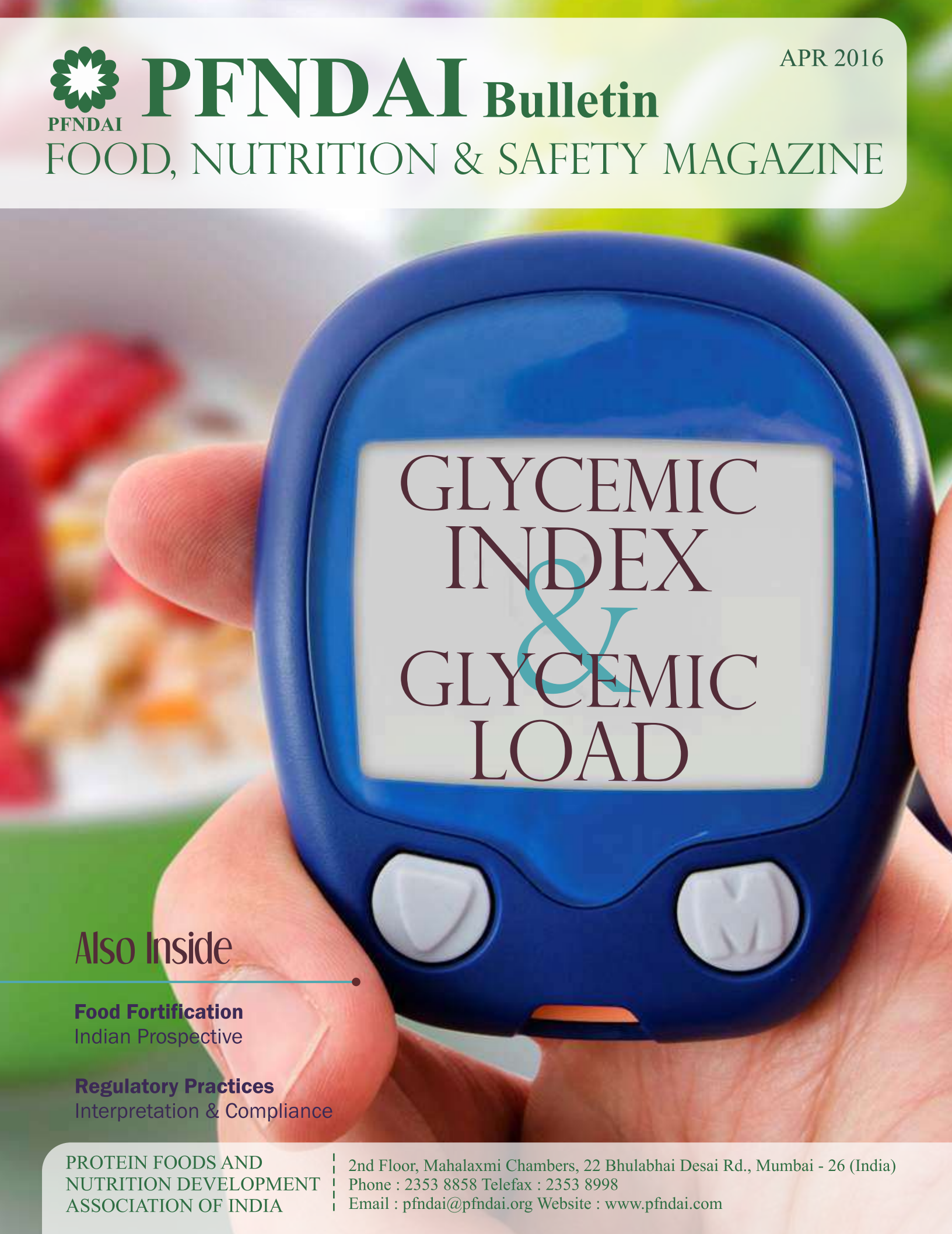
APR 2016

PFNDAI Bulletin

PFNDAI

FOOD, NUTRITION & SAFETY MAGAZINE



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PFNDAI **PFNDAI Bulletin** APR 2016
FOOD, NUTRITION & SAFETY MAGAZINE

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Editorial

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Association of Food Scientists & Technologists (India) Mumbai Chapter in association with Institute of Chemical Technology (ICT) Mumbai, has started a unique programme for students of food science & technology named Avishkar, Food Technology Innovation Premier League (IPL) 2016 (not the popular sports event).

There are six IPL teams owned by 6 food companies in Dairy, Fruits & Vegetables, Oils & Fats, Nutraceuticals, Breakfast foods and Traditional foods areas. Students of food science, technology, nutrition and any food related course can apply for any team with an innovative idea based on product, process, equipment or business idea.

These will be screened and the selected student teams will be allowed to present their ideas before a jury which will select the best three teams awarding them Rs. 10,000, Rs. 7,500 and Rs. 5,000 prizes. These ideas will then be taken up by the respective owners of the team for commercialisation in the next year.

This is one of the best programmes supported by food industry in academics especially directly to students. Students today have an enormous access to information which was earlier available only through libraries. The internet has allowed this and is being used by young minds which has world over resulted in some phenomenal products in science and technology and especially in electronics and computers. Tapping them would really be mutually beneficial and many times with great results. This has been realised by these organisers who really deserve heartiest congratulations. This will not only spur the many young enthusiastic students to study the problems and come up with original solutions.

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This will also push the teachers to provide the latest information on food products, processes and equipment in their teachings which will form the basis for these students to look for the solutions. Students will also need some good library facilities to augment the knowledge imparted by teachers in the classrooms. Only a few institutions have excellent books and journals holding but it might be worthwhile thinking of networking with other food science, technology and nutrition institutions libraries so with minimal inputs more students and teachers can get the benefits of the libraries. This is done in IITs.

Industry certainly deserves credit for helping with this programme by participating and later on implementing the brilliant ideas evolved by these students. Their inputs in supporting education have not been great except for some handful of companies. We sincerely hope that more companies would join this programme or similar supportive activities for students in educational programmes as they must remember that today's student may be company's employee tomorrow.

The organisers have done a wonderful job of bringing this programme of innovative ideas being developed for industry's benefit in such a popular competitive manner that students will certainly be enthusiastic to participate and try with all their heart to sincerely win the top honours. We wish all the very best of luck

Prof. Jagadish S. Pai,
Executive Director
executivedirector@pfndai.org

GLYCEMIC INDEX & GLYCEMIC LOAD

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

Carbohydrates are an essential part of our diet. Previously carbohydrates were classified as simple or complex. The general advice was to eat more complex carbohydrates and less simple sugars, as the former would not increase blood glucose to the same extent like foods containing large amounts of simple sugars. However, the rise in blood glucose (glycemic response) upon eating carbohydrate -containing foods varies considerably. Therefore, in order to distinguish between various carbohydrate-containing foods, glycemic index is used.

What is glycemic index (GI)?

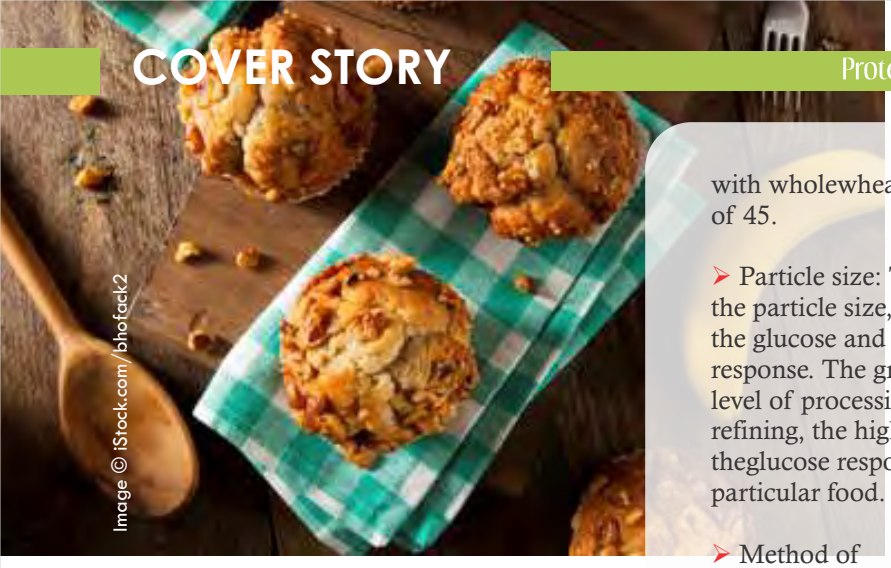
The term GI was coined by Jenkins and co-workers in 1981 to describe the extent to which blood glucose levels in humans change after eating a carbohydrate-containing food and to rank various foods on a scale of 0 to 100. To date GI values of about 2400 food items have been published*.

Measuring GI

GI is measured by giving a fixed amount of a test food, usually containing 50g of available carbohydrates and comparing the blood glucose responses prior to eating and at half-hourly intervals over the next two hours after eating; with a reference food either white bread or glucose. GI is expressed as percentage of the response to the same amount of carbohydrates from the reference food. The food should be tested on a minimum of 10 participants. The test food and the reference food are given on different days.

The GI is a system used to qualitatively classify dietary carbohydrates, based on how they affect blood glucose levels. Foods are classified as low GI if the value is < 55, intermediate for values between 56-59 and high if the GI is >70.High glycemic index foods will lead to a rapid increase in blood glucose. The rapid increase in blood glucose will be a signal for the pancreas to secrete more insulin. In contrast, a low GI food leads to lower but more sustained increase in blood glucose due to which there is less demand on the beta cells of the pancreas. This has implications for dietary management in metabolic syndrome and diabetes mellitus, as GI values can help in food selection, meal formulations/construction of diets such that postprandial fluctuations in blood glucose levels will be minimized.

The concept of GI is widely accepted and recommended bythe FAO, WHO and professional associations concerned with diabetes, heart disease. In Australia, Sweden, and South Africa, food labels display GI values, to help in food selection for prevention and management of chronic disease. However, labelling of foods has not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been adopted by all countries e.g. the advisory council of the USDA stated that it is necessary to develop and validate methods for assessment of carbohydrates. The European Food Safety Authority and the Canadian Food Inspection Agency have pointed out the need for more research on post meal glycemic response if GI has to be applied for health claims.

Why do foods have different GIs?

Several factors may affect the blood glucose response and GI:

Presence of fat, protein: Protein and fat may modulate the rise in blood glucose after the meal by slowing down gastric emptying. When lentils were eaten alone, the GI was lower than when the pulse was eaten with white bread.

➢ Presence of fibre especially soluble fibre: Fibre especially soluble viscous fibre tends to slow down the rise in blood glucose levels after a meal and is able to lower the GI. However, effectiveness may vary with type of fibre and viscosity- the higher the viscosity, the greater its effect. E.g. an English muffin made with white wheat flour has a GI value of 77 and that made with wholewheat has a GI of 45.

