, aamchur and garam masala powder.
- 2 tablespoon gram flour, ½ teaspoon Turmeric Powder.
- 200g Nutrela Soya Granules (soaked, boiled and squeezed dry)
- 100g boiled potatoes mashed.
- 100g fresh bread crumbs.
- Salt to taste.

Method:

- Heat oil and add chopped ginger, garlic, green chilly and sauté it.
- Fry onion till translucent, add capsicum and give it a quick stir fry.
- Add chopped carrot, cauliflower and sauté for 2 minute.
- Sprinkle chilly, cumin, coriander, turmeric, aamchur, and garam masala.
- Add salt to taste and garnish with coriander leaves.
- Shape in to flat round tikkis, dip in the batter, coat with bread crumbs and deep fry in medium heat oil for about 2 mins or until golden brown.
- Serve hot with green chutney or tomato ketchup.

It is hoped this will help overcome the limitations of current testing methods which the researchers believe are time-consuming and costly. The research, developed by academics at the University of Adelaide, uses bio-photonics optical technologies to analyse and measure biological material.

"Vitamin B12 deficiency has been shown to be a potential modifiable risk factor for dementia and Alzheimer's disease and is associated with cognitive decline," says Dr Georgios Tsiminis, Research Fellow at the University of Adelaide. "Older adults are particularly at risk of B12 deficiency due to age-related reduction in absorbing vitamin B12 received through their diet.

Promising step

"Our sensor is an early first step towards a point-of-care solution for measuring and tracking B12 in healthy ageing adults. This would allow doctors to monitor B12 levels and intervene as soon as B12 deficiency was detected." The sensor is still at proof-of-concept stage but, with development, the researchers believe it has wide-reaching potential applications.

"Currently our device could not aid in diagnosing vitamin B12 deficiency in a general practice setting," says Dr Tsiminis. "However, this is the first time a rapid technique based on optical spectroscopy has been shown to be able to detect vitamin B12 in human blood serum. We believe this is a very promising first step towards achieving this goal."
The optical sensor measurement of B12 in human blood takes less than a minute and requires minimum preparation. This is the first demonstration of vitamin B12 being measured in human blood serum without the need for a full laboratory test. The sensor uses an optical measuring technique called Raman spectroscopy which produces a unique optical fingerprint of a target molecule, in this case vitamin B12.

"Our method provides a realistic basis for a system that is portable, cost-effective, and affords rapid results, along the lines of the pinprick test for diabetes," says Dr Tsiminis. "Time and cost limitations currently mean that regular and frequent B12 measurements are not being carried out. Having such a device could make this testing routine, potentially having a real impact on dementia and Alzheimer's disease."

2-5 coffees per day shows CVD benefits

By Will Chu, 30 Sep 2016
NutraIngredients

Coffee's antioxidant properties can reduce cardiovascular disease (CVD) rates, a report has suggested.

The report, commissioned by the Institute for Scientific Information on Coffee (ISIC), suggests that 2-5 cups per day of coffee may reduce risk of death from CVD by just over a fifth. Populations worldwide and degree of protection also differed as findings suggested that two cups of coffee per day may offer the greatest protection in a Japanese population, whilst three cups may provide the greatest protection in populations in the UK.

Updated to include the latest research, the report builds on findings presented during the 'Coffee and CVD Mortality' event held at the EuroPRevent Symposium in 2015.

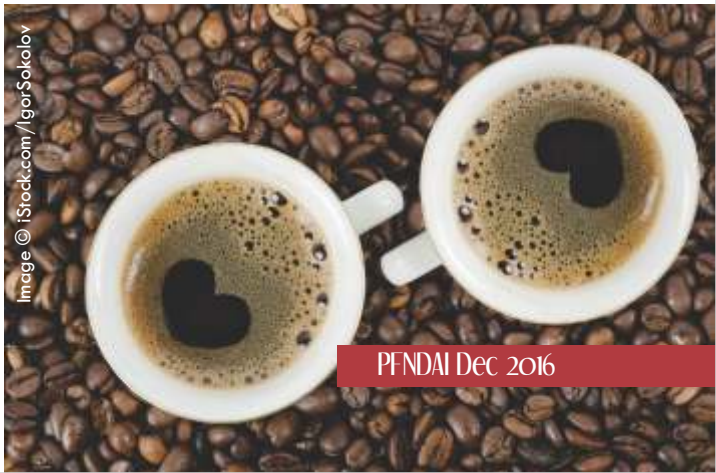
Specifically, a handful of studies were included that review the effects of coffee consumption in specific patient groups. These include a meta-analysis of studies in heart attack patients that noted a favourable association between habitual coffee consumption and mortality risk.

A study of 75 patients with hypertension was also included, which suggested that drinking coffee was associated with higher blood pressure compared to those who did not drink coffee. The effect was greatest in those who drank three or more cups of coffee per day.

Research carried out by The Women's Health Initiative concluded that caffeinated and decaffeinated coffee were not risk factors for high blood pressure in postmenopausal women.

Finally, a large patient study suggested that higher coffee intakes reduced the rate of an irregular and abnormally fast heart rate. "The precise mechanisms of action behind the suggested association are unknown," the report stated. "The antioxidant profile of coffee has also been proposed as a potential mechanism that might affect the association between coffee consumption and reduced CVD morality risk."

Coffee naturally contains a variety of compounds including caffeine, other antioxidants and diterpenes. These compounds not only give coffee its distinctive flavour but also the positive effects on health. Concern over coffee's negative health effects mainly stem over the compounds found in coffee that are formed during the storage and processing of coffee beans.



These include compounds such as acrylamide and furan, which form through heat processing, although international food safety agencies have backed its safety. Coffee manufacturers regularly monitor acrylamide levels and have undertaken research into processes that could help lower levels without affecting quality and acceptability of the coffee.

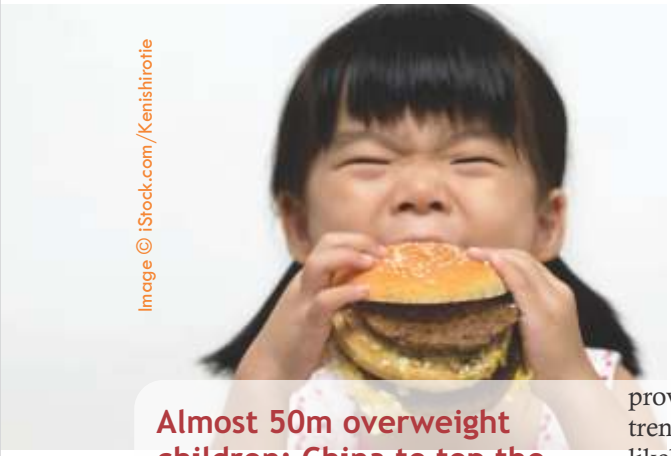


Image © iStock.com/Kenishirotie

Almost 50m overweight children: China to top the global chart by 2025

By Gary Scattergood, 11Oct2016
Food Navigator Asia

China will have 48.5m overweight children by 2025, the largest number in the world, after witnessing the eighth largest global increase in percentage terms over the period 2000-2013. India will have the second highest number of overweight children by 2025 (17.3m), with Indonesia eighth (6.2m) and Pakistan ninth (5.3m).

While these countries with large populations are far more likely to top the list in terms of total numbers, the percentage increase in the prevalence of overweight and obese children from 2000-2013 is damning. China has seen a 40% increase in the prevalence of overweight and obese children between 2000 and 2013, the eighth largest rise globally. In Indonesia it is 39.1%, the eleventh highest increase globally. Elsewhere in Asia, the Philippines has witnessed a 36.3% increase, Bangladesh 26.8% and Thailand 28.4%, resulting in five Asian countries being in the top 20 nations in terms of percentage increase for the number of children overweight or obese.

The findings were published in the journal Pediatric Obesity and released by the World Obesity Federation to coincide with World Obesity Day on Tuesday, October 11. The study states: "Using data prepared by the Global Burden of Disease collaborative for 2000 and 2013, we have estimated that by 2025 some 268m children aged five to 17 years may be overweight, including 91 million obese, assuming no policy interventions have proven effective at changing current trends. We have also estimated the likely numbers of children in 2025 with obesity-related co-morbidities: impaired glucose tolerance (12m), type 2 diabetes (4m), hypertension (27m) and hepatic steatosis (38m)."

Member states of the World Health Organization have adopted resolutions aiming to achieve 'no increase on obesity levels' by 2025 (based on 2010 levels) for infants, adolescents and adults.

Targets won't be met

However, the report states that "the 2025 targets are unlikely to be met, and health service providers will need to plan for a significant increase in obesity-linked co-morbidities." Researchers added that they found very few countries with a reduction in overweight prevalence in the last decade. "No countries showed a fall in childhood overweight prevalence of more than three percentage points over the period 2000–2013, while only two countries, Albania and Lesotho, showed a fall in prevalence more than two percentage points over the period," they point out.

The World Obesity Federation has now set out three points it believes can help tackle the rise of childhood obesity. They state governments need to strengthen their leadership to prevent, manage and treat childhood obesity with national childhood obesity strategies; that local services need to take action to prevent childhood obesity; and that health services must take action to manage childhood obesity. Last year we highlighted a report co-compiled by the General Administration of Sport of China and the Ministry of Education, which surveyed information from roughly 350,000 students, aged 7-22 across 31 parts of the country. It found that 18% of boys and 10% of girls were obese.

Caffeine exhibits role in warding off dementia, study shows

By Will Chu, 06Oct2016
NutraIngredients

Daily consumption of drinks containing caffeine could help in the fight against dementia, a new study has claimed.

The study published in The Journals of Gerontology found there was a lower chance of dementia or cognitive impairment in older women whose caffeine consumption was above average. The results go some way in supporting claims that caffeinated drinks such as coffee, tea and cola beverages have a role in halting cognitive decline.


Image © iStock.com/shironosov

Of these drinks, it is coffee that is the main contributing source of caffeine in the diet. The EFSA Comprehensive European Food Consumption Database shows coffee consumption is at its highest in adults at 36.5-319.4 mg per day.

A typical cup of black coffee contains around 85 mg of caffeine. The exact amount depends on brewing approach, brew strength and specific coffee bean. The study looked at the recorded caffeine consumption of a total of 6,467 women. Differences in when dementia or cognitive impairment were diagnosed among women and their caffeine intake were assessed.

In yearly cognitive assessments that lasted up to 10 years, 388 women were diagnosed with probable dementia. Risk factors such as age, race, education, body mass index (BMI), prior cardiovascular disease, diabetes, smoking and alcohol consumption were also taken into account.

Stimulatory effect

The team, from the University of Wisconsin–Milwaukee, found women consuming above median levels of caffeine intake (mean intake 261mg/day) for this group were less likely to develop incident dementia or any cognitive impairment compared to those consuming below median amounts (mean intake 64mg/day) of caffeine for this group.

"The literature suggests several possible mechanisms that may provide clues to the causal pathways. At normal daily consumption range per person, which is 2–4 cups of coffee, the primary action of caffeine is that of a non-selective adenosine receptor antagonist."

These findings are generally consistent with available literature. A study looking into similar observations in European men found those who consumed three cups of coffee per day had the lowest cognitive decline over a 10year period. Likewise, a recent literature review reported a modest reduction in rates of cognitive decline across six studies.

While the evidence appears compelling study lead Ira Driscoll, a professor of psychiatry at the University of Wisconsin-Milwaukee expressed caution at her study's findings until further research could be carried out. "We are certainly not suggesting that caffeine cures or prevents neurodegenerative conditions such as Alzheimer's disease (AD)." she said. "I would suggest that it certainly isn't harmful and may in fact be protective."

"We know that AD is a multi-factorial disease, and it is unlikely that altering this one component of one's diet will cure us of AD. But when it comes to AD, I think we can all agree that this is a pretty innocuous way of potentially lowering one's odds of developing AD."

'An adjustable dietary factor'

Accumulating evidence of caffeine intake as a possible protective factor against neuro-degeneration is exciting as caffeine is an easily adjustable dietary factor with very few side effects. The study concluded by recommending research that further quantified its relationship with cognitive health outcomes to better understand underlying mechanisms and their role in dementia and cognitive impairment.

Commenting on future AD prevalence, which is expected to quadruple by 2050, Driscoll said: "Anything that potentially lowers the odds of AD could have an enormous impact on what is rapidly becoming a global healthcare and economic crisis." According to the European Coffee Federation, the EU has the highest per capita coffee consumption in the world. The EU consumes 2.5 million tonnes coffee per year, which equates to four kilos of roasted coffee per EU inhabitant per year. Every day some 725 million cups of coffee are drunk in the EU.

Cocoa flavanols offer 'modest but significant' benefits for heart disease risk factors

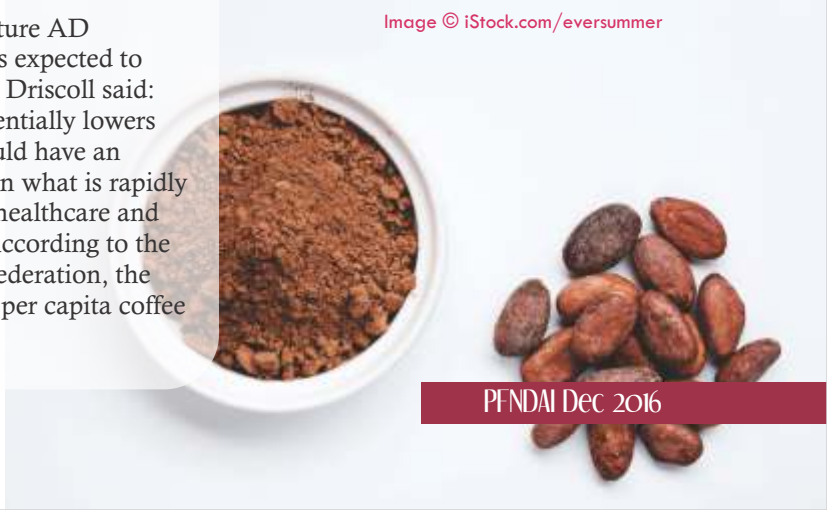
By Elizabeth Crawford, 17Oct2016 Food Navigator USA

If a spoonful of sugar helps the medicine go down, a serving of cocoa could help avoid the need for medicine in the first place – at least when it comes to some heart disease risk factors.

A new meta-analysis of 19 randomized controlled trials published in the Journal of Nutrition found the flavanols in cocoa products, including chocolate, have "modest but significant benefits in lipid metabolism, insulin resistance and systemic inflammation," which are all major risk factors for cardio metabolic diseases.

Specifically, the research found cocoa flavanol intake lowered triglycerides 0.10 mmol/L compared to placebos and boosted good cholesterol 0.06 nmol/L compared to the control group. In addition, the fasting insulin concentrations were significantly lower in the study participants who took cocoa flavanols to the tune of about 2.33 uIU/mL on average.

Image © iStock.com/eversummer



Based on their review of the studies, the researchers explain flavanols could benefit insulin concentrations by inhibiting glucosidase & glucose absorption from the intestines, increasing insulin secretion, activating insulin receptors and other mechanisms of action. The insights gleaned by the researchers about flavanols' impact on lipid metabolism, insulin resistance, systemic inflammation, renal function and oxidative stress are additions to the overall body of knowledge, according to the study. As are the conclusions that sex, age and existing co-morbidities do not impact the results.

The form in which the flavanols were consumed and the duration of intervention also did not change the results, but the greatest effects were among study participants who consumed 200 to 600 milligrams of flavanols daily. Those with lower doses of flavanols only saw a benefit in good cholesterol while those with more saw a steeper drop in triglycerides and benefit in insulin resistance, according to the study.

Based on this discovery, the researchers say there is an "urgent need for large long-term RCTs that improve our understanding of how the short-term benefits of cocoa flavanol intake on cardio-metabolic biomarkers may be translated into clinical outcomes."

Early breastfeeding on the rise in India, but 'room for further improvement'

By Gary Scattergood, 10Oct2016 Food Navigator Asia

Early initiation of breastfeeding is on the rise in India, but researchers warn more needs to be done to strengthen policy and improve healthcare skills to reduce the rate of infant mortality.

Image © iStock.com/Tuned_In

In India, 1.2m children aged 0–59 months die each year, with an estimated 58% of these deaths occuring during the neonatal period. A meta-analysis of three large trials conducted in Ghana, India and Nepal found that initiation of breastfeeding was associated with a 44% lower risk of neonatal mortality

Writing in BMJ Global Health in a paper funded by the UNICEF Regional Office for South Asia, the authors note that a multipronged strategy in India has led to an increase in the rates of early breastfeeding from 24.5% in 2006 to 44.6% in 2014. "Importantly, in the seven states with the highest burden of neonatal mortality, the combined rate of early initiation of breastfeeding increased from 12.5% in 2006 to 34.4% in 2014 (ie, a 2.7fold increase) with an average annual rate of increase of 21.8%," the paper states.

"This evidence seems to indicate that focused strategies, effective capacity-building initiatives, strong partnerships, vibrant community-based action, and strategic mass media communication contributed to double/triple the rate of early initiation of breast feeding."

However, the report also makes clear there is considerable room for further improvement. They point out that despite 81.1% of deliveries in 2014 being attended by a skilled health provider, only 44.6% of newborns were breast fed within one hour of birth, "indicating that rates of early initiation of breastfeeding could double if all newborns delivered by a health provider were breast fed within one hour of birth." The report also points out that breastfeeding initiation can be particularly delayed for infants born by caesarean section.

Global evidence

India's National Family Health Survey 2015 shows that, in states such as Andhra Pradesh and Telangana, where 92% of deliveries are attended by skilled health providers, there are high rates of caesarean deliveries (40% in Andhra Pradesh and 58% in Telangana). This is in turn associated with low rates of early initiation of breastfeeding (37% in Telangana and 40% in Andhra Pradesh).

"Furthermore, prospective cohort studies in India have shown that infants born by caesarean section were almost four times less likely to initiate breastfeeding within one hour of birth than infants born by vaginal delivery. However, global evidence suggests that, in the presence of adequate support, a caesarean section is not necessarily a barrier to timely initiation of breast feeding," the researchers note.

The report concludes there is an urgent need to continue to strengthen national and state policies, hospital and maternity practices, and the knowledge and skills of birth attendant to support the early initiation of breastfeeding. "Both public and private sector providers need to reach out to mothers, families and communities with one unequivocal message: early initiation of breastfeeding saves lives," it adds.

Egg nutrient gets recommended daily intake level

By Noli Dinkovski, 06Oct2016 Food Manufacture UK

Choline, a little-known nutrient that has been shown to benefit pregnant women and babies,

Image © iStock.com/Picsfive

has for the first time been given a recommended daily intake level by European Food Safety Authority. Most commonly found in eggs, choline is often classified with the B vitamin complex as it has some similar functions.

Essential nutrient

It was officially recognised as an essential nutrient by the US Institute of Medicine in 1998, with a recommended intake of 425mg. The new European Adequate Intake (AI) level is for 400mg daily. Recent research has shown that the central nervous system is particularly sensitive to a lack of choline, with effects on the structure of the brain and spinal cord, as well as cognition. An average medium size egg provides 144mg of choline.


Image © iStock.com/Lilechka75

Fat or sugar? Genes may have the deciding vote

By Will Chu, 06Oct2016 Food Navigator

Along with taste, appearance, smell and texture, food choice may also be genetic as a study identifies biology as a factor in preferring foods high in either fat or sugar.

Researchers from the University of Cambridge presented evidence in the journal Nature that a central molecular pathway may show significance in macronutrient preference in humans. The pathway's identification serves to establish a direct link between food preference and particular genetic variants. By applying these insights to human gene variation, this work may explain why individuals make particular food choices, with potential implications for a deeper understanding of obesity. The pathway in question involves the melanocortin4 receptor (MC4R). Its disruption can lead to mice eating a lot more fat and unusually a lot less sugar.

Tests for MC4R

In a two-part study the team provided subjects with portions of chicken korma curry with varying fat levels 20% (low), 40% (medium) and 60% (high) of the total caloric content. Subjects were selected according to their weight with 20 lean and 20 obese subjects taking part. In addition, 14 adults with a loss of function in the MC4R gene were also selected.

Subjects were allowed to sample each of the three kormas before choosing one full portion.
Part two of the study saw the same subjects given an Eton mess a British desert made up of strawberries, whipped cream and broken meringue. Like the procedure for the chicken korma, subjects were allowed to sample a choice of three versions of the desert one with low (8% of calorific content), medium (26%) and high (54%) sugar content – before selecting one for consumption. While no overall difference in the amount of food eaten was found between the groups, subjects with the faulty MC4R gene consumed close to double the amount of high-fat korma than lean individuals and 65% more than obese individuals.

With the Eton mess, both lean and obese subjects reported a preference for the high-sugared version. Unusually, those who had the faulty MC4R gene did not like the high-sugared version as much as the lean and obese groups. Collectively, they ate proportionally less of all three versions when compared to the other experimental groups. "Our work shows that even if you tightly control the appearance and taste of food, our brains can detect the nutrient content. Most of the time we eat foods that are both high in fat and high in sugar," said professor Sadaf Farooqi from the Wellcome Trust Medical Research Council Institute of Metabolic Science at the University of Cambridge.

"By carefully testing these nutrients separately in this study, and by testing a relatively rare group of people with the defective MC4R gene, we were able to show that specific brain pathways can modulate food preference," added Farooqi, who also led the research team.

Gene influence

While a loss of function MC4R variants in humans are rare (1–5% of people with severe obesity), studies have shown the physical appearance of human MC4R deficiency is similar to mice also lacking Mc4r. As the individual's genetic makeup was determined beforehand, the researchers were able to directly test whether disruption of melanocortin signalling alters food preference in humans. The team acknowledged the influence of other genes that may play a role in weight gain and eating behaviour. Genetic variants in the protein CD36 have been linked to a preference of high-fat foods and common obesity-associated variants have been associated with dairy food choices.

Himalayan kodo millet found to have nutraceutical and functional food potential

By Gary Scattergood+, 05Oct2016 NutraIngredients USA

Kodo millet, an underutilised crop plant used as a staple food by Himalayan communities in India, may have widereaching potential for nutraceuticals and functional food products, research has discovered.