➢ Particle size: The larger the particle size, the lower the glucose and insulin response. The greater the level of processing and refining, the higher theglucose response to a particular food.

➢ Method of preparation/processing: How the food is cooked and for how long can influence GI. Spaghetti cooked "al dente" has a lower GI than spaghetti cooked until it is soft. Instant oatmeal has a higher GI than steel-cut oatmeal. Isolation of beta glucan using two different processes showed that the beta-glucan product in which viscosity had been retained was more effective. Fruit puree and fruit juice have higher GIs than whole fruit; mashed potato has a higher GI than a whole baked potato.

➢ Whether a food is served hot or cold: serving boiled potatoes cold could reduce the GI to the medium range. This may be due to formation of resistant starch as a result of retrogradation. As resistant starch is not completely digested in the human gastrointestinal tract, it would not increase the blood glucose level to the same extent as boiled potato that contains less amount of resistant starch.

➢ Cooked versus raw: GI of raw turnip is30 whereas GI of cooked turnip is 85, raw celery root has a GI of 35, that increases to 85after cooking. Cooking gelatinizes starch andthe more the gelatinization, the higher will be the GI, as the starch becomes more accessible to intestinal enzymes.

➢ Variety: long-grain white rice has a lower GI than brown rice but short-grain white rice has a higher GI than brown rice.

➢ Degree of ripeness: the more ripe a fruit, the higher the GI.

➢ Whether a food is eaten alone or with other foods: A high-GI food eaten with a low-GI food will give a combination that has a moderate-GI. Also, adding an acid like lemon juice or vinegar, to a food tends to lower the GI. Interaction of starch with other ingredients influences GI.

➢ Monosaccharides, amylose and amylopectin content: differences in monosaccharide components, nature of starch, resistant starch and fibre content, all influence GI. The higher the ratio of amylopectin to amylose, the higher the GI, because amylose is digested more slowly than is amylopectin. Differences in amylose content could explain some of the variation in GI values. Higher resistant starch content can affect GI favourably.

Examples of foods with different GI values are given below:

Low GI <55	Moderate GI 56-69	High GI >70
Whole wheat flour, Oat bran, muesli (without sugar), barley, corn. Whole pulses e.g. chana, lentils, rajma, chawli, soy bean, hummus.	Whole wheat/multigrain/ oat bran/rye bread Oatmeal, brown/ basmati rice, couscous, quinoa	White bread Corn flakes, puffed rice, bran flakes, instant, Short grain white rice, puffed wheat, rice pasta/ sevai, popcorn, Pizza
Most fruits, non-starchy vegetables including green leafy vegetables, raw carrots, tomato.	Bananas, orange juice, carrot juice, pineapple, papaya, mango, sweet corn	Potato, Watermelon
Soy milk, tomato juice (unsweetened), orange /apple juice unsweetened	Carbonated beverages	
Cashews salted, groundnuts, dates		

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Food Fortification Indian Prospective

By Mr. Sanjay Singh,
Head - Commercial R&D,
Piramal Nutrition Solutions
M/s Piramal Enterprises Ltd.

Need for fortification

Micronutrient malnutrition is prevalent in developed as well as developing countries. Micronutrients are essential for growth, development and maintaining good health. Even moderate level of micronutrient deficiency can lead to severe detrimental effects on human functions. Micronutrient deficiency is the risk factor for many diseases and also can contribute to increased rate of morbidity and mortality. In addition to direct health effects, it also has implications on economic development, security and productivity of nation.

Micronutrient deficiency at global scenario

Worldwide, iron, vitamin A and Iodine deficiencies are most common micronutrient deficiencies affecting not less than one third world's populations, majority of whom are in developing countries. Most prevalent is iron deficiency, it is estimated that just over 2 billion people are anaemic, just under 2 billion people are iodine deficient and around 254 million pre-schooled age children are vitamin A deficient. According to WHO mortality data around 0.8 million deaths (1.5% of the total) can be contributed to iron deficiency every year and similar number to vitamin A deficiency. It is estimated that zinc, vitamin D and folate deficiency increased global burden of diseases substantially in recent years.

Micronutrient deficiency in India current status

As per national sample survey organization (NSSO) survey on food intake showed that in India the intake of Vitamin A, iron, dietary folate were much lower than recommended Daily allowance (RDA). Vitamin D deficiency is also widespread in India in urban as well as rural population. Data from various sources shows that iron deficiency anemia is prevalent in pregnant women and children below 3 year age.

In 2002-03, the national nutrition monitoring bureau (NNMB) conducted survey in eight states of India for deficiency of Vitamin A. The study revealed that vitamin A deficiency is prevalent among children 1-5 year age. The milder forms of Vitamin A deficiency such as Bitot spots, conjunctival xerosis and night blindness are prevalent in varying magnitudes in different Sates of the country. Overall prevalence of Bitot spot is 0.8% which is higher than WHO cut-off level of 0.5% in 6 out of 8 state of India. Overall prevalence of goitre in India is 4% which is lower than WHO cut-off of 5%. However it is prevalent in Maharashtra and West Bengal state estimated around 11.9% and 9% respectively. The survey shows that prevalence of Anaemia in pregnant women is high in states of Madhya Pradesh, Orissa and Karnataka (80-85%), followed by West Bengal, Maharashtra and Andhra Pradesh (70-77%) and Tamil Nadu (69%) with the least being in Kerala (50%). Prevalence of Anaemia in preschool children is also high in states of Orissa (92.4%), followed by West Bengal (81.2%) and Andhra Pradesh (70.8%).

Reasons for Micronutrient malnutrition

- Lack of diversified diet


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- Morbidity
- Parasitic infestation
- Soil quality
- Compromised agricultural practices
- Climatic condition

Strategies to combat micronutrient malnutrition

- Direct supplementation of vulnerable populations or groups with micronutrient supplements Supplementation of micronutrients in the form of tablets or capsules is effective strategy to get immediate benefit to most at-risk groups of population. However it does not reach to practically unreachable at-risk groups, as well as other household and community members not targeted to receive any kind of supplementation.

- Dietary improvement

This strategy aims to increase dietary availability, horticultural interventions, management of proper distribution, regular access, and consumption of vitamin and mineral rich foods in at-risk and micronutrient-deficient groups of populations in developing countries. Such efforts involve changes in dietary behaviour of the targeted population. It involves the requirement of proper storage and distribution channel and also requires educating population on importance of eating vitamin-mineral rich food & consumption of fresh food. The strategy is reportedly effective but requires a relatively long time to achieve results.

- Fortification of common foods with micronutrients Food fortification is considerably more cost effective strategy than supplementation . Primary role of food fortification is prevention of deficiency, it is estimated that the cost of treating malnutrition is 27 times more than the investment required for its prevention. The main objective of food fortification is to increase the level of consumption of the added nutrients to improve nutritional status of a given population. Nevertheless, food fortification can also be practiced to eliminate and control dietary deficiencies and their disorders. Commercial food fortification is particularly appealing because, if the right food is selected, high coverage is assured.

Food Fortification in India

India's history of fortification began in 1953 when fortification of hydrogenated vegetable oil (vanaspati) with vitamin A was mandated. The legislation was enacted in order to make vanaspati nutritionally equivalent to the animal based ghee product. Indian edible oil industry is fragmented with very few large and organised players involved in the manufacturing and sale of vegetable oils. Large amount of edible oil is imported to meet the market demand. Over the last few years, the growth in demand for packaged products has been increased than the demand for loose oil. The technology of oil fortification is simple and inexpensive further Vitamin A exhibit good stability in edible oil at normal cooking and simmering/low temperature frying condition, however stability is significantly dropped in case of repeated frying and high temperature frying.

The use of iodized salt in India started with the Kangra Valley study, carried out during 1956 – 1962. The study revealed that iodized salt consumption decreased the prevalence rate of goitre from 38% to 19% over 6 years. The Kangra Valley study paved the way for the introduction of iodized salt in the country, initially by Government agencies and later by private firms. In India mandatory salt iodization began in 1998. In India as per the Coverage Evaluation Survey 2009, 91 % of households had access to iodized salt, of which 71 per cent consumed adequately iodized salt. Another 9 per cent consumed salt with no iodine. There are wide rural and urban variations in household coverage of adequately iodized salt (83.2% in urban areas vs. 66.1% in rural areas). In recent years, Double-fortified salt (DFS) with iron and iodine receiving increased policy attention. The government prescribed legal standards for DFS and moving towards mandatory double fortification of salt.

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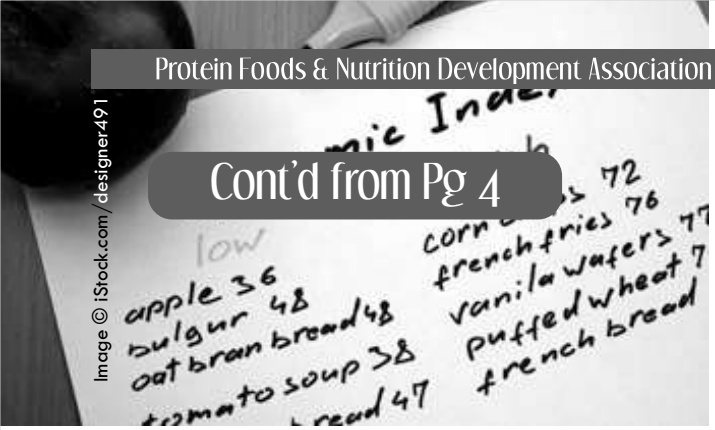

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➢ Content of anti-nutritional factors like phytic acid, polyphenols and phospholipids that can reduce digestion and absorption of protein and minerals. Cooking may also reduce the content of phytates and lectins.

Several aspects contribute to different GI values for the same food:

• Use of venous versus capillary blood.

• Differences in portions used e.g. 50 g versus 75 g of total carbohydrate; in some cases 50 or 75 gms of the food rather than available carbohydrate.

• GI values for the same food vary within and between individuals; e.g. GI values of boiled potato varies between 56- 120; GI of cauliflower is 15–30, corn is 37–68 and onion is 10-15.

• Changes in the ingredients or processing methods used.

• Botanical differences in the same grain e.g. GI values for rice from different countries vary considerably. GI values for rice cannot be reliably predicted on the basis of the size of the grain (short or long grain) or the type of cooking method.

• The method used for determining the carbohydrate content. The available or glycemic carbohydrate fraction is measured as the sum of starch and sugars and does not include resistant starch. However, some people have used food composition tables or values supplied by the food manufacturers, whereas others directly measure the starch and sugar contents of the foods.