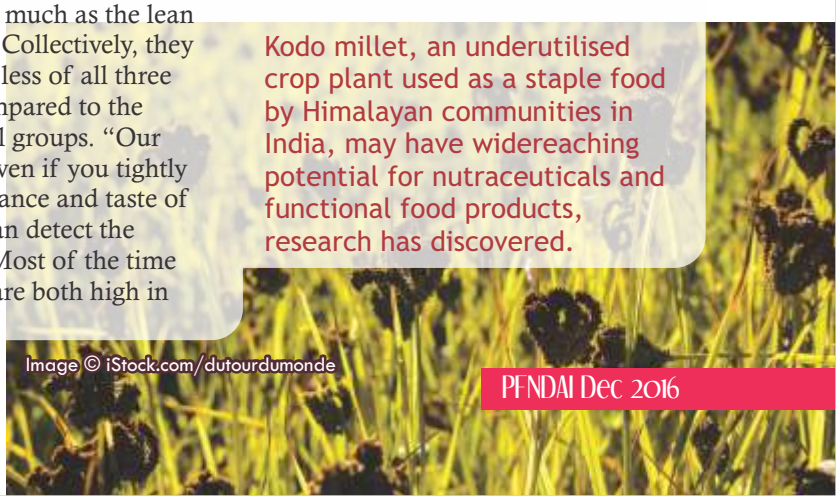


Image © iStock.com/dutourdumonde

Writing in Food Chemistry, researchers from India's Dr Y S Parmar University of Horticulture and Forestry said they sought to phytochemically investigate kodo millet for its nutritional and antioxidant potential for use in functional foods and nutraceuticals.

"[Kodo millet] is an extremely hardy and drought-tolerant crop that can survive on marginal soils where other crops may not survive, and can supply 450–900 kg of grains per hectare," states the study. By virtue of their importance, millets have a great potential for being utilised in different food systems by virtue of their nutritional quality and economic importance…as the bulk of the production is consumed at the farm/village level, so far the real value of these crops has not been appreciated," it adds.

The study found that kodo millet was rich in proteins, carbohydrates and crude fibres, while its fat content was less than other millets, making it suitable for dieting patients. It adds that kodo millet showed a high total of phenolics and flavonoids, and a high radical scavenging activity. The polyphenols extracted also showed very good antibacterial activity.

Vascular complications

Researchers also identified a number of functional benefits the millet could provide. They wrote: "Kodo millet grains were found to be rich in minerals Mg, P, K, Ca and Na. Similar to our results, it has been cited in the literature that millets are rich in fibre content which can be helpful in reducing chronic vascular complications. Also, the nutritional potential of kodo millet in terms of proteins, carbohydrates and energy values was found to be a lot richer than popular cereals like rice, wheat, barley, indicating the kodo millet has higher percentage of nutrients than cereals which we are regularly taking in our diet."

The non-starchy polysaccharides of the millet form the bulk of its dietary-fibre constituents, potentailly offering several health benefits including delayed nutrients absorption, increased faecal bulk and lowering blood lipids, claim the researchers. The millet is also gluten-free, making it suitable for celiacs. The study concluded that kodo millet had considerable food and nutraceutical potential, subject to further studies. "Due to the presence of various bioactive compounds, it could be used in formulation of nutraceuticals and functional foods, which can be consumed safely without posing any of health risks…but further studies have to be done on the nutritional value of food products once kodo millet is incorporated into food items or products," states the study.

Infant nutrient found to lower hospital infection rate: Study

By Will Chu, 18Oct2016
NutraIngredients

A protein that forms a key component of infant nutrition may play a significant role in reducing hospital acquired infections in neonatal intensive care, according to US researchers.

Results published in The Journal of Pediatrics found that treating newborns with lactoferrin, produced no toxic effects. In addition, a lower rate of infant infections of conditions such as meningitis, pneumonia and urinary tract infections (UTI) was observed.

The implications of this study will be of interest to those in infant formulation. Lactoferrin, a multifunctional protein is present in secretory fluids, such as saliva, tears and breast milk providing antibacterial activity to infants. Lactoferrin can also be purified from milk or produced recombinantly and is a main ingredient in the composition of infant formulas currently available.

The European Food Safety Authority (EFSA) has deemed it safe for infants aged 06 months, to be fed approximately 1.2 g bovine lactoferrin per day from infant formula containing 200 mg bovine lactoferrin /100 g.

Infant investigations

Researchers from the University of Missouri School of Medicine and Sinclair School of Nursing designed a randomised, double blind, placebo-controlled trial that enrolled babies with birth weight of 750-1500g. In total 60 of these babies were fed lactoferrin through a feeding tube twice a day for 28 days (150 mg/kg), while another 60 babies were given a placebo.

The team found the rate of hospital-acquired infections was 50% lower among the infants fed lactoferrin. "While a large-scale clinical trial is needed before lactoferrin becomes a standard treatment protocol in NICUs, our results show the safety of lactoferrin and provide an initial report of efficiency related to reducing hospital-acquired infections," said Dr Michael Sherman, professor emeritus at the University of Missouri School of Medicine and lead author of the study.


Image © iStock.com/studiojh

Lactoferrin can cost an estimated €23- € 454 ($25- $500) per dose, according to Dr Sherman who compared this figure to those referenced in a study published in the Journal of the American Medical Association. Here, it found that hospital-acquired infections in the US cost €8.9bn ($9.8bn) to treat each year. The European Centre for Disease Prevention and Control (ECDC) also identified hospital-acquired infections accounting for approximately €7bn per year in Europe.

Lactoferrin alternatives

The majority of infant formulas available on the market are supplemented with lactoferrin as its ability to bind iron makes it useful for protecting the gut of infants against infections from microbial-requiring iron. While it remains a popular choice as a protein source in infant formulations, current research and development efforts have looked into not only lowering the formula's protein content but also locating a source that provides the full complement of essential amino acids.

"If you're trying to lower the protein content in infant formula, then quality becomes a challenge," said Dr Sandra Einerhand, founder of Einerhand Science and Innovation and consultant speaker. The amino acid requirement has to be checked so that the infant receives the right amino acids. The first amino acid that becomes limiting is tryptophan and to compensate for this you then have to add a peptide or a single amino acid to the formula. Alphalactoalbumin has been identified as a potential protein substitute."

Essential nutrient

It was officially recognised as an essential nutrient by the US Institute of Medicine in 1998, with a recommended intake of 425mg. The new European Adequate Intake (AI) level is for 400mg daily. Recent research has shown that the central nervous system is particularly sensitive to a lack of choline, with effects on the structure of the brain and spinal cord, as well as cognition. An average medium size egg provides 144mg of choline.

Strong evidence for synbiotics and constipation relief

By AnnieRose HarrisonDunn, 10Oct2016 NutraIngredients USA

Synbiotics can lead to significant clinical improvement in slow transit constipation, a Chinese trial has shown.

The 12 week trial saw 100 patients with slow transit constipation given either the synbiotic BIFICOPEC containing a combination of pectin fibre and Enterococci, Bifidobacteria, Lactobacilli or a placebo of maltodextrin twice daily. The results published in the journal Nutrients show clinical remission rates reached 37.5% at week four and 45.8% at week 12 in the synbiotic group, compared to just 13.3% at week four and 16.7% at week 12 in the placebo group. Over the 12 weeks, 64.6% of the patients given synbiotics saw a clinical improvement, compared to just 29.2% of the patients in the placebo group.

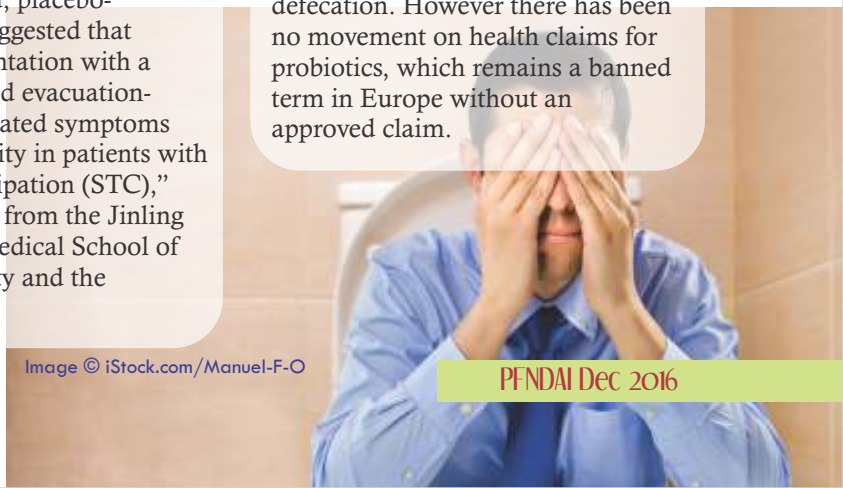
The synbiotics group experienced increased stool frequency, improved stool consistency, decreased colonic transit time (CTT) and improved constipation-related symptoms. "This randomised, placebo-controlled trial suggested that dietary supplementation with a synbiotic improved evacuation-parameters-associated symptoms and colonic motility in patients with slow transit constipation (STC)," wrote the authors from the Jinling Hospital at the Medical School of Nanjing University and the Zhejiang University in China.

Novel therapies needed

Past research has estimated chronic constipation affects almost 16% of all adults worldwide, with women and the elderly particularly perceptible. Most sufferers of chronic constipation are given laxatives or prokinetic agents to alleviate symptoms empirically. Yet these current treatments are far from perfect. "Although there is a wide range of medications, many patients are still dissatisfied with their current treatments, according to the results of a long-term survey, due to insufficient efficacy and some adverse effects," the researchers wrote.

One paper published this year reported side effects such as abdominal cramps, rash, excessive flatulence and dizziness for patients using the new pharmacotherapy for chronic constipation prucalopride. "From our clinical experience in constipation, laxatives or other agents could be efficient at the beginning of chronic constipation, but they gradually become largely ineffective. Therefore, novel effective therapies are still needed," the researchers added.

In the EU there are a few approved fibre health claims concerning stool frequency. In January last year the European Food Safety Authority (EFSA) backed a claim for prebiotic giant Beneo's chicorybased fibre inulin and improved bowel function. The same year EFSA gave the thumbs up to DuPont's claim that its bulk sweetener lactitol can help people maintain normal defecation. However there has been no movement on health claims for probiotics, which remains a banned term in Europe without an approved claim.



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FOOD SCIENCE & INDUSTRY NEWS

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Three overlooked "super-foods" rising in popularity thanks to innovative formats

By Elizabeth Crawford, 29Sep2016
Food Navigator USA

Super-foods are no longer restricted to exotic and hard to find plants in underdeveloped countries.

Rather, the latest batch comes from a little closer to home and likely already are in most US consumers' pantries, according to a food trendologist. "Some of the new super foods on the market are things that might not feel very new, but that are being put into new practice," in ways that highlight their health benefits and versatility, Kara Nielsen said Sept. 28 during a Packaged Facts' webinar that focused on natural and organic trends. For example, she cited "healthful green foods," such as algae, seaweed, spirulina and grass, as an outgrowth of the pressed-juice trend that offer "all sorts of great benefits, including good B vitamins, iron and different other minerals that support us."

Amazing Grass' Green Superfood is an example of how the green juice trend is transitioning into more chewable snacks that feature wheat and barley grasses along with spinach and alfalfa. The bars also tap into growing consumer interest in alkalizing foods that will balance the acidity in their main diets, Nielsen said. She also pointed to the increasing use of seaweed in snacks, such as Mary's Gone Crackers and Gimme Seaweed Chips. These are particularly popular among children, she noted.

Avocados climb higher

The mainstream appeal of avocados first became apparent when Avocados from Mexico featured the fruit in the first Super Bowl ad to focus on produce several years ago. Since then, their popularity has continued to climb. "We see industry packaging avocados in ways that make them more convenient, and thus allow us to have this delicious and healthful oil in our diets in more frequent ways or when you can't get your hands on a natural avocado," Nielsen said.

For example, she pointed to Primal Kitchen's paleocentric salad dressings made with avocado oil and Kettle chips cooked in avocado oil. Closer to the whole food, but still convenient, are Hope Foods Organic Spicy Avocado Hummus, Wholly Guacamole Minis and Avoke Spoonable avocado smoothies in an oval-shaped bowl, she added.

Chickpeas take centre stage

"The chickpea is just everywhere," Nielsen said, adding: "This is a totally mainstream food that offers a lot of terrific plant-based protein," but which is appearing in evermore versatile products. For example, she noted that chickpeas have appeared in snacks for several years as roasted, crunchy alternatives to nuts or the basis for sweets, such as blondies. But now they are taking on a more significant centre-of-the-plate role in TaDah! Falafel Poppers that feature flavourful fillings, Banza's protein-packed pasta and Vana Life chickpea-based frozen Indian meals. "We are also seeing chickpeas do things like be crumbs," as in the case of WatUsee Foods' gluten-free chickpea "bread" crumbs, Nielsen added.

Finally, she added, "one of the biggest things in the chickpea world is this option of aqua faba," which "is using chickpea cooking water that has a lot of this protein and benefits still in it to make vegan mayonnaise, confections and different kinds of meringues."

Australian flavoured cheese coaxing Asians to buy dairy for first time

By RJ Whitehead , 10Oct2016 Food Navigator Asia

Australian cheese products flavoured with chocolate, fruits and nuts are setting out to win over new customers in Asia. Beston Pure Foods began producing its Edwards Crossing range of natural cheeses in Murray Bridge, South Australia, in September 2015.

It sent its first shipment of cheddar and gouda to Thailand and Singapore in December, where it is reprocessed and flavoured under the Kyubu brand.

Image © Kyubu™


Image © Kyubu™ Cheese

Flavours include Chocolate & Almond, Strawberry, Orange Yoghurt, Nacho and Milky Cheddar. The Japanesestyle cheese snack cubes hit the shelves through a retail supermarket chain in Thailand in July and in Singapore last month. Beston general manager Daniel Raschella said the flavoured cheeses were designed to be a first introduction to cheese for people before encouraging them to try the more traditional cheese products. He said Kyubu was developed specifically for the growing Asian market, particularly across Thailand, Vietnam, Indonesia and Malaysia.

"It's a bridge for a period to allow people to get a feel for some of the cheeses we can make but also we want to use it as a platform to give people the experience of eating the natural cheeses we make as well," Raschella said. We're also very keen at the moment to move it into China and we've got a person on the ground in Vietnam who's getting a lot of interest. We're also talking to distributors in Cambodia and Malaysia."

Australia sent 17,000 tonnes of cheese to China worth US$81m in 2014, and is the second biggest exporter of cheese to the country, behind New Zealand. Japan is Australia's most important overseas cheese market, accounting for almost 55% of product exports in 2014-15, followed by China, Malaysia, South Korea and Singapore. "The Japanese are much more mature in their palate for cheese," Raschella said. "Kyubu is more aimed at the Asean countries, and potentially China."

"What's also happening is a lot of the Asean countries and China have a lot of expats who have lived in Australia, the US or Europe for many years, have had children abroad and are now coming back with children who have been brought up with western foods and are still looking for these sorts of products."

Asia eats less than 10% of the world's cheese but its appetite is growing fast. Cheese consumption there rose from about 550,000 tonnes in 2000 to just over 1m tonnes in 2012. Demand is expected to reach 1.65m tonnes by 2020. Raschella said the Asian cheese market was very commodity driven at the moment, meaning that a lot of cheese was going into processed products, such as slices or cubes. "What we're trying to do is slowly move people away from fullprocessed cheeses and back to natural to get more flavour," he said. "The market is so big—we're not out to take the whole world, we're out to find the pockets and the people who are interested in quality products."

Authenticity & emotional connection sell brands better than freefrom claims, Foodmix survey finds

By Elizabeth Crawford, 13Oct2016 Food Navigator USA

The highly popular and arguably overused strategy of placing free-from claims front and centre in food and beverage marketing to woo today's more health-conscious shopper may not be as effective as some manufactures believe, according to new research from Foodmix Marketing Communications.

Rather, the full-service brand marketing agency surveyed 1,000 Americans and found that a brand's values and "personality traits" are what make consumers fall in love with it to the point where they will advocate for it to their friends and family.

"Most people like a lot of brands, but there are a few that they really love and are really passionate about," said Dan O'Connell, CEO of Foodmix Marketing Communications. Reflecting on the survey, he said "what drives that connection is less about what we have taken out and the claims we added to the product," such as protein-packed or gluten-free, "and it is more about the brand's personality and whether it fits with the consumers' lifestyle and fits with their values."

He explained that qualitative statements, such as those traditionally focused on in marketing, including price, convenience, consistency, ingredients and taste are "the basic foundations of food brand marketing and are characteristics that are expected by consumers. So you are not going to differentiate your product based on those claims. They are just informational."

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Likewise, functional attributes, such as reduced-sodium are important and will drive trial because of consumers' dietary or lifestyle needs but they don't "stir passion," O'Connell said.
"Experiential attributes are the ones that really drive that connection and inspire people to talk about a product," and move it out of the friend-zone and into one of love, he added. Examples of these include "the authenticity of the brand's story from the farm to the table and way it makes consumers feel authoritative so they can tell their friends about it and share it," he said.

Generational divide

The survey also found that attributes that tipped consumers over from just liking a product to loving it varied slightly by generation. "Baby-boomers were more connected to a sense of security and stability and something they can trust and know," maybe from childhood or from family traditions, O'Connell said. Whereas Millennials were drawn more to food brands that conveyed a sense of adventure or that were authentic, fun, exciting and creative, he added.

These messages can be conveyed through images on packages or in "about us" type stories on the back panel and product website, O'Connell said. He also said the most successful brands work with social media influences to tell their story to consumers or run inspirational campaigns and contests that engage with buyers.

He added: "With the emergence of social media and the sharing culture we live in, successful marketing is not about outshouting or outspending the competition like it was years ago. It is about making a connection and becoming a part of consumers' daily lives. …
Ultimately, the onus is less on the dollar spend and more on creating a resonate story."

Image © iStock.com/Lokibaho

Betaglucan & fibre: Golden oldies in 2016?

By Kacey Culliney, 27Sep2016
Food Navigator

Simple, recognisable nutrients like beta-glucan and fibre should be on the menu when targeting a new wave of active and positive seniors, say experts.

Today, 12% of the globe's 7.3bn people are aged 60 or over and according to the latest figures from the United Nations it is the fastest-growing population segment – increasing at a rate of 3.26% per year. By 2050, there will be 2.1bn people aged 60 and over, and right now Europe holds the largest percentage of this global group – 24%.

David Jago, director of innovation at Mintel, said seniors were looking for certain things: "They're as likely to look for the benefit, combined with an ingredient that they recognise." "The key ones are calcium and vitamin D for bone health; plant sterols, oats and omega3 for heart health; and fibres for digestive health," he told NutraIngredients. Jago added that recently there had even been a shift of focus from generic oats to the more specific component beta-glucan, with major ingredient players moving into this space.

Better the devil you know...

Most success, he said, could be found in simpler, familiar product ideas. "Regular food or 'real' food that tastes good and is nutrient-rich will have much stronger appeal than anything that is perceived as functional or medical."

Nestlé Boost was just one example, he said, of a product that held "strong appeal" to seniors and was now a multimillion dollar brand selling widely through supermarkets. The nutritional drinks contain 10 g protein, 26 vitamins and minerals, including calcium and vitamin D, as well as 3 g of fibre.

Ewa Hudson, global head of health and wellness research at Euromonitor, agreed that the most appropriate foods were "products and formulations that are commonly eaten, like ready meals and soups especially." Hudson said milk drinks and biscuits were senior-friendly matrices. "Flavoured milk drinks would be a good carrier because it would be easy to drink and swallow and you could have it packed in a modern way so it doesn't look like a product for the elderly. With biscuits the focus is going to be in the direction of wholegrain and 'back to basics' – focused on more natural nutrition rather than functional."

Hudson said UK retailer/manufacturer Marks & Spencer had recently launched a "very interesting" line of ready meals under its 'Active Health' brand. The range includes meals like Beef Lasagne, Red Thai Chicken Noodles and Italian Garlic Chicken and Bean Bake – all high in fibre and beta-glucan and labelled as 'cholesterol-lowering' on-pack, permitted thanks to an EU-approved beta-glucan claim.

"They launched this line of ready meals for 'active nutrition', rather than targeting the elderly specifically. And this is interesting because the elderly do eat ready meals, but it's not specifically positioned for them."

Message on a bottle

Jago said successful products had to be sensitive to European youthfulness-elderly dynamics. "It should be about the positives of healthy ageing, not the negatives of medical conditions that come with age," he said. "In much of Asia, old age is revered, respected, and there is no shame in admitting one's age – so it's relatively common to see food and drink labels featuring older consumers and stating that the product is for consumers aged 50+ or 60+.

"In Europe youth rules and older consumers typically won't buy products that are clearly positioned for them, except in the case of medical or nutritional needs. If you can't state on the product that it's for seniors, then the industry needs to work harder on finding the right 'formula' that will appeal to older consumers, but not patronise them."

Hudson agreed: "Focus needs to be on the positive. That's why active nutrition is perhaps a good angle to focus on – promoting things like healthy joints and physical activity." Japan, she said, was a prime example of a country that targeted seniors in a smart way, keeping activity in mind. "In Japan, mobility is a big talking point – looking at a diet that will optimise your health working with exercise having a routine. It's looking at active nutrition from the concept that it's not just going to the gym it's a little everyday activity like walking the dog or gardening."

Boost elderly protein intake by improving taste and convenience, study suggests

By Will Chu, 28Sep2016 Food Navigator

Improving protein consumption in the elderly may be a matter of improving taste, convenience and affordability as a study sets out a series of strategies designed to boost intake in this demographic.

Along with these improvements, the study also identifies education as a key approach to achieving an adequate protein intake. Here improving the understanding of and minimising perceptions of spoilage and wastage were proposed as well as improving cost-efficiency and the freshness and healthiness of protein-rich foods.

The findings of the study go some way to contradicting studies that identified a reduced appetite, changes in sensory abilities, and deteriorations in manual dexterity and gastrointestinal function as reasons for a reduced protein intake.