Glycemic Load

When 50 gm of carbohydrate from a single food is consumed, it may not have the same effect on blood glucose compared to when one serving of the same food is eaten or when it forms part of a meal. Generally, glycemic response to carbohydrate foods is likely to be reduced when they are consumed with other foods as part of amixed meal. GI values of composite breakfast meals have been found to more closely related to their protein and fat than their carbohydrate content. It is difficult to accurately predict GI of mixed meals, as it does not take into account the effect of intake of fat and protein that are simultaneously consumed with the carbohydrate containing food.

Use of GI has some limitations:

(i) It may lead a person to lay too much emphasis on carbohydrate and ignore other beneficial properties of foods.

(ii) It does not consider the amount a person eats or realistic serving sizes. Example: water melon and carrot have high GIs: watermelon - 72 and raw carrot -35. But both are good sources of fiber, and are low in calories as their moisture content is high. Carrots contain approx 8 gm of carbohydrate so to get 50 gm of carbohydrates, one would have to eat approximately 600g of carrots at one time. Similarly 100g of watermelon contains about 5 g of carbohydrate so one would need to eat about a lot of watermelon to get 50 g of carbohydrate.

In order to overcome such shortcomings, the concept of Glycemic Load was developed to describe both the quality (glycemic index) and quantity of carbohydrate.

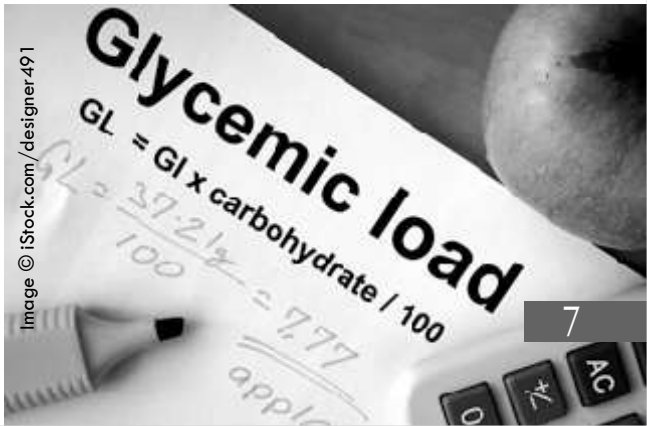
What is Glycemic Load (GL)?

GL also ranks how foods affect blood glucose levels but it takes into account the amount of carbohydrate in each serving of food. It is calculated by multiplying the glycemic index value by the amount of carbohydrate in grams and dividing the total by 100. GL helps us to compare the potential of foods that contain the same amount of carbohydrate to raise blood glucose levels. GL of a diet can be calculated by adding the GL of all the foods present. Foods are classified as low-GL foods - ≤ 10; moderate-GL foods - 11-19; and high-GL foods ≥20. Foods with high GL will raise both blood sugar and insulin levels and therefore should be eaten sparingly. Watermelon has a GL of 3.6 although its GI is 72, its and the GL of raw carrots is 2.

GI and GL are being researched for their effect on various health conditions. A high dietary GI has been found to be related to elevated triglyceride concentrations, low HDL cholesterol, accumulation of fat in liver (non alcoholic fatty liver disease), high adipose tissue and less lean body mass. Low GI diets may also lower oxidative stress.

Type 2 diabetes mellitus (DM)

High dietary GI e.g. Intake of refined carbohydrates (foods like white rice, potatoes (cooked or French-fried), white bread and



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carbonated beverages along with low intakes of dietary fibre has been associated with increased risk of developing type 2 DM. When a high GL meal is consumed, blood glucose levels rise faster and the demand for insulin is more as compared to a low GL meal. High blood glucose and excessive insulin secretion are believed to contribute to loss of the insulin-secreting function of pancreatic β-cells, ultimately and irreversibly resulting in diabetes.

In persons with type 1 and type 2 DM, low GI diets can help to improve overall blood glucose control and in type 1 DM, a high fibre, low GI diet may help the person to have less number of hypoglycemic episodes. In a recent study, consumption of two additional servings of low GI fruits consumed whole as part of a low GI diet (e.g. apples, pears, oranges, tangerines, grapefruit, strawberries, raspberries, cranberries, blackberries, blueberries, nectarines, peaches, plums) was associated with a significant benefit in glycaemic control, blood lipids and blood pressure.

In an intervention study, increasing the ratio of beans (low GI) with white rice and limiting the intake of white rice by substituting with beans resulted in reduced glycosylated haemoglobin, blood pressure and heart rate in persons with diabetes. Low GI diets may be beneficial in management of gestational DM. the few studies conducted on gestational DM show that they are safe, sustainable and there was no adverse effect on obstetric or foetal outcomes.

Cardiovascular disease (CVD)

High dietary GL is associated with increased serum triglyceride concentrations and lower HDL concentrations, both of which are associated with risk of CVD. High dietary GL is also associated with increased serum C-reactive protein that is a marker for inflammation and a predictor of CVD risk.

Obesity and Satiety

Low GI foods have been found to delay return of hunger, decrease food intake at the next meal and thus increase satiety more than high GI foods. Short term studies, conducted for 5 weeks to 6 months, showed that low GL diets resulted in more weight loss than did high GL diets. By helping in weight loss, low GI diets can potentially help reduce risk of metabolic syndrome.

How to lower GI and GL:

✓ Increasing consumption of whole grains, nuts, whole pulses/legumes, fruit and non - starchy vegetables. Non-starchy vegetables contain only small amounts of carbohydrate and do not affect blood glucose levels much. India has a rich variety of such vegetables: ladies finger, tomato, cucumber, cabbage, cauliflower, broccoli, onion, leafy vegetables, French/green beans, gourd vegetables like ridge gourd, bitter gourd, cluster beans, radish, brinjal etc.

✓ Decreasing consumption of starchy high GI foods like potatoes, white rice, white bread, and foods high in refined carbohydrates / sugar e.g. biscuits, cookies, cakes, candy, chocolates, soft drinks, fruit –based beverages. In general, the less processed a food is, the lower its glycemic index is likely to be. Also, in refined grains most of the germ and bran are removed during milling, resulting in loss of health-conferring constituents like fiber, vitamins, minerals, lignans, resistant starch, and phenolic compounds. Large observations studies have associated whole grain consumption with a 21-32 % reduction in risk of diabetes.

✓ Using a viscous fibre like psyllium husk in the food or consuming it with or just prior to the meal.

✓ Combining a carbohydrate-containing food with a protein source e.g. low fat milk or pulses. Pulses have a low GI because they contain slowly digestible starch, fibre, non-nutrient bioactive compounds - phytates, phenols, lectins and amylase and trypsin inhibitors. Hence the European, Canadian and American Diabetes Associations recommend consumption of dietary pulses as a means for diabetes control through lowering the GI and increasing the dietary fibre content of the diet. The American Heart Association also recommends the consumption of legumes as part of the DASH dietary approach to reduce CVD.

✓ Try and use the rule of "80-20" – eighty percent of the diet should be multi-coloured whole foods rich in fiber, and the remaining twenty percent can include foods like white bread, foods rich in sugar etc.

Lastly,GI and GL should not be used in isolation. It should be one component of a plan for healthy eating that will provide all the necessary components that confer health benefits.

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In West Bengal wheat fortification started in 2000, since then 11 other states introduce fortification, though many initiatives have halted due to change in leadership or logistical constraints. It is estimated that currently 7.64% industrially milled flour is fortified. The primary challenge to this strategy is that only 20% of wheat consumed in India is processed by organized mills. The remaining 80% is processed by local mills (chakkis), which process the grain for individual households.

To overcome these shortfalls Indian Government should adopt to home fortification strategy, whereby wheat flour can be fortified with multi-nutrient powders just before making the dough. Apart from this, wheat is primarily consumed in north India whereas rice is the staple food for south and east. Iron Fortification of rice is technically challenging as it changes the colour of rice kernel and make it unappetizing though continue development is on-going in this area.

The Indian government has recommended food fortification in the 10th, 11th, and 12th Five-year Plans as a strategy to improve nutrition through existing government nutrition programs as below:

• Integrated Child Development Services (ICDS, targets pre-school children and pregnant or lactating women): The purpose of ICDS is to improve the health, nutrition and development of children. The programme offers health, nutrition and hygiene education to mothers, non-formal preschool education to children aged three to six, supplementary feeding for all children and pregnant and nursing mothers, growth monitoring and promotion, and links to primary healthcare services such as immunization and vitamin A supplements.

• MidDay Meal (MDM, targets school children): this was introduced primarily to protect the nutritional as well as the educational rights of the children. Food provided to children in school should be hygienic and healthy. Biggest challenges are ensuring the right hygiene practices particularly with cleanliness to be followed while cooking, serving & eating the food. Beside people should be taught for correct storage & handling practices with raw & cooked foods.

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• Public Distribution System (PDS, targets poor, underserved communities): providing food grains at affordable prices.

Food Fortification in India

Micronutrient powders are available in single serving sachet. Generally it contains 5 to 15 essential vitamins and minerals; one sachet to be mixed into the normal meals per day. MNP's are available for specific age groups. It does not affect the taste or texture of food. WHO recommends use of MNPs containing iron, vitamin A and zinc, to reduce anaemia among children aged 6-59 months. Number of home fortification with MNP programs conducted throughout the world and showed positive health benefits.

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COMING EVENTS

Institute of Food Technologists (IFT)
Annual Meeting & Expo 2016
July 16-19, 2016
Chicago, Illinois, USA
W: www.ift.org

Dairy Tech India 2016
August 26-27-28, 2016
BIEC, Bangalore
T: 011-65655264
W: www.dairytechindia.in
E: dairytechindiamtpl@gmail.com

AAHAR - The Food & Hospitality Fair 2016
September 15 - 17, 2016
Chennai Trade Centre. Chennai
T: 044 – 28587297

International FoodTec India
September 22-24, 2016
Hall 1& 5, Bombay Exhibition Centre, Mumbai
Contact: Ms. Ummeayman R., Nutritionist, PFNDAI
T: 040-65594411
E: m.pathan@koelmesse-india.com

Indian Ice Cream Congress & Expo 2016
September 28-29, 2016
Expo Centre, Sector-62, Noida, Delhi NRC
W: http://indianicecreamcongress.in

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Research in Health & Nutrition

Community lifestyle intervention reduces cardiovascular disease risk in diabetes patients

February 1, 2016 Science Daily

It took just 16 two-hour classes on the basics of a healthy lifestyle to substantially reduce cardiovascular risks associated with type 2 diabetes and elevated fasting blood glucose levels for 110 patients, according to a study published in The Journal of the American Osteopathic Association.