Inadequate protein intake

Ageing is considered a reliable predictor of protein intake and has been attributed as an indirect factor in the increase in falls and fractures in this population. A decrease in immune function, increased risk of infection, decreased independence and increased morbidity and mortality have also been noted. According to the study, many older adults across Europe are not meeting the lowest levels of suggested intakes. In the United Kingdom, approximately 10–30% of community-dwelling older adults consume less protein than recommended, whereas 10–35% of older adults in the Netherlands consume less than the recommended levels of protein.

In Nordic countries, 78%–88% of studied participants were estimated to consume less than the recommended intakes of protein. The team from Bournemouth University began their investigations by sending out questionnaires that evaluated the individual's consumption of meat, fish, eggs and dairy product; reasons for the consumption/non-consumption of these foods; as well as demographic and lifestyle characteristics.

These questionnaires were sent to 1000 adults aged 65 years and over. In total, 351 (35.1%) questionnaires were returned. "We found that people were most likely to eat different types of animal protein if they were tasty, affordable and convenient to buy and prepare," explained Katherine Appleton, lead researcher and professor of psychology at the University of Bournemouth. "We found that people were also likely to select food that they perceived to be healthy. These reasons all have implications for the kinds of interventions that are likely to be successful in persuading older people to eat more protein."

Health vitally important

The findings have implications for intervention strategies concerning this age group. For example cost and ease of preparation as a factor may mean more emphasis on the promotion of pre-prepared or precooked foods that may make a difference to protein consumption. Additionally, more effort in educating older adults on where to find cheaper sources of protein may be beneficial.


Image © iStock.com/vladans

The health aspect of protein has previously been identified as important for fish, egg and dairy consumption, as well as for meat consumption. Additionally medical factors have been found to be important for dairy consumption as well as meat and egg consumption. "Eating enough protein is important for our health as we age, but many older monkey-business-images people don't consume enough. Options such as taking protein supplements or having fortified foods are often unpopular," added Appleton. "People took into account the healthiness of foods when picking what to buy and eat, so better information and education may also change people's decisions."

Wake up to breakfast drinks: Where innovation could take the category next

By Rachel Arthur, 03 Oct 2016
Food Navigator Asia

Australia is the largest market for breakfast drinks, with a current retail value of around A$200m (USD $153m).

But when it comes to innovation, the UK can give the Aussies a run for their money, says Zenith International, while the US market also shows promise. Liquid breakfasts scarcely existed 20 years ago. Today, consumers recognize the importance of breakfast and are looking for products that save time while providing the right balance of nutrients. On-the-go lifestyles, health awareness, and consumers' desire for convenience are driving growth in the category, according to the F&B consultancy, which has released its 2016 Global Breakfast Drinks report.

Cereal + milk: in beverage form

For Zenith, breakfast drinks are defined as any products that are marketed as 'formulated supplementary food' and aim to replace a traditional meal (usually breakfast) with a liquid on-the-go option. This represents an optimum combination of cereals and milk, marketed as offering 'the nutrition of a bowl of cereal and milk'.

The category is defined using the following criteria: shelf stable, liquid, dairy-based, high in protein and fibre, containing added minerals and vitamins, and coming in a portable, on-the-go format. Most breakfast drinks contain cereals, the exception being in the US market. "Breakfast drinks are positioned as a healthy, fast and convenient option for breakfast," Juliette de Nettancourt, consultant, Zenith International, told this publication. "They target busy people who are likely to skip breakfast, but are willing to have a healthy lifestyle. The trend is to offer products with nutritious ingredients, such as on-trend grains like chia or quinoa. Products are also strongly linked to health trends and we see some launches of new products which are low in sugar, gluten free, or free from any type of artificial ingredients."

Sanitarium initiated the trend in Australia with the launch of Up&Go in 1998 a brand that has since been extended to New Zealand and the UK. The Australian market has had time to mature and is the largest market for breakfast drinks. But today the UK market is growing rapidly – with sales currently totalling £15m ($19m). "The Australian market is dominated by the brand Up&Go which mainly drives innovations," said de Nettancourt. "But I believe the UK market is now more innovative than Australia, as competition pushes companies to target consumers more specifically with innovative products. "For instance, some brands have reformulated their drinks so they will have less sugar intakes, or develop products that are meant to provide a stronger and longer satiety feeling."

Breakfast – and beyond

As the name would suggest, breakfast drinks are often positioned around one consumption occasion. "This is a differentiation advantage, marketing is very clear and it limits competition with other snacks or drinks," said de Nettancourt. "However, it is important to note that despite being targeted as an occasional product, many consumers would have breakfast drinks at any time of the day as a way to get energy."

This reach beyond breakfast is seen in the US, where the market is shaping itself more towards milk shakes, breakfast bars and food supplements. "The success of supplementary drinks and shakes in the US is linked to health trends and busy lifestyles," said de Nettancourt. "Not many shakes are targeted for breakfast in a similar way to breakfast drinks in Australia and the UK.

However, consumers are likely to have them at any time of the day, including breakfast. "Given the market nature and the fact that people are already replacing their breakfast meal with a drink, it appears that there is an opportunity for breakfast drinks to develop in the US. "Similar to the UK market,


Image ©iStock.com/JuthapadBenjapong

breakfast drinks will have to be more innovative than supplementary shakes by offering a healthy breakfast option with original and trendy ingredients."

Challenges for the sector

De Nettancourt says the biggest challenge for breakfast drinks will be to offer a healthy, nutritious drink with low sugars, without compromising on taste. "It is also important to highlight that consumers are likely to prefer fresh drinks over shelf stable, aseptically packed breakfast drinks. Furthermore the opaque packaging (which helps with branding) hides the consistency of the drink, which can be found less appealing, and a negative image can be generated if a consumer pours the drink into a glass."


Image © iStock.com/CREATISTA

Fonterra drops sugar in children's yogurt by 40%

By Jim Cornall, 04Oct2016 Dairy Reporter

Fonterra's Anchor Uno has reformulated its children's yogurts, with 40% less sugar than the original product.

The New Zealand dairy company says that the yogurts now contain the lowest levels of sugar (per 100 grams) in any children's yogurt brand in New Zealand.
Anchor Cultured brand manager Nicola Carroll added that Anchor is continuously improving its product portfolio to reduce the use of added sugars.

Anchor Uno notes that it has removed the sugar from the yogurt base and now only -includes added sugar through the fruit preparation. A 40% reduction in sugar was achieved with no artificial colours, flavours or sweeteners. According to Fonterra, its research shows the new formulation is equal to or more preferred than the previous recipe. Anchor Uno is the market leader with 52% share in the children's yogurt segment.

Discover "Miracle fruit" as a substitute for sugar in acidic drinks

Food News LATAM OCTOBER 05 2016

Over time, high sugar consumption has been closely linked to obesity and health problems that come with being overweight.

Eating too much sugar can also increase your risk of several chronic diseases such as heart disease, diabetes and cancer. The truth is that table sugar is not the only source of sugar that people ingested. Sugar can be found in many other foodstuffs by different names, such as corn syrup, dextrose, glucose, maltodextrin, maltose, and even molasses. Therefore, many alternative natural sweeteners like stevia, coconut sugar, and now even a "miracle fruit," have been widely reviewed and used commercially.

Soda and fruit juices contain a lot of sugar or other sweeteners, as a result, they are a major contributor to the obesity epidemic. As consumers become more aware of the harmful effects surrounding their consumption, demand for natural sweeteners like the "miracle fruit" has increased. According to a study by Brazilian researchers, miraculous fruit serves as a substitute for sugar in acidic drinks such as lemonade and can also reduce the intensity of taste and bitter taste that can leave behind.

The miraculous fruit, or Dulcificum Synsepalum, is an indigenous tropical plant that is known for its berry and is found in West Africa. It is called the "miracle fruit" because it contains an active compound known as Miraculin which causes the plant to make sour foods taste sweet. Once one bites the berry has the unique potential to alter the taste buds of the tongue to feel a taste that is about 400,000 times sweeter than sucrose, the researchers Kenzo Kurihara and Lloyd Beidler. This sensation can eventually be removed by saliva. The berry, in fact, contains a low sugar content and has a high concentration of antioxidants. While miraculin has no distinctive taste, the plant's berry is sweet but has a strong and spicy taste.

Before it was first used as a sweetener, the berry was used as medicine. It is used today to sweeten palm wine, and to improve the taste of corn bread in West Africa. In other countries such as Japan and the United States, it was used to treat diabetes and to eliminate metallic taste in the mouth after chemotherapy. The study on the miracle fruit as a sugar substitute in acidic beverages was published in the journal Appetite and was conducted by scientists at the University of Lavras in Brazil. Seventeen participants had to compare unsweetened lemonade with sweetened lemonade containing about 13.4% sugar and lemonade sweetened with sucralose.


Image © Hamale Lyman

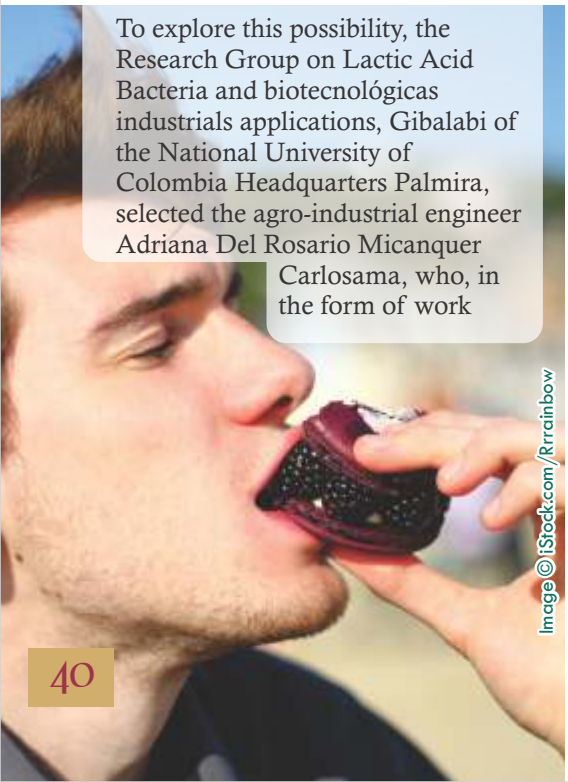
The researchers believed that 13.4% was the "ideal sweetness" after performing a sensory test. The miracle berry had to be eaten before consuming the lemonade without sugar in order to be effective. All seventeen participants agreed that drinking the miracle berry before drinking the lemonade had a taste similar to that of sucrose lemonade.

"Through this study, it was observed that the miracle fruit seems to be a good substitute for sugar in acidic beverages, because it is a natural product that gives a sweet flavour and reduces acidity, besides presenting a sensory profile similar to the Sucralose." Scientists said the study. While this study revealed groundbreaking evidence, more research on miracle fruit is needed. Further research is required to find out how the taste of other food products or beverages will affect and what side effects, if any, may come from consuming this fruit.

New technique prolongs sweet taste for longer

Food News LATAM 04 OCTOBER 2016

This technology would lead to an improvement in the sensory and nutritional characteristics of this natural sweetener in the food industry.



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To explore this possibility, the Research Group on Lactic Acid Bacteria and biotecnológicas industrials applications, Gibalabi of the National University of Colombia Headquarters Palmira, selected the agro-industrial engineer Adriana Del Rosario Micanquer Carlosama, who, in the form of work Grade, tested the encapsulation of stevia in order to prolong its sweet taste in foodstuffs.

The research was directed by Liliana Serna Cock, associate professor of the Faculty of Engineering and Administration of the UN Palmira Headquarters and Alfredo Adolfo Ayala Aponte, associate professor of the Universidad del Valle. This work arose from a request for research by the company La Tour SA, which inquired about the possibility of prolonging the sweet taste of aspartame. This company provided the inputs and the space to do an initial phase of experimentation, while the second phase was carried out in the Bioconversion Laboratory of the Palmira UN Headquarters.

Since it is more interesting to focus on an artificial sweetener (such as aspartame), by doing so in a natural stevia, by observing yield, particle size, morphology, water solubility, among other properties, it was determined that through Of the double emulsion technique followed by complex coacervation (coating of microparticles with a polymer film), it was possible to encapsulate up to 84% stevia.

It was assessed whether it was possible to prolong the sweet taste when the capsule was applied to a food matrix. "For example, if implemented in gum or gums, it is expected that the consumer perceives a sweet taste for a longer time and this could be a value added product," explains Adriana Del Rosario Micanquer. The Colombian Association of Food Science and Technology (ACTA) since 1999 has convened the award created to highlight the spirit and the research work in the scientific and technological fields by academics, research groups and scientific institutions working at the national level. Constitute networks of relationships with international institutions.

Four categories are awarded: Food Safety Research, Food and Nutrition Research, Contribution to a Whole Life in Food Safety and Research in Food Science and Technology. The latter, sponsored by Alpina, gave the first place to the aforementioned research, in which the agro-industrial engineer Adriana Del Rosario Micanquer participated. To participate, it was necessary to send an extensive article, which details the methodology and results, as well as the scope of the research. Subsequently, the nominated projects had to make an oral presentation.

The award was presented at the XIII International Congress of Food Science and Technology (Conacta 2016), held on September 21, 22 and 23 at the Metropolitan Convention Center of Quindío, Armenia. Thanks to her work during the undergraduate degree in Agroindustrial Engineering and her good academic performance, Adriana Del Rosario Micanquer obtained a Degree of Honour on August 19, 2016 and a postgraduate scholarship. At the moment, it aspires to initiate the Doctorate in Biotechnology, from the first semester of 2017 in the UN Headquarters Medellín.

Vacuum impregnation to incorporate prebiotic and antioxidants into fruits

Food News LATAM 17 OCTOBER 2016

In modern times, the development of foods that promote health and well-being is one of the key priorities of the food industry.

The vacuum impregnation (VI) technique is considered as a tool in the development of new products from fruits or vegetables, where you can enrich or incorporate nutritional and functional ingredients by modifying their

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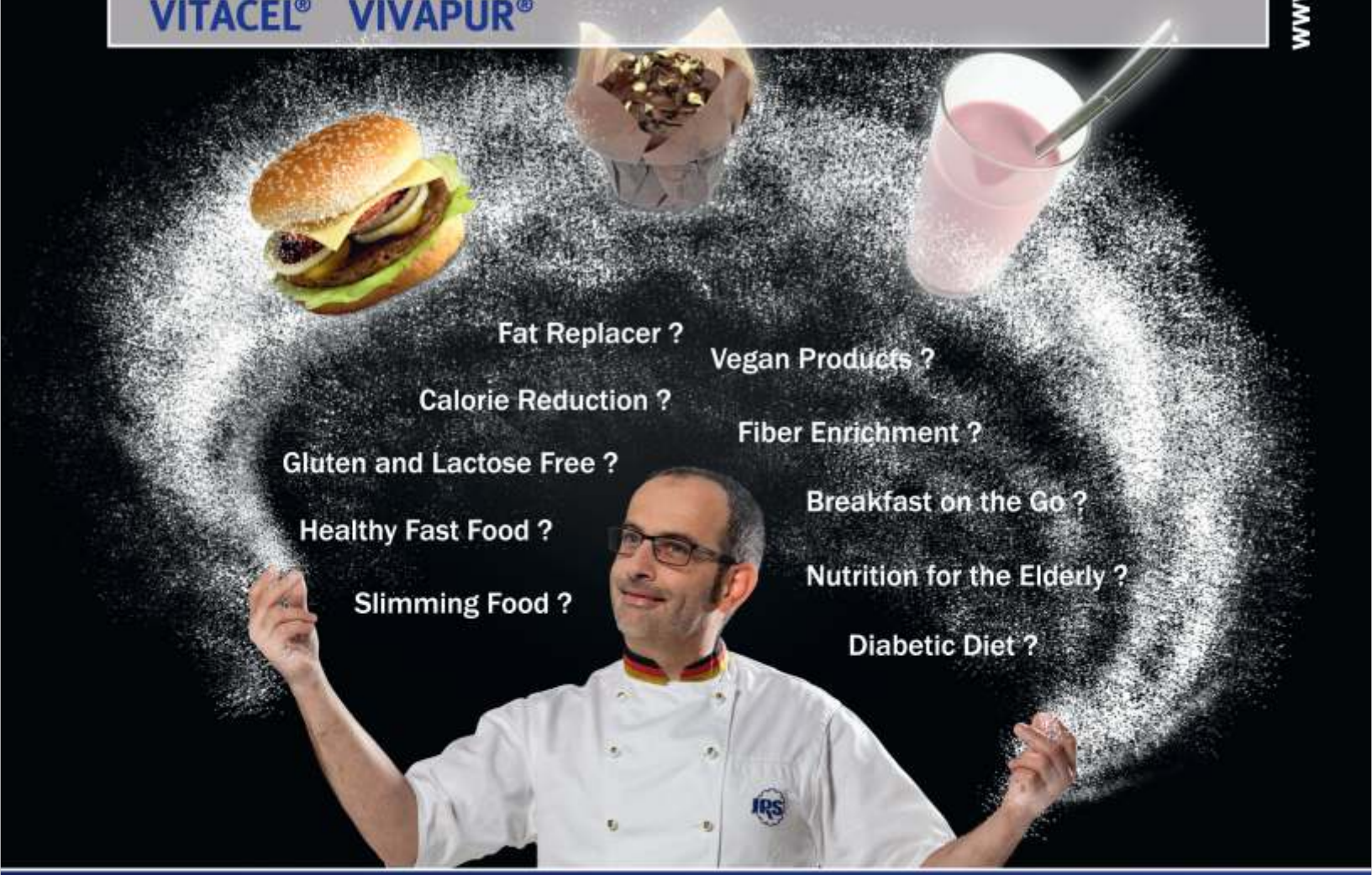

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composition to meet specific health requirements, quickly and easily.

In this sense, the research carried out by Indira Milagros Betalleluz Pallardel of the Polytechnic University of Valencia, is part of the development of two functional appetizer proposals as an alternative to commercial products on the market characterized by their high saturated fat content, Salt, refined sugar and high energy density and whose consumption has negative consequences for health.

The objectives of this development were:

In a first stage to study the viability of the IV technique to incorporate a prebiotic: oligofructose (Orafti P95) in apple (var. Granny Smith) and in a second stage to develop a symbiotic juice from mandarina enriched with oligofructose and inoculated with Lactobacillus salivarius spp salivarius for incorporation into the apple by IV in order to enhance the natural functionality of this fruit. The stability of drying and storage processes was evaluated for its presentation as an appetizer in both developments.

The first development began with the study of the influence of different variables of the IV process as: vacuum pressure (PV), concentration of impregnation solutions (CS), duration of application of vacuum pressure and The atmospheric pressure (t1 and t2 respectively) and the apple variety, using oligofructose solutions (Orafti P95). As expected, there was a greater incorporation of solids with increasing concentration of the solution and at the same time a loss of water under the highest concentrations, allowing to have control over the degree of impregnation. In the studied ranges no significant effect was found for the variables: PV, t1 and t2. Also, the impregnation parameters were determined with isotonic solutions.

The Fuji and Granny Smith varieties were selected for their physicochemical characteristics and their level of impregnation, under an isotonic solution a content of 5.7 and 5.1% of oligofructose respectively was achieved. The product showed good stability without significant changes in prebiotic content after drying at 40 ° C for 24 hours, as well as the maintenance of its physicochemical and functional properties after 4 months of storage.

The second development began with the study of the formulation of the impregnation solution; The factors: source and concentration of protein, initial amount of inoculum and prebiotic concentration were evaluated. The results obtained indicate beer yeast as the most appropriate source of protein, the amount of inoculum has no significant effect on the final count and the presence of oligofructose at high concentrations exerts an inhibitory effect on the growth of the microorganism. The initial characteristics of the juice formulated for probiotic growth were pH of 6, 0.5% brewer's yeast, 0.4% v / v inoculums and 5% oligofructose.

In addition, the effect of the incubation of the juice formulated with Lactobacillus salivarius spp. Salivarius, on the physical-chemical and functional properties and the reuse of the same liquid was evaluated in 5 vacuum impregnation cycles. The formulated juice was a suitable medium for the growth of the microorganism whose initial content increased in 2 log cycles, obtaining a count of 8.9 log CFU / mL. Growth was evidenced by variations in pH, soluble solids and reducing sugars, variations in other properties (colour, density, aw, viscosity) were minimal. The incubation had a significant effect on the antioxidant capacity where an increase of 4.6% and 26.7% was detected under the FRAP and DDPH methodologies, respectively, the ABTS method showed a decrease of 23%.

The ascorbic acid content, by its oxidative nature, decreased by 4.5%, while the content of flavanones, by its stable character, did not present significant changes. During the reuse of the liquid in several cycles of impregnation, the physical properties showed minimal changes, significant changes in the functional properties were observed with a decrease in the antioxidant activity (10.6%, 2.5% and 7.5% evaluated by the methodologies of: FRAP, DPPH And ABTS, respectively), ascorbic acid content (17.4%) and phenols (4.6%). There were no significant changes in the content of flavanones and oligofructose. The suitability of the symbiotic liquid for apple enrichment by vacuum impregnation technique has been demonstrated both experimentally and theoretically. However, drying at 40 ° C for 24 hours produces important changes in functional, physicochemical and sensory properties. The probiotic content in the dry product was greater than 106 CFU / g at the start of storage, a level that decreased in the first 15 days of the study. From this moment no counts were found. With respect to the rest of functional properties evaluated, only the ascorbic acid content decreased markedly from the 30 days of storage. Previous studies have shown that water and moisture activity are critical parameters that affect probiotic viability.

The functional evaluation of the developed snacks presents them as healthy alternatives and of important contribution to the enrichment of the diet, nevertheless in vitro and in vivo evaluations are necessary to demonstrate its effectiveness.

REGULATORY NEWS

Image © iStock.com/hadkhanong_Thailand

False claims risk undermining the Asia market for heart health products

By Gary Scattergood, NutraIngredients Asia 07Sep2016

Global and local players in Asia's heart health sector are adopting radically different strategies - but dubious health claims from some of the latter threaten to undermine the market, according to an industry analyst.