The Complete Health Improvement Lifestyle Intervention Program (CHIP) includes dietary targets, cooking classes, an exercise program and group discussions to give participants the specifics they need to improve their health. Based on the fact that 75 percent or more of Western diseases are lifestyle-related, CHIP gives participants concrete instruction that takes a mind, body and spirit approach to healthy living.

The retrospective study evaluated 2011-2014 data collected from 110 patients in six Ohio University CHIP cohorts from 11 Appalachian counties where the prevalence of diabetes is over 7 percent higher than the national average. Participants experienced significant reductions in total cholesterol levels (9.6 percent), fasting glucose (9 percent), body mass index (3.7 percent) and systolic blood pressure (5.7 percent).

"This study supports the osteopathic philosophy of medicine, including that diet and exercise are the most effective prescriptions physicians can give patients struggling with lifestyle diseases like Type 2 diabetes. But lifestyle changes require more commitment than taking a pill, which is why programs like CHIP are so beneficial," said Jay Shubrook, DO, a diabetologist at Touro University California, College of Osteopathic Medicine in Vallejo. "Community-based interventions provide the social supports and specific instruction that move patients into healthy habits, which in some cases enabled them to reduce medications."

The primary focus of CHIP was the consumption of whole foods, such as fresh fruits, vegetables, whole grains, legumes, nuts, and 8 ten-oz glasses of water daily. More specific goals included overall dietary fat content below 20 percent of total calories, daily intake of added sugar less than 10 tsp, daily sodium less than 2000 mg, cholesterol below 50 mg, and high fiber intake (>35 g/d). Stress reduction techniques and flexibility exercises were taught and encouraged, along with at least 30 minutes (or 10,000 steps) of daily aerobic exercise.

Currently almost 30 million Americans have diabetes and 1 in 3 Americans have prediabetes. Diabetes complications include cardiovascular disease, stroke, limb amputation and microvascular complications. Direct medical costs for diabetes in the U.S. are estimated at $176 billion annually. Indirect costs from disability, work lost and premature death add up to another $69 billion.

To date, CHIP has shown to be effective in maintaining reductions in CVD risk factors for up to three years after completion of the program.

"This program engages the community to strive for and reach better health, while preparing participants with the structure they need to continue a healthy lifestyle in the future," Shubrook explained..

Higher dietary fiber intake in young women may reduce breast cancer risk

February 1, 2016 Science Daily

Women who eat more high-fiber foods during adolescence and young adulthood--especially lots of fruits and vegetables--may have significantly lower breast cancer risk than those who eat less dietary fiber when young, according to a new large-scale study led by researchers at Harvard

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T.H. Chan School of Public Health.

"Previous studies of fiber intake and breast cancer have almost all been non-significant, and none of them examined diet during adolescence or early adulthood, a period when breast cancer risk factors appear to be particularly important," said Maryam Farvid, visiting scientist at Harvard Chan School and lead author of the study. "This work on the role of nutrition in early life and breast cancer incidence suggests one of the very few potentially modifiable risk factors for premenopausal breast cancer."

The researchers looked at a group of 90,534 women who participated in the Nurses' Health Study II, a large long-running investigation of factors that influence women's health. In 1991, the women--ages 27-44 at the time--filled out questionnaires about their food intake, and did so every four years after that. They also completed a questionnaire in 1998 about their diet during high school. The researchers analyzed the women's fiber intake while adjusting for a number of other factors, such as race, family history of breast cancer, body mass index, weight change over time, menstruation history, alcohol use, and other dietary factors.

Breast cancer risk was 12%-19% lower among women who ate more dietary fiber in early adulthood, depending on how much more they ate. High intake of fiber during adolescence was also associated with 16% lower risk of overall breast cancer and 24% lower risk of breast cancer before menopause. Among all the women, there was a strong inverse association between fiber intake and breast cancer incidence. For each additional 10 grams of fiber intake daily--for example, about one apple and two slices of whole wheat bread, or about half a cup each of cooked kidney beans and cooked cauliflower or squash--during early adulthood, breast cancer risk dropped by 13%. The greatest apparent benefit came from fruit and vegetable fiber.

The authors speculated that eating more fiber-rich foods may lessen breast cancer risk partly by helping to reduce high estrogen levels in the blood, which are strongly linked with breast cancer development.

"From many other studies we know that breast tissue is particularly influenced by carcinogens and anti-carcinogens during childhood and adolescence," said Walter Willett, Fredrick John Stare Professor of Epidemiology and Nutrition at Harvard Chan School and senior author of the study. "We now have evidence that what we feed our children during this period of life is also an important factor in future cancer risk."

Maternal diet alters the breast milk microbiome and microbial gene content

February 2, 2016 Science Daily

In a study to be presented on Feb. 5 at the Society for Maternal-Fetal Medicine's annual meeting, The Pregnancy Meeting™, in Atlanta, researchers will present findings from a study titled, Maternal Diet Alters the Breast Milk Microbiome and Microbial Gene Content.

Breast milk contains a diverse microbiome that is presumed to colonize the infant gastrointestinal tract and contribute to the establishment of the infant gut microbiome. The composition of the breast milk microbiome varies over time and among individuals, though the factors driving the variation are largely unknown.

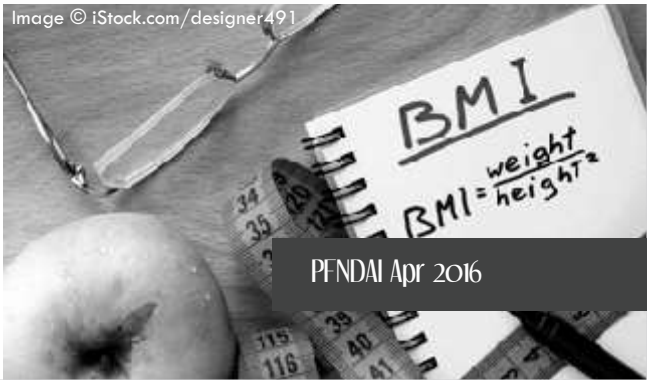
Since maternal diet during gestation and lactation has been previously shown to independently alter the offspring microbiome and offspring disease susceptibility, researchers speculated that the breast milk microbiome may be a mediator of this dietary impact. Two groups of lactating women participated in highly-controlled single-blinded cross-over dietary intervention studies to evaluate if maternal diet plays a significant role in structuring the taxonomic and metagenomic composition of the breast milk microbiome.

"We saw considerable differences based on maternal diet," explained Kristen Meyer, with the Baylor College of Medicine, one of the researchers of the study and the presenter at the SMFM annual meeting. "Based on this, we speculate that the maternal diet serves as a significant driver of the early infant microbiome, reinforcing the gestational dietary impact," added Meyer.

Don't use body mass index to determine whether people are healthy

February 4, 2016 Science Daily

Over the past few years, body mass index, a ratio of a person's



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height and weight, has effectively become a proxy for whether a person is considered healthy.

Many U.S. companies use their employees' BMIs as a factor in determining workers' health care costs. And people with higher BMIs could soon have to pay higher health insurance premiums, if a rule proposed in April by the Equal Employment Opportunity Commission is adopted.
But a new study led by UCLA psychologists has found that using BMI to gauge health incorrectly labels more than 54 million Americans as "unhealthy," even though they are not. The researchers' findings are published online today in the International Journal of Obesity.

"Many people see obesity as a death sentence," said A. Janet Tomiyama, an assistant professor of psychology in the UCLA College and the study's lead author. "But the data show there are tens of millions of people who are overweight and obese and are perfectly healthy."

The scientists analyzed the link between BMI -- which is calculated by dividing a person's weight in kilograms by the square of the person's height in meters -- and several health markers, including blood pressure and glucose, cholesterol and triglyceride levels, using data from the most recent National Health and Nutrition Examination Survey.

The study found that close to half of Americans who are considered "overweight" by virtue of their BMIs (47.4 percent, or 34.4 million people) are healthy, as are 19.8 million who are considered "obese."

Given their health readings other than BMI, the people in both of those groups would be unlikely to incur higher medical expenses, and it would be unfair to charge them more for health care premiums, Tomiyama said.

Among the other findings:
• More than 30 percent of those with BMIs in the "normal" range -- about 20.7 million people -- are actually unhealthy based on their other health data.
• More than 2 million people who are considered "very obese" by virtue of having a BMI of 35 or higher are actually healthy. That's about 15 percent of Americans who are classified as very obese.

Tomiyama, who directs UCLA's Dieting, Stress and Health laboratory, also called DiSH, found in previous research that there was no clear connection between weight loss and health improvements related to hypertension, diabetes, and cholesterol and blood glucose levels.
She said she was surprised at the magnitude of the numbers in the latest study.

"There are healthy people who could be penalized based on a faulty health measure, while the unhealthy people of normal weight will fly under the radar and won't get charged more for their health insurance," she said. "Employers, policy makers and insurance companies should focus on actual health markers."

Jeffrey Hunger, a co-author of the paper and a doctoral candidate at UC Santa Barbara, said the research shows that BMI is a deeply flawed measure of health. "This should be the final nail in the coffin for BMI," he said.

Hunger recommends that people focus on eating a healthy diet and exercising regularly, rather than obsessing about their weight, and strongly opposes stigmatizing people who are overweight.
The proposed EEOC rule would allow employers to charge higher insurance rates to people whose BMI is 25 or higher. A BMI between 18.5 and 24.99 is considered normal, but the study emphasizes that normal BMI should not be the primary goal for maintaining good health.
Tomiyama is planning a new study of people with high BMIs who are very healthy. Prospective participants may contact her laboratory for more information.

Co-authors of the International Journal of Obesity study are Jolene Nguyen-Cuu, manager of Tomiyama's laboratory, and Christine Wells, a UCLA statistical analyst.

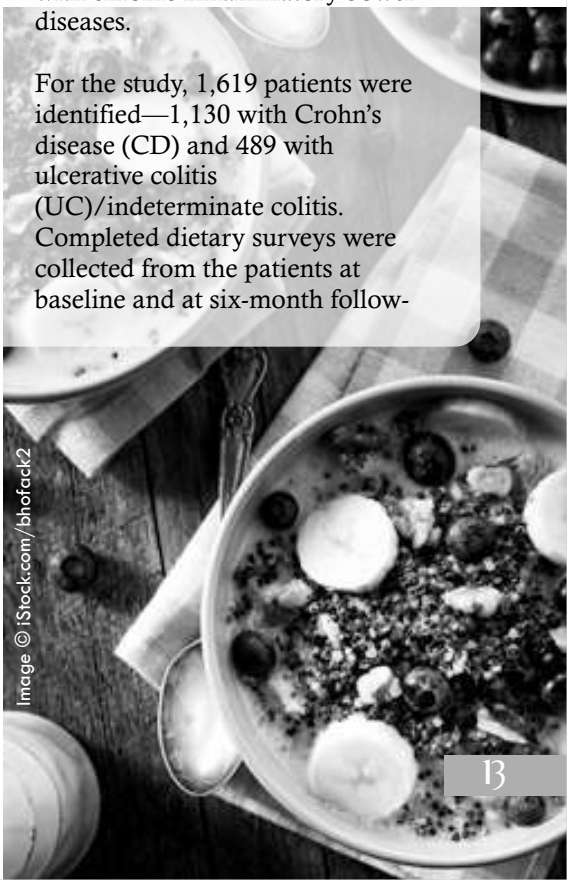
Dietary fiber may reduce Crohn's disease flares

IFT Weekly February 3, 2016

A study published in Clinical Gastroenterology and Hepatology shows that dietary fiber consumption may reduce flares in patients with Crohn's disease.

Using the Crohn's and Colitis Foundation of America Partners Internet cohort, the researchers examined the association of dietary fiber intake with flares in patients with chronic inflammatory bowel diseases.

For the study, 1,619 patients were identified—1,130 with Crohn's disease (CD) and 489 with ulcerative colitis (UC)/indeterminate colitis. Completed dietary surveys were collected from the patients at baseline and at six-month follow-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up. Consumption of fiber and whole grains was classified into quartiles and deciles. At the 6-month follow-up period, the researchers considered a disease flare to be a disease activity index score above remission cut-off values.

The researchers found that the risk for disease flare differed by type of disease. Patients with CD were about 40% less likely to have a disease flare when they did not avoid high fiber foods compared to those who reported that they did avoid high fiber foods. Patients with CD in the highest quartile of fiber intake were significantly less likely to have a flare. For patients with UC, researchers found no link between dietary fiber intake and disease.

"The results of this study support findings reported in investigations occurring in the 1980s—low fiber eating does not result in improved outcomes for individuals with CD compared to individuals with CD not restricting fiber intake," the researchers wrote. They concluded that the "recommendations to limit dietary fiber should be re-evaluated."

Banana, pear may improve athletic performance, recovery

IFT Weekly February 3, 2016

A study published in the Journal of Proteome Research shows that consuming bananas and pears before intense exercise may improve athletic performance and recovery time. Scientists at the North Carolina University Research Campus (NCRC) wanted to investigate the impact of eating bananas and pears before and during exercising as opposed to just drinking water.

For the study, 20 male cyclists visited the NCRC Human Performance Laboratory three times, two weeks apart. After fasting overnight, they drank only water or consumed water


Image © iStock.com/K-Paul

with bananas or pears before cycling 75 kilometers at high intensity. The scientists measured metabolite shifts in the blood before and after the participants exercised and for one day of recovery.

The researchers found that performance times of the cyclists were 5% and 3% faster when banana and pears, respectively, were consumed versus water. Additionally, they experienced an improved rate of recovery and higher energy and ability to focus mentally.

"Bananas contain natural sugar as well as potassium, vitamin C, and vitamin B6," said Nick Gillitt, director of the Dole Nutrition Institute (DNI). "If you tell athletes to fill up with sugar before exercising, you want them to use the right foods, and bananas are the right foods."

In addition to their favourable sugar profile, bananas also have phenolics such as dopamine that help reduce free oxygen radicals produced during high intensity exercise. Bananas enhance recovery time by reducing inflammation and improving an athlete's ability to handle oxidative stress during cycling. Pears perform similarly and provide a healthy alternative to bananas.

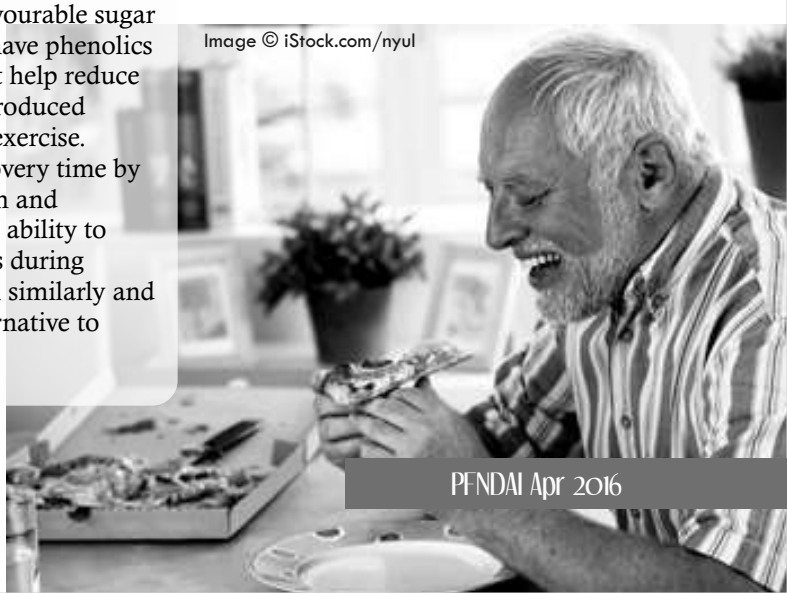
Aging may worsen the effects of a high-salt diet

February 9, 2016 Science Daily

Aging is associated with a number of changes that cause the body to function less efficiently, including the way the body controls water and sodium levels.

Research has shown that as humans and animals age, they are less able to regulate sodium and water retention, urine concentration and thirst compared to their younger counterparts. A new article in the American Journal of Physiology -- Regulatory, Integrative and Comparative Physiology finds that age significantly impaired the ability of rats to get rid of excess sodium when exposed to a high-salt diet. These findings could have implications for salt consumption in the elderly; they suggest older people could be at greater risk for the negative consequences of consuming a high-salt diet.

"Changes in the control of sodium and water balance is a major characteristic of the normal human aging process and includes a decrease in thirst, urinary concentrating ability and capacity to excrete water and electrolytes," the authors wrote. Normally, the body responds to an increase in salt in the diet by producing more urine to flush out the excess sodium. But this response is blunted in older people. "These changes in fluid and electrolyte regulation can put the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elderly at increased risk for disorders of hyponatremia (due to water retention) or hypernatremia (as a result of sodium retention), which can cause central nervous system dysfunction and also negatively impact medication effectiveness, resulting in adverse clinical events and surgical outcomes as well as other physiological functions," the researchers added.

Hong Ji, MD, and colleagues at Georgetown University, in collaboration with researchers at St. Louis University and Nova Southeastern University, looked at aldosterone, a steroid hormone made by the adrenal gland. Aldosterone helps to control the body's amount of fluid and electrolytes -- minerals such as sodium, potassium and calcium in the blood that help regulate bodily functions and processes. Aldosterone production is regulated by angiotensin type 1 (AT1) receptors, which become activated upon binding the peptide hormone angiotensin II. Previous research has found that aldosterone decreases with age and becomes less responsive to changes in the environment.

To investigate how age affected aldosterone levels and the animals' response to dietary sodium, the research team put young and old rats on a low-sodium diet. They observed that old rats ate and drank less than the young rats at the start of the study and had lower levels of aldosterone. After two weeks, all of the rats were switched to a high-salt diet for six days. In response, all of the rats showed a decrease in the level of plasma aldosterone, but the decrease was significantly less in old rats. The young rats drank and urinated more.

While the old rats also drank more water, it took them longer to increase their water intake and they still drank less than the younger rats. The small increase in water did not help the old rats to produce more urine or more diluted urine, suggesting that they were not effectively clearing the excess sodium they consumed.

"The main findings of this study are that aging impaired the adrenal AT1 receptor response to a dietary sodium load in male Fischer rats," the researchers wrote. "The number of adrenal AT1 receptors were not reduced as rapidly in response to a high salt diet compared to the young animals. These age-associated effects on adrenal AT1 receptors correlated with reduced water intake and plasma aldosterone with little change in urine volume, urine osmolality or plasma AVP (antidiuretic hormone)."

High-cholesterol diet, eating eggs do not increase risk of heart attack, not even in persons genetically predisposed, study finds

February 11, 2016 Science Daily

A new study from the University of Eastern Finland shows that a relatively high intake of dietary cholesterol, or eating one egg every day, are not associated with an elevated risk of incident coronary heart disease.

Furthermore, no association was found among those with the APOE4 phenotype, which affects cholesterol metabolism and is common among the Finnish population. The findings were published in the American Journal of Clinical Nutrition.
In the majority of population, dietary cholesterol affects serum cholesterol levels only a little, and few studies have linked the intake of dietary cholesterol to an elevated risk of cardiovascular diseases. Globally, many nutrition recommendations no longer set limitations to the intake of dietary cholesterol. However, in carriers of the apolipoprotein E type 4 allele -- which significantly impacts cholesterol metabolism -- the effect of dietary cholesterol on serum cholesterol levels is greater.

In Finland, the prevalence of the APOE4 allele, which is a hereditary variant, is exceptionally high and approximately one third of the population are carriers. Research data on the association between a high intake of dietary cholesterol and the risk of cardiovascular diseases in this population group hasn't been available until now.

The dietary habits of 1,032 men aged between 42 and 60 years and with no baseline diagnosis of a cardiovascular disease were assessed at the onset the Kuopio Ischaemic Heart Disease Risk Factor Study, KIHD, in 1984-1989 at the University of Eastern Finland. During a follow-up of 21 years, 230 men had a myocardial infarction, and 32.5 per cent of the study participants were carriers of APOE4.

The study found that a high intake of dietary cholesterol was not associated with the risk of incident coronary heart disease -- not in the entire study population nor in those with the APOE4 phenotype. Moreover, the consumption of eggs, which are a significant source of dietary cholesterol, was not associated with the risk of incident


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coronary heart disease. The study did not establish a link between dietary cholesterol or eating eggs with thickening of the common carotid artery walls, either.

The findings suggest that a high-cholesterol diet or frequent consumption of eggs do not increase the risk of cardiovascular diseases even in persons who are genetically predisposed to a greater effect of dietary cholesterol on serum cholesterol levels. In the highest control group, the study participants had an average daily dietary cholesterol intake of 520 mg and they consumed an average of one egg per day, which means that the findings cannot be generalised beyond these levels.

Fish consumption during pregnancy supported by research

February 23, 2016
Science Daily

A new study supports the theory that the detrimental effects of low-level exposure to mercury may be outweighed by the beneficial effects of fish consumption.


Image © iStock.com/JackF

The study finds little evidence of harm in infants whose mothers had low fish consumption and low mercury exposure. In fact, infants of mothers with higher mercury exposure during pregnancy and who consumed more fish had better attention and needed less special handling during a newborn exam. This likely was due to the beneficial nutritional effects of fish consumption, according to the researchers.
"The better neurobehavioral performance observed in infants with higher mercury biomarkers should not be interpreted as a beneficial effect of mercury exposure, which is clearly neurotoxic," says Kim Yolton, PhD, a researcher at Cincinnati Children's Hospital Medical Center and senior author of the study. "It likely reflects the benefits of polyunsaturated fatty acid intake that also comes from fish and has been shown to benefit attention, memory, and other areas of development in children. In our study, mercury exposure was very low, primarily due to consumption of fish low in mercury, so the detrimental effects might have been outweighed by the beneficial effects of fish nutrition."
The study is published online in Neurotoxicology and Teratology.

The researchers assessed the neurobehaviour of 344 5-week-old infants using a standard neurobehavioral scale. Gestational mercury exposure was measured in maternal blood and infant umbilical cord blood. The researchers collected fish consumption information from the mothers and estimated polyunsaturated fatty acid intake based on the type and amount of fish consumed.

Eighty-four percent of mothers reported eating fish during pregnancy but only about two ounces per week on average. Those infants with higher prenatal mercury exposure showed asymmetric, or unequal reflexes. But when fish consumption was taken into account, those whose mothers consumed more fish had better attention and needed less special handling.

In 2014, the FDA and EPA updated their advice to consumers to encourage women to eat more fish (eight to 12 ounces per week) than had previously been recommended and to select fish with the lowest mercury levels. These include salmon, shrimp, pollock, light canned tuna, tilapia, catfish, and cod. They also suggested avoiding fish with the highest mercury levels, including tilefish, shark, swordfish, and mackerel.

"The important thing for women to remember is that fish offers excellent nutritional qualities that can benefit a developing baby or young child," says Dr. Yolton. "Moms just need to be thoughtful about which fish they eat or provide to their child."

Food-based proteins discovered as key to child malnutrition in developing countries

February 23, 2016 Science Daily

Contrary to popular belief among world relief workers, children in developing countries may not be eating enough protein, which could contribute to stunted growth, a Johns Hopkins-directed study suggests.

Analyzing blood samples from more than 300 African children -- more than 60 percent of whom had stunted growth -- researchers found that children who were stunted had 15 to 20 percent lower levels of essential amino acids, the building blocks of proteins, than children who were growing normally.

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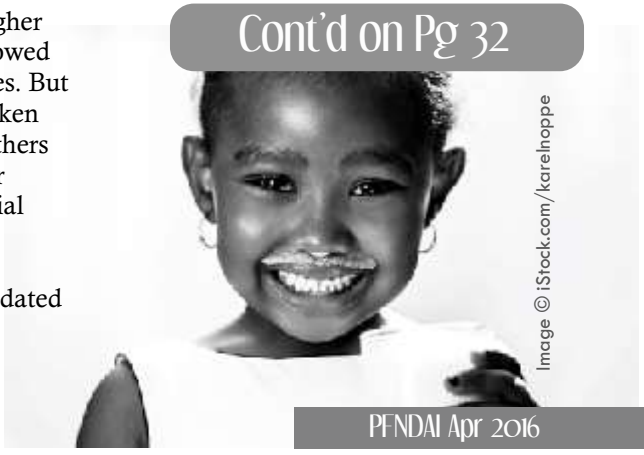
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Food Science & Industry News

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A new alternative to sodium: Fish sauce

February 2, 2016 Science Daily

Cooks, chefs and food manufacturers are looking for natural ways to reduce sodium in recipes in nearly every culture.

A big challenge to doing that is taste. Consumers typically describe reduced-sodium foods as lacking in taste and flavour. Findings of a study in the January issue of the Journal of Food Science, published by the Institute of Food Technologists (IFT), found that Vietnamese fish sauce added to chicken broth, tomato sauce and coconut curry reduced the amount of sodium chloride by by 10-25 percent while still maintaining the perceived deliciousness, saltiness and overall flavour intensity.

Fish sauces are a standard condiment and ingredient in various Southeast Asian cuisines that add an umami element to many foods. Fish sauce is made by combining sea salt and long-jawed black anchovies in large vats to slowly ferment for 8-12 months, during which the protein breaks down to free amino acids and increases the umami taste. It is used as a readily available source of protein and seasoning in the Asia region.

This researchers, a team of researchers (Linh Hue Huynhm Robert Danhi, and See Wan Yan) from Taylor's University in Malaysia showed that fish sauce may be used as a partial substitute ingredient for salt as a means to reduce sodium content in food without diminishing palatability.

These results could aid chefs and food manufacturers in creating foods lower in sodium content that would meet the needs of consumers, healthcare providers, governmental organizations, and consumer advocacy groups without compromising taste.

Researcher developing portable method to detect tainted medicines, supplements

United Nations Human Rights Council safe-medicines resolution motivates research

February 2, 2016 Science Daily

Image © Case Western Reserve University

Soumyajit Mandal, assistant professor of electrical engineering and computer science at Case Western Reserve University, inserts a bottle of pills into his authentication prototype.

Fake or low-quality medicines and food supplements are an ongoing global problem in underdeveloped nations, although technology-savvy places, such as the United States, are also not immune.

A researcher at Case Western Reserve University is developing a low-cost, portable prototype designed to detect tainted medicines and food supplements that otherwise can make their way to consumers. The technology can authenticate good medicines and supplements.

"There is a big problem with counterfeit and substandard medicines in poorer countries, particularly in Africa and Asia," said Soumyajit Mandal, assistant professor in the Department Electrical Engineering and Computer Science in the Case School of Engineering. "In the U.S., the biggest problem is with various dietary supplements."

Mandal and his collaborators are developing a small, box-like detector that has been preliminary tested in field trials. "The work builds on--and improves--a related project introduced in Europe a few years ago to create a portable, low-cost detector for medicines," he said.

Mandal said the detector he and his colleagues are developing is much more flexible (capable of analyzing a wide variety of medicines and dietary supplements), and more sensitive (capable of measuring smaller quantities).

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Mandal is the principal investigator of the research and co-author of an associated paper to be published in IEEE/ACM Transactions on Computational Biology and Bioinformatics, a bimonthly peer-reviewed scientific journal. Research participants are Professor Swarup Bhunia at the University of Florida, in Gainesville, Fla., and Research Fellow Jamie Barras and Professor Kaspar Althoefer, both at King's College London.

"Current results are very promising and have advantages over competing methods," Mandal said. "The required instrumentation is simple and low-cost, compared to other analytical techniques, such as optical spectroscopy."

A global health concern

The paper, titled "Authentication of Medicines using Nuclear Quadrupole Resonance Spectroscopy," links their research to the concept of safe medicines "as a human right." In 2013, the United Nations Human Rights Council adopted a resolution focused on access to medicines "that are affordable, safe, effective and of good quality."
"We think our technology will have an important positive impact on public health by enabling consumers to directly authenticate the contents packets or bottles without having to send samples to an analytical chemistry lab," Mandal said.

A medicine or dietary supplement might be incorrectly labeled for a variety of reasons--intentional fraud, poor manufacturing practices and degradation due to poor storage or post-expiration date. The key to detection is to know the proper active pharmaceutical ingredients (API) in a medicine or supplement, so technicians can determine whether a pill or powder is what it appears to be. The technology being developed in Mandal's lab does not authenticate liquids.

How it works

The device uses Nuclear Quadrupole Resonance (NQR) spectroscopy, a non-invasive and non-destructive analytical technique for medicines and supplements in pill or powder form. Most chemical elements have nuclei that generate NQR signals. Almost all medicines have API with NQR-active nuclei. Mandal's research team proposes a "chemometric passport approach" for quality assurance. Data on packaged medicines will be derived from a spectroscopic analysis performed at the point of manufacture.

The contents of the packet will later be authenticated by matching the results of another spectroscopic analysis using unique chemical identifiers from a reference spectrum.
Authentication information can be accessed either from a secure database stored in the cloud, or from information encoded directly within the product barcode. The absence of a match triggers a "contents don't match the label" alarm on the testing device.

Mandal said that capability would be particularly useful at customs checkpoints and postal sorting offices when a barcode might not be visible. One day, he said, a person might be able to test his or her own medicines or supplements at home, which would have a direct effect on public health.

The research is showing that NQR isn't sensitive to pill coatings and non-metallic packaging material, Mandal said.
"Part of what we are proposing is to take this product and do a systematic survey of how much misidentification there is out there," Mandal said. "We need more data to understand the extent of the problem. We are recruiting people willing to try our prototype."

Scientists develop transgenic plants to improve drought resistance

IFT Weekly February 3, 2016

A study published in the Proceedings of the National Academy of Sciences shows that engineering plants to produce high levels of a protein known as PYL9 may boost drought tolerance in rice and the model plant Arabidopsis.

Because plants can't flee drought, they deploy an array of survival strategies while awaiting better growing conditions. Their drought responses are controlled by a hormone known as abscisic acid (ABA), which regulates growth and development and directs plants' reaction to stress. Plants' short-term drought responses include closing their stomata—holes that "exhale" water—and creating extra wax to seal moisture within leaves. Long-term drought conditions cause plants to go into dormancy and redirect water and nutritional resources away from leaves to sink tissues such as seeds and buds, reservoirs for new growth. This process, called senescence, may result in a plant that looks shriveled and leafless but is just executing a line of defense.

The researchers found that altering plants to overexpress the protein PYL9 made them highly sensitive to ABA. A stress-responsive promoter protein controlled the level of PYL9 expression in the plants.

Image © iStock.com/Monika Wisniewska

The gene alterations enabled Arabidopsis and rice to better withstand severe drought stress and caused older leaves to yellow sooner compared with the plants' wild type counterparts. PYL9 transgenic rice had a 50% survival rate after a two-week drought compared with 10% survival in wild type rice.
However, the researchers cautioned that the spike in survival rate does not mean that the yield of the transgenic plants under drought conditions would equal that of conventional rice varieties under good growing conditions. The study did not test for yield.

Unexpectedly, when transgenic plants were treated with ABA under normal conditions, the old leaves started to wilt, even though the plants received enough water. This suggests that the plants had blocked their old leaves' access to water, preferentially driving water to developing tissues instead.

The research team concluded that during severe drought conditions, hypersensitivity to ABA leads to increased senescence and death of old leaves but protects young tissues by sending them into dormancy.
The study also suggests that the ABA core signaling pathway plays a crucial role in plant survival during extreme drought and that senescence is a beneficial drought defense strategy, previously points of contention among plant scientists.

New sunscreen offers vitamin D production with UV protection

By Yvette Brazier Medical News Today 4 February 2016

Solar D, a sunscreen that for the first time enables the body to produce vitamin D with no loss of sun protection factor, will be on sale in the US from this summer. A study published in PLOS ONE describes the findings.