Malarkodi Mahendran, a senior consultant at Future Market insights in India, analysed the varying approaches while highlighting the business opportunities for heart health products in the region. She said every 20 seconds someone in Asia has a chronic heart episode.

"One third of all deaths in region are caused by heart attack or stroke, and they account for 17% of all health costs in Asia," she told the Vitafoods Conference in Hong Kong. With Asian consumption of healthy oils compromising just 13% of the overall total, alongside rising sales of soft drinks, processed foods and excessive levels of salt intake, she said the market for functional foods for heart health was tipped to grow from US$340.2m today to US$665.7m by 2026.

"The drivers for this growth are the rising consumer awareness of health benefits, the trend of adopting prevention rather than cure, as well as the growing ageing population," she said.

The current market for heart health products is dominated by Omega3s, followed by beta-glucans, soya proteins, phytosterols and antioxidants, she added, before suggesting strawberry powder, algae, cocoa flavanols, and tomato extracts could soon make their presence felt in the market.

Staple focus

Predicting India, China and Japan to become the biggest growth markets for heart health products, Mahendran went on to add that the sector was split by the approaches of global manufacturers and local players. While MNCs are more focused on launching new products with new flavours, domestic outfits are focusing on fortifying and reformulating local staple foods. She said Nestlé and Kellogg had both launched new fortified heart health products in the region lately, with a clear focus on clean labels and proven health claims.

However, some domestic players persisted in making claims that were "not always legitimate."

"China, Indonesia and India have particular problems with counterfeit claims. At the moment, many consumers are not aware that the claims are dubious," she said, adding that it could ultimately undermine the market. She suggested three factors that could help boost the fortunes of heart health products in Asia, namely expanding products to suit all price ranges, diversifying the product range away from breakfast cereals, edible oils and dairy goods, and educating consumers that functional foods are not just for people with existing health concerns, as is widely perceived to be case today.

FSSAI releases new ecommerce regulations for public consultation

By RJ Whitehead , Food Navigator Asia 27 Sep 2016

A newly drafted policy by India's food regulator will hold all ecommerce entities responsible for the quality of food they serve to customers.

Its terms will also require manufacturers, distributors, exporters and warehouses that set up online to secure a Food Safety and Standards Authority of India licence from the Central Licensing Authority. While listings sites, which do not deal directly with food orders, are exempt from the draft policy, they are still bound by other rules governing misleading claims, false advertising and claims from sellers, vendors and manufacturers.

"Ecommerce companies shall clearly specify on their platform that liability of any violation of the Food Safety and Standards Act and applicable rules and regulations made there-under would be with sellers, restaurants, vendors, importers or manufacturers of the food products," said the notification.

Image © iStock.com/BrianAJackson

The new policy comes from the Central Food Monitoring Authority, which has devised a number of new norms for enhancing food safety in India. If implemented, it will govern all the leading online food delivery sites and restaurant search portals. The FSSAI will finalise the draft policy document based on the feedback and comments it gets from stakeholders. The guidelines were formed on the basis of discussions between the regulator and food business operators in March.

The boss of one leading food testing lab has come out in support of the policy, saying that food e-retailers will be able to collaborate in achieving wider food hygiene and safety. Ashwin Bhadri, CEO of Equinox Labs said the step served as a much-needed improvement for public health. "The new notification on ecommerce marketplaces is an excellent move by FSSAI. It gives a lot of clarity to ecommerce companies on what they need to do.

Though interpretation of FSSAI regulations can be a challenge for companies, "[the draft policy] will ensure that the end-customer gets safe products and are assured of food safety even when they buy online," Bhadri added.

Some 20 ecommerce businesses focus on selling food items in India. These include Big Basket, Swiggy and Grofers, while international giants such as Amazon, Flipkart and Snapdeal also offer food items on their platforms.

Infant formula intake and protein guidelines queried in Southeast Asia

By Gary Scattergood, Food Navigator Asia 26Sep2016

There is concern about the considerable variance in the recommended consumption levels of infant formula and follow on formula in Asia and questions over the amount of protein they are required to contain, an international conference has heard.

Dr Jacques Bindels, from Danone Nutricia Research, said he couldn't decide if the variability in recommended consumption levels was due to the differences in national diets or simply the differing opinions of policymakers.

His presentation at Fi Asia in Jakarta highlighted the low recommended consumption level in Indonesia as a cause for concern, as well as the relatively high level of protein content such products have to contain in certain countries. According to the national regulations, Singapore, Malaysia and Thailand tend to have higher recommendations for milk intake, formula or otherwise, with around three servings a day suggested for ages 12, and two servings for ages 23 and over three years.

China and Hong Kong recommends slightly less consumption, with Australia and Indonesia coming towards the bottom of the list. In the latter, just one serving a day is recommended at all age groups. "As you can see there is quite variability and one might wonder if the diets are so different or the opinions of those making the rules are different – I can't quite tell." He said there was a lot of evidence to show that there is a long list of "problem nutrients" for young children, such as a lack of folic acid, calcium, iron, zinc, vitamins c and, and Iodine among others. "So these need to be provided by formula, supplements or other functional foods," he added Bindels cited recent expert recommendations from Thailand for follow-up formula for children aged 12-36 months.

In the "Composition of Follow-Up Formula for Young Children Aged 12-36 Months: Recommendations of an International Expert Group Coordinated by the Nutrition Association of Thailand and the Early Nutrition Academy", it was recommended that young children consume one to two cups, 200-400ml a day, providing an average daily consumption of 300 ml a day and 15% of total energy.

In Europe, the advice from the European Food Safety Authority (EFSA) states that 300ml to 500ml a day is acceptable, after the age of one. Both of these recommend levels are higher than the current advice in Indonesia.

Obesity risk

Meanwhile, some Asian countries, Malaysia and Indonesia included, require infant and follow-on formulas to contain protein content higher than that proposed by the recent International expert recommendations. "High protein can be high risk for obesity if the child is already little bit chubby at two or three years old," said Bindels. "This is why the [International expert] study recommends lower protein."

The study notes that: "A double-blind, randomized clinical trial conducted by the European Childhood Obesity Trial Study Group found that feeding infant formula and FUF with a lower protein content during the first year of life induces a marked health benefit in

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reducing BMI and obesity risk at school-age, as compared to conventional formula with high protein contents."

He cited Malaysia as an example where protein intake among young children already exceeds the recommended daily amount, even before milk consumption is taken into consideration. This is "alarming" given the country's current and predicted obesity rate, Bindels added. There is a similar problem, albeit to a lesser extent, in Indonesia. "Therefore they should consider looking at the regulations which recommend high protein [in formula]," he added.


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Turmeric extract receives self-affirmed GRAS status

IFT Weekly September 14, 2017

DolCas Biotech has received self-affirmed GRAS (Generally Recognized As Safe) status for its BCM-95 turmeric extract for use in foods, dietary supplements, and medical foods.

DolCas Biotech, in collaboration with Arjuna Natural Extracts, India, conducted more than 24 clinical trials in the United States, Europe, Japan, and Australia on the extract's safety and application for health-related conditions.

The expert panel convened by GRAS Associates concluded that BCM-95, when being used in accordance with the designated food uses and use levels, is GRAS when consumed as proposed at a maximum of 180 mg per person per day in conventional foods, and at 1,000 mg per person per day in medical foods.

The panel addressed chemical composition and purity of BCM-95 in detail, as well as evaluated the manufacturing process utilized to produce the subject material. The panel determined that production in accordance with FDA Good Manufacturing Practices (GMPs) criteria yielded BCM-95 with an acceptable purity that met appropriate food grade specifications.

"We intend to promote BCM-95 for use in medical foods for various conditions, at a dose level of 500 mg per serving," said Nipen Lavingia, vice president of business development at DolCas. "If two servings of the subject medical food were consumed daily, the daily dietary exposure level of curcumin would be 1,000 mg per person."

Test Improves Detection of Proteins and Aids in 'Gluten-Free' Labelling

Nutrition Insight 13 Oct 2016

For people with celiac disease, wheat allergies or gluten sensitivity, the options for gluten-free foods are growing.

But knowing for sure whether products marketed as such are truly safe to eat can be more complicated than just reading a label. Now scientists, reporting in ACS' Journal of Agricultural and Food Chemistry, have developed a more reliable way for manufacturers to detect gluten in purified wheat starch, a common ingredient in foods labelled gluten-free.

Gluten is a mixture of proteins in the starch of wheat, rye and barley grains that can be broken down into two subgroups: prolamins (wheat gliadins) and glutelins (wheat glutenins). When people with celiac disease, wheat allergies or gluten sensitivity consume these proteins, they can experience a range of symptoms from diarrhea and vomiting to fatigue and migraines. Current testing for gluten in foods involves running an enzyme-linked immunosorbent assay, or ELISA. Although the method determines gliadin levels accurately, its measurements of glutenins are less reliable. Katharina Anne Scherf and colleagues wanted to find a more comprehensive approach.

The researchers combined gel-permeation high-performance liquid chromatography with fluorescence detection to develop a sensitive technique that can detect both gliadins and glutenins in purified wheat starch. The new method identified higher amounts of gluten in 19 out of 26 starch samples than the ELISA analyses did. And, according to the new test, 12 samples that had been labelled gluten-free contained between 25.6 and 69 milligrams of gluten per kilogram of starch. The US Food and Drug Administration and the United Nations' Food and Agriculture Organization have set the maximum limit for gluten in products labelled gluten-free at 20 mg/kg.

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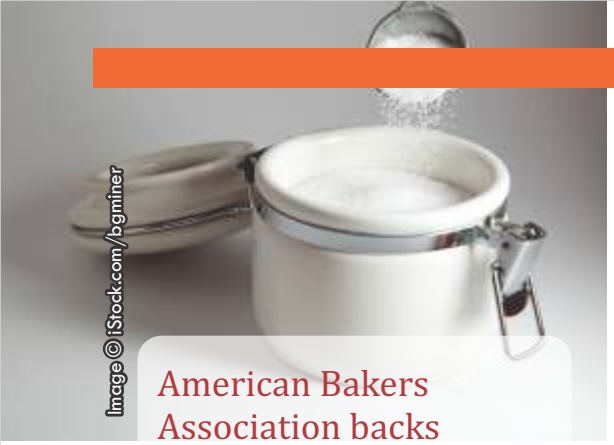
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American Bakers Association backs 'potassium salt' petition: It sounds more clean label

By Elaine Watson+, 06Oct2016 Food Navigator USA

The American Bakers Association (ABA) has joined the CSPI, Unilever, and other food manufacturers in voicing its support for a citizen's petition asking the FDA to permit 'potassium salt' as an alternate name for potassium chloride on food labels, while the Salt Institute remains resolutely opposed.

Petitioner NuTek Food Science which has patented technology to tackle the metallic aftertaste of potassium chloride, a popular salt replacer – argues that using the term 'potassium salt' would 'demystify' the ingredient for consumers and help the industry achieve the government's dual goals of lowering sodium and increasing potassium intakes.

Survey data shows that consumers believe potassium salt to be 'more appetizing,' 'less processed,' 'safer to consume,' and 'healthier' than the 'chemical-sounding' potassium chloride, said NuTek president Brian Boor. "A statistically significant number of consumers lack familiarity with the term potassium chloride and often mis-associate it with chlorine or other chemicals... 'Potassium salt' more closely reflects reasonable consumer expectations of the ingredient and more accurately describes the basic nature of the ingredient."