Without vitamin D, it is difficult for the body to absorb calcium and phosphate, which are needed to ensure healthy bones and teeth.
While vitamin D is available in a few foods, including fish-liver oils, fatty fish, mushrooms, egg yolks and liver, very little is taken in by diet, and the main source for people around the world is the sun.

In total, 80% of human vitamin D intake is synthesized in the skin as a result of solar or artificial ultraviolet-B (UV-B) radiation.
However, vitamin D deficiency and insufficiency constitute a major health problem worldwide. Vitamin D deficiency affects around 40% of children and 60% of adults globally, particularly in the US, Canada, Europe, Asia, India, South America and Australia.
Low vitamin D levels tend to be prevalent in people who live in northern latitudes, those who cover up for fear of tanning or for medical or religious reasons, and people who work indoors.

Why do we need vitamin D?

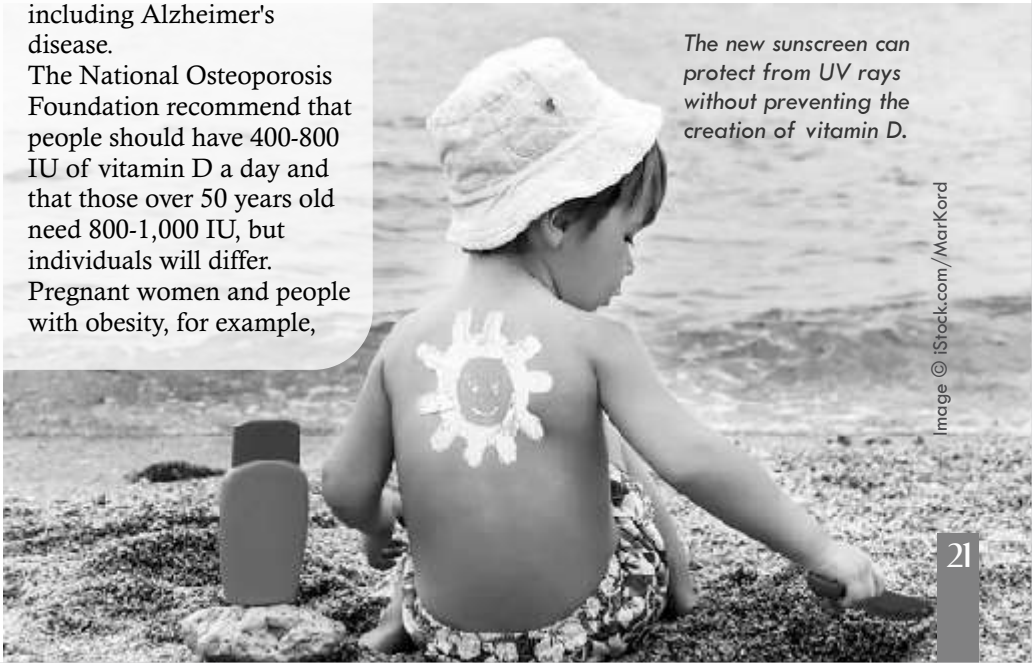
Lack of vitamin D can cause musculoskeletal problems such as rickets, osteomalacia, fractures and muscle weakness, leading to falls in older adults. Researchers have also linked it to some cancers, autoimmune diseases such as type 1 diabetes, multiple sclerosis and rheumatoid arthritis, infectious diseases, type 2 diabetes, cardiovascular problems and neurocognitive disorders, including Alzheimer's disease.
The National Osteoporosis Foundation recommend that people should have 400-800 IU of vitamin D a day and that those over 50 years old need 800-1,000 IU, but individuals will differ. Pregnant women and people with obesity, for example, will need more.
How much vitamin D the body can get from sun exposure depends on several factors.

When and where a person exposes their skin to the sun affects how much vitamin D the body will produce. Catching the rays in the middle of the day, generally from 11 am-3 pm, will boost vitamin D levels, as will living near the equator.
In the summer, at noon, someone with a fair complexion that tans gradually would need 6 minutes of sun exposure to achieve 1,000 IU of vitamin D in Miami; in Boston, the same person would need 1 hour.

Pale skin makes vitamin D more quickly than darker skin, and if a larger area of skin is exposed, more vitamin D will be produced.
Air pollution, altitude, cloud and being behind glass all reduce the amount of vitamin D that the body can produce.
However, these same factors also inversely affect the risk for sunburn and melanoma.

Can you have too much vitamin D?

It is also possible to have too much vitamin D, but this would not normally result from diet or sun exposure. According to the Vitamin D Council, toxicity can occur after taking 40,000 IU per day for 2 months or more, or as a result of a very large one-time dose.



The new sunscreen can protect from UV rays without preventing the creation of vitamin D.

Image © iStock.com/MarKord

Excess vitamin D can cause the liver to produce too much of a chemical called 25(OH)D. This can lead to high levels of calcium in the blood, or hypercalcemia.

Symptoms include nausea or vomiting, feeling thirsty or needing to urinate more often, muscle weakness or pain, bone pain, tiredness and confusion. However, both hypercalcemia and these symptoms can result from other conditions. However, a lack of vitamin D is more likely, and this has been fueled by fears of developing skin cancer, resulting in people either avoiding the sun or covering up with sunscreen. Applying sunscreen with a sun protection factor (SPF) of 30 protects against melanoma, but it also reduces the skin's capacity to produce vitamin D by almost 98%.

Protection from the sun and the need for vitamin D

As well as the threat of non-melanoma skin cancer, ultraviolet (UV) radiation from the sun is known to cause erythema, which is a skin disorder resulting from hypersensitivity. Protection from the harmful rays is sought in sunscreens. The European Commission (EC) state that a sunscreen with an SPF of 6 offers "low protection," an SPF of 15 provides "medium protection" and an SPF of 30 gives "high protection."

Researchers at Boston University in Massachusetts designed four tests to measure the levels of protection and vitamin D optimization for sunscreens containing different combinations of compounds that are known to absorb UV radiation.

They found that one product, Solar D, offered the same protection as other SPF 30 sunscreens, while allowing for up to 50% more production of vitamin D in-vitro.

The researchers told Medical News Today that the effects have not yet been tested on humans.
Dr. Michael F. Holick, PhD, professor of medicine, physiology and biophysics at Boston University School of Medicine and an endocrinologist at Boston Medical Center, explains that Solar D was "designed with compounds with differing filter compositions to maximize vitamin D production while maintaining its sun protection for reducing erythema or burning of the skin."

Dr. Holick told MNT:
"The ingredients in the sunscreen are essentially identical to most of the major brands, with the minor adjustment of the formulation to enhance the transmission of ultraviolet light that specifically make vitamin D3 in the skin."
When we asked whether the sunscreen would offer the same protection against melanoma, Dr. Holick told us, "There is no reason why it should not be as effective as other sunscreens."
Solar D is already on sale in Australia. Dr. Holick informed us that the sunscreen will be available in different SPF levels, and the lower the SPF, the more vitamin D will be produced.

Don't ignore different flavour preferences of older consumers: Study

Food Navigator, 21 Jan 2016

Certain flavours, such as ginger or mint, appeal to older consumers more than younger ones, and should be considered along with texture when targetting seniors in new product development (NPD).

Researchers from the University of Wageningen tested different products, such as milk chocolate, dark chocolate, mint chocolate, plain gingerbread and extra strong gingerbread for three different groups: young adults, seniors aged over 65 years with an impaired sense of smell and seniors with a normal sense of smell.

They found that the younger subjects associated strong ginger flavour with emotions such as 'disgusted' whereas the seniors stronger linked these flavours to positive emotions, such as 'pleasant', 'happy', and 'enthusiastic'. Similarly, while mainly positive emotions were noted across all three groups for the milk chocolate, younger participants linked the mint version to the emotions 'wild' and 'disgusted' while the seniors felt 'pleasant' and 'satisfied'. Those who were smell impaired found the mint version to be 'mild' more than the seniors with a normal sense of smell.

The study underlines the importance of target group segmentation in product development, say the researchers. "Product developers may want to tailor the taste of their product to their target age group whether it is a protein drink, a protein-rich meal or a vitamin D supplement," says lead researcher Louise den Uijl.

"The current results can provide R&D guidance beyond the traditional liking and sensory characteristics .This guidance seems to be important with an eye on the increasing need for tailored and emotionally meaningful products for seniors," write the authors, who published their results in the journal Food Quality and Preference.

Cont'd on Pg 28

REGULATORY PRACTICES: INTERPRETATION AND COMPLIANCE

By B Sesikeran MD,
Former Director of National Institute of Nutrition, Hyderabad
Chairperson, Scientific Panel on Labelling & Member,
Scientific Committee, FSSAI

Regulation has been defined as any measure or intervention implemented under government authority and acts to control the behaviour of individuals or groups that come within the ambit of that authority.

The regulations laid down under the Food Safety and Standards act is the authority and all Food Business Operators (FBO) are those who are regulated. Regulations include the following

- The primary laws (Act)
- Subordinate instruments
- and the rules/ guidelines/ advisory etc

Off these the Act is sacrosanct and cannot be changed unless it is done by the Parliament while all others could be changed or modified or removed etc through pre defined processes which would be mentioned in the act.

Regulation is not only as good as the act, rules and regulations but also the way in which they are executed. Execution depends on the following and these are defined as Good Regulatory Practices (GRP)

Five Principles of Good Regulatory Practice -

- Good governance
- Rigorous impact assessment
- Scientific basis and proportionality
- Open consultation
- Minimal restrictiveness

Good Governance is the manner in which the executive authority vested with the powers, manage the entity. Their motivation, understanding of the issues, reliance on good scientific advice, unbiased approach, management capacity and compliance with good practices followed elsewhere in the world decides the quality of governance.

Impact assessment- There has to be a continuous feed back on the impact of regulatory decisions and this leads to constant improvement in the regulatory processes. Every regulation is laid down with an objective and if such an objective cannot be achieved then the regulation needs to be re looked and redone to attain those objectives.

Scientific basis and proportionality: Food regulation is entirely based on scientific facts and evidences and not on perceptions of individuals or political views nor on peer reviewed opinions available from non authentic sources. Science itself keeps evolving and the same shall be applied to regulations as well. Sometimes regulations may be applicable in some situations and not applicable in another due to practical limitations hence there should be a scope for proportionality within each regulation.

Open consultation: This is generally followed in food regulation and is the cornerstone for evolving a good regulation. Opinions are likely to be highly varied but invariably the consumer, the FBO, scientists and the regulator should come to a common ground to achieve a meaningful regulation.

Minimal restrictiveness: Regulation facilitates trade with safety and benefits of the consumer in mind. It is never meant to be restrictive. Food Business needs innovation and novelty to provide the best benefit to consumers. Restrictive regulations will lead to

very standardized foods and leaves very little scope for improvement in food standards through innovations.

Design of standards

Standards and regulations should be well designed to achieve their intended objectives and can be effectively enforced.
Regulations that are poorly designed and implemented can create unnecessary technical barriers to trade. (Leighton-ASEAN).

The APEC(Asia Pacific Economic Cooperation) have developed guidelines for the Preparation, Adoption and Review of Technical Regulations: A simple but effective analytical tool to make good regulations. This includes a check list which needs to be adhered to before framing the regulation.

1. Has the problem been clearly identified?
2. Have all the options to address the problem been considered?
3. Has the design and implementation of technical regulations been considered?
4. Have performance-based regulations and/or standards been considered?
5. Have international standards and obligations been considered?
6. Have compliance mechanisms been considered?
7. Have provisions for review and monitoring of the technical regulation been considered?
8. Has consultation taken place?

Cost- Benefit analysis of a new regulation (OECD)

Cost-benefit analysis is a useful tool to decide whether a particular regulatory response is the most appropriate in a given situation. It enables decision-makers to make judgements about the reasonableness of a regulation and the practicalities for those who will be required to comply.

It also allows regulations to be designed so that they impose the lowest costs and yield the greatest benefits.

A major consideration when undertaking a cost-benefit analysis is the assessment of risk

....the direct results of inappropriate regulation are likely to be higher costs, higher prices, misallocation of resources, a lack of product innovation and poor service quality (OECD)

Examples of non enforceable regulations are

1. NO ADDED MSG on label when there are no analytical methods to differentiate between MSG inherent in foods and MSG which as been added as an additive
2. NO ADDED SUGAR – when we cannot differentiate between naturally present sugar and additional sugar.

Most regulations should be based on scientific evidences of a) Efficacy and b) A risk assessment process

Efficacy related check list:

1. Is there any benefit due to the product / an ingredient
2. If yes what are the biological/ chemical/ biochemical characteristics of the product / an ingredient
3. What is the minimum quantity and duration when you observe an effect
4. Is this available in a single serve or multiple, if multiple then how many servings are recommended per day
5. Can the benefit be quantified or identifiable through a marker
6. Are there any differences in the requirement in different physiological conditions
7. Is there a claim being made if yes then the nature of the claim and appropriate available scientific evidences to make such a claim

Risk Assessment check list
1. Is there a hazard if so what is the hazard
2. Can we quantify the risk and the probability of the risk(probability of such a adverse effect happening)
3. Is there a Lowest Adverse Effect Level (LOAEL)
4. Arrive at a No Observed adverse effect level
5. Is there an intake assessment and how likely is the 95 percentile intake to go beyond NOAEL
6. Is there any need for a risk communication on the label e.g. "Do not exceed two servings in a day"
7. If there is a risk due to excess what are the ways of managing such a risk.

Conclusion:

Good regulatory practices depend on regulations made out of good basic science, valid and published scientific evidences of efficacy and safety along with good management practices

Nutrition Week Activity 2016–

The Maharaja Sayajirao University of Baroda

Report By Ms. Ummeayman R., Nutritionist, PFNDAI

The Nutrition Awareness Activity was organized at Baroda at The Maharaja Sayajirao University on January 23, 2016. One of the objectives of the Association is the awareness creation towards safe and nutritious foods and healthy lifestyle and so the theme of the event was "Soya Food & Health". The activity was sponsored by Ruchi Soya Industries and supported by Kelloggs and Parle Products.

The event had two sessions, first session was competitions for students and second session was seminar. Various competitions organized were Poster Making, Debate, Innovative Recipe Competition wherein students of Food Science, Nutrition, Home Science and Food Technology from SLU College (S.L.U. Arts and H. & P Thakore Commerce College for Women, Ahmedabad), Shri K. P. Patel College of Home Science, The Maharaja Sayajirao University of Baroda, Saurashtra University –Rajkot, P.M. Patel College of Home Science, and S.M. Patel College participated.

In Poster making competition, the students made posters on 'Healthy Food Choices' wherein they made informative posters on health and wellness and healthy eating. The competition was judged by Dr. Anupa Rajput, Consultant with UNICEF & Nutritionist and Dr. Heena Rawal, Associate professor at Sadguru College.

Debate on Soya Protein and Milk Protein was very informative wherein students focused on the benefits of both the proteins and its sources and also discussed the various researches done on the same. Debate was judged by Mrs. Reema Rao, Associate Prof. at Sadguru college and president IDA chapter Gujarat &Dr. Shashikala Tuteja, Associate Prof. at Maharaja Sayajirao University.

The participants made a very good attempt to come up with creative, innovative, delicious, yet nutritious recipes using Soya. This competition was judged by Mrs Sandhya Shah, Project Manager Livelihood Programme at Shroff Foundation Trust & Dr. Gayatri Jadeja, Nutritionist and Assistant Prof. at Krishi Vigyan Kendra Anand Agricultural University.

The theme of the seminar was 'Soya Food and Health'. Dr. Uma Iyer, HOD-Dept. of Foods & Nutrition and Dean-Faculty of Family & Community Sciences, The Maharaja Sayajirao University, welcomed all to the Nutrition Awareness Activity and stated the importance of nutrition in wellbeing and that awareness creation about a healthy diet is important for today's lifestyle.

Mr. Nilesh Mazumdar, CEO, Consumer Brands Division, Ruchi Soya Industries presented 'Soya for Healthy Lifestyle'. Nutrition is important for overall growth and development of all organs of body and for better academic and cognitive development in schools.

Mr. Nilesh Mazumdar felicitated by Dr. Uma Iyer

Ms. Cherisha Doshi being felicitated by Dr. Swati Dhruv

He also highlighted on the needs of protein for muscle development and immunity building. Soya is a good substitute for animal proteins and it is a source of vegetable protein with low fat containing macro and micro nutrients, essential amino acids and dietary fibres. For a Housewife, the biggest challenge is how to cook food which is healthy for her family and at the same time can cater to ever increasing demand for variety and taste by each member of the family. Thus, he also gave an insight into how some of the daily recipes can be made into more nutritious by incorporation of soya.

'Soy Products & Processing' was presented by Ms. Siddhita Kadam, Food Scientist, PFNDAI, wherein she presented the various soy products being consumed by all. Soybeans and soybean products such as soybean oil, tofu, textured soy protein, soy sauce, soy milk, soy flour etc have been in India and we have been consuming it for decades now. She also gave an insight into the various processes that are being carried out for the production of the soy products such as Soybean oil, Soy Flour, Soy protein, Soy Milk, various types of Tofu, Soy sauce, Miso and tempeh.

Ms. Cherisha Doshi, Dietician PFNDAI, presented 'Advantages of Soy foods to Human Health'. A major risk factor of Cardiovascular Heart Disease (CHD) is having too much 'bad' low density lipoprotein (LDL) cholesterol in the blood; eating soya foods as part of a healthy low saturated fat diet can help lower this LDL cholesterol. Soya is thought to lower cholesterol in two ways: Reducing the body's natural cholesterol-producing capacity in the liver and Soya foods are normally eaten in place of other higher saturated fat foods such as fatty meat and full fat dairy products.

A number of soy components have been investigated for potential anticancer activity. Soybean contains several components with anticancer activity, such as, isoflavones, protease inhibitors, phytosterols, saponins, phenolic acids, and phytates. Most of the data support that predominantly isoflavones are responsible for the anticancer effects of soybean

Prizes were distributed to the winner students for all the competitions and Ms. Ummeayman R. Nutritionist-PFNDAI, presented the vote of thanks and thanked all the participants for thought provoking questions.


Poster Competition


Debate Competition


Dr. Gayatri Jadeja judging recipes


Mrs. Sandhya Shah judging recipes

Mrs. Reema Rao with participant

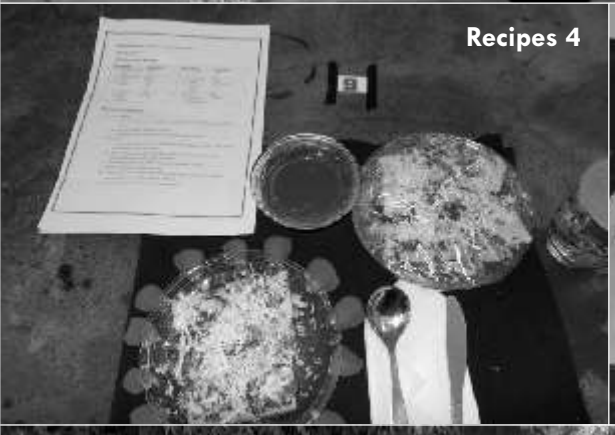

Mr. Nilesh Mazumdar giving award

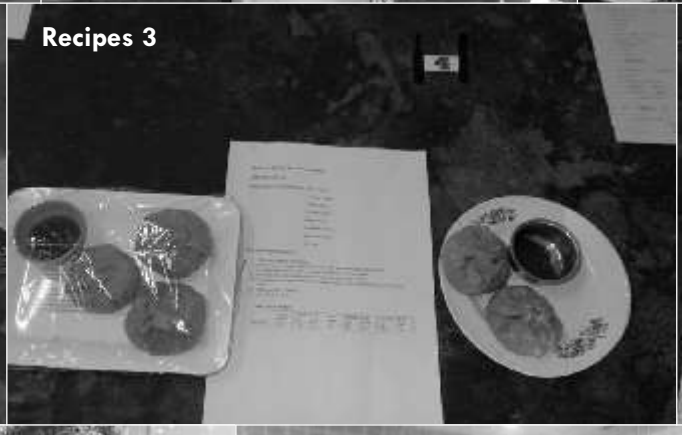
Dr. Uma Iyer giving award


Ms. Ummeayman R giving award


Ms. Siddhita Kadam giving presentation


Recipes 1


Recipes 4


Recipes 3


Recipes 2


Lunch Break


Audience

Cont'd from Pg 22

"Moreover, when applied to – for seniors – nutritionally beneficial food products (e.g. protein rich products), these marketing strategies may aid to better meet the nutritional requirements of senior consumers." According to the authors, emotional associations are much more important in older people's food choices than for younger people as they are formed upon experience and memory. They can therefore differ from younger adults in the intensity of their food-evoked emotions.

But Den Uijl et al. say the emotional response to different foods, such as everyday staple foods or complete dishes, may differ than for these snack type foods, and have called for future research to focus on these.

The experiment compared the emotional responses of group of younger adults aged between 18 and 45 years to that of a second group of 70 seniors (aged over 65 years) who had an impaired sense of smell (hyposmic) and 84 normosmic seniors. Nasal chemosensory function was measured using a TDI score. The