ABA: Potassium chloride is integral to sodium reduction efforts, but name puts shoppers off

In comments filed with the FDA, the ABA noted that potassium chloride "is a mineral that is mined from natural deposits in the earth, in a similar manner as sodium chloride (salt) is mined," and is "integral" to industry sodium reduction efforts. However, it added: "The word 'chloride' is confusing to consumers as it sounds like chlorine and therefore has a chemical connotation. We know that the chloride ion in potassium chloride or sodium chloride has none of the properties of chlorine, and therefore this is potentially misleading to consumers. The name 'potassium salt' as proposed in this petition avoids this confusion while appropriately and accurately describing the ingredient in terms that are understandable and recognizable to consumers."

Alcoholic Beverages Control Commission freezes sale and distribution of alcoholic ice cream with new regulation

By Mary Ellen Shoup+, 28Sep2016 Dairy Reporter

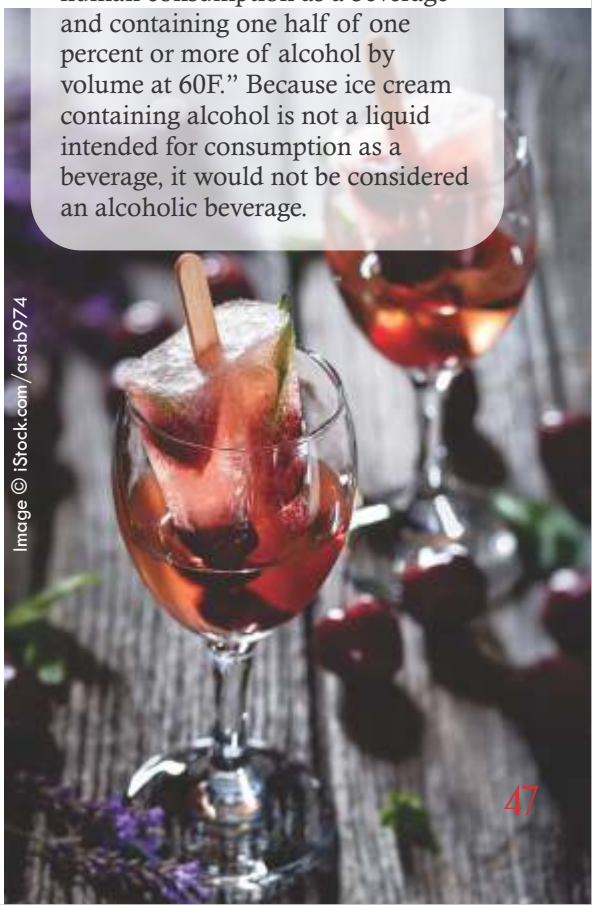
The Alcoholic Beverages Control Commission (ABCC) recently issued an advisory restricting the sale and distribution of alcohol-infused ice cream in the state of Massachusetts, in response to the increase in production and sales of boozy ice cream.

According to the International Dairy Foods Association (IDFA), Americans are looking for an indulgence when they eat ice cream, making the combination of premium ice cream and different types of alcohol a natural, popular choice among adult consumers. However, Kris Foster, general counsel of ABCC, said that rising sales of alcoholic ice cream have also prompted the agency to set down a clearly-defined regulation for local licensing boards.

The new restriction requires that any manufacturer who uses wine, beer, or spirits in their ice cream file for a federal exemption, regardless of the amount of alcohol used. Alcohol levels used in the specialty ice cream category can vary between nearly none and almost 5% (roughly the same amount as some varieties of beer). "No businesses (such as ice cream parlours and food trucks) can lawfully make and/or sell alcohol-infused ice cream without producing a written classification from the Alcohol and Tobacco Tax and Trade Bureau (TTB) exempting each alcohol-infused ice cream product it sells," the advisory document stated.

Alcoholic ice cream ≠ alcoholic beverage

The ABCC defines an alcoholic beverage as "any liquid intended for human consumption as a beverage and containing one half of one percent or more of alcohol by volume at 60F." Because ice cream containing alcohol is not a liquid intended for consumption as a beverage, it would not be considered an alcoholic beverage.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Any businesses with licenses to either import, distribute, or sell alcoholic beverages are not lawfully allowed to import, sell, or manufacture ice cream with alcoholic content. Any such action is considered a legal violation and the retailer would be subject to sanctions.

The only exception to this prohibition is where the TTB has classified in writing that a particular product is a "non-beverage product." This TTB classification is specific to each individual product a business manufactures, and not a business' entire line of products. What this means for retailers is that a retailer cannot lawfully purchase alcohol-infused ice cream from a wholesaler because it is both unlawful for a wholesaler to sell alcohol-infused ice cream, and it is also unlawful for retailers to sell it to the public without the appropriate TTB label/permit classifying it as an approved non-beverage product.

One exception to this requirement is restaurants with liquor licenses who serve their own alcohol-infused ice cream desserts such as "adult milkshakes" or bourbon vanilla ice cream.

Is intoxication a concern?

Ice cream naturally retains a higher percentage of alcohol content compared to other food products where alcohol is heated up and cooked away. Meaning many alcohol-infused ice cream products have an actual ABV with potential of intoxication effects. Liquor-infused ice cream manufacturer Tipsy Scoop, which is located in New York City but distributes to retail locations in Boston, requires its customers to be over the age of 21 before consuming its products like its Spiked S'Mores and Rum Root Beer Float flavours. However, it would take a lot of ice cream to achieve illegal levels of intoxication (i.e. above .08). According to Ralph Sacramone, executive director of ABCC, it would take eating more than four pints of alcoholic ice cream in most cases to become overly intoxicated.

Regulation of Probiotics in the USA: Dietary Supplements

By Ivan Wasserman, counsel to the International Probiotics Association, 06Oct2016 NutraIngredients USA

The United States Food and Drug Administration's (FDA) regulation of products containing probiotics is complex and largely depends on the claims that are made for the product.

For example, they can be regulated as foods, dietary supplements, cosmetics, or drugs/biologics (a class of drugs which are extracted from or derivatives of living organisms). In this second of a four part IPA Counsel Corner series, we will focus on the second category: dietary supplements.

FDA defines a dietary supplement as "a product intended for ingestion that contains a 'dietary ingredient' intended to add further nutritional value to (supplement) the diet." Dietary Supplements are typically sold as tablets, capsules, powders, and liquids (although there are additional considerations in determining if a product is a liquid supplement or a conventional food beverage). Like other ingredients, before marketing a dietary supplement with a probiotic ingredient a determination must be made if it requires the submission of a New Dietary Ingredient notification to FDA with information on the safety of the ingredient. A notification is not required if the probiotic was sold in the United States as a dietary supplement prior to October 15, 1994, or if it is present in the food supply as an article used for food in a form in which the food has not been chemically altered. FDA's current position is that certain changes in how an ingredient is processed, may trigger the need to submit a notification.

Like foods, dietary supplements cannot claim to treat, cure, mitigate or prevent a "disease," but can claim to "affect the structure or any function of the body of man or other animals." Common probiotic structure/function claims include "support healthy digestion" and "support a healthy immune system." Unlike foods, dietary supplements making structure/function claims must bear a mandatory disclaimer: "This statement has not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat cure, or prevent any disease."

Also, the manufacturer must notify FDA within 30 days of making the claim. As with all claims, structure/function claim for dietary supplements must be truthful, non-misleading, and substantiated with competent and reliable scientific evidence.


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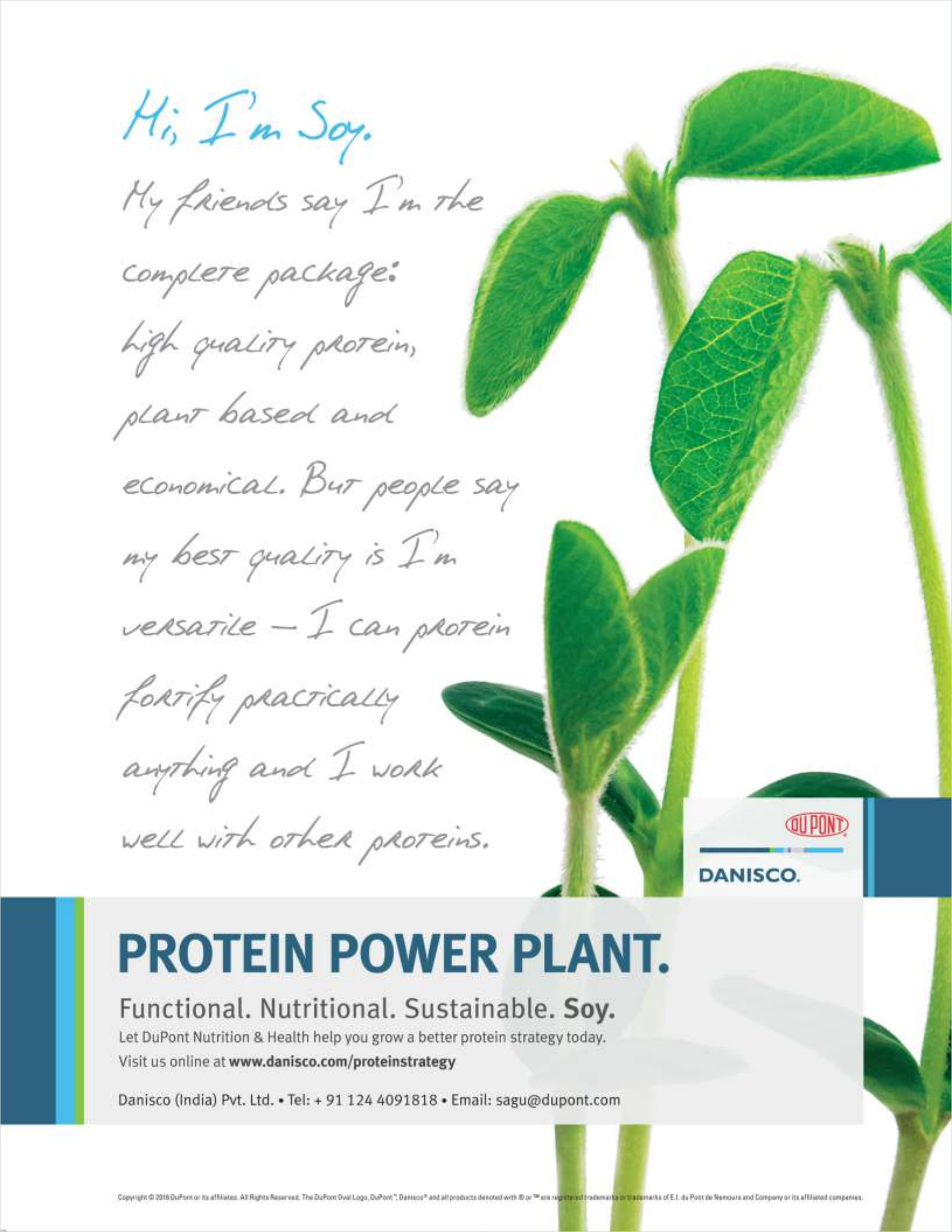

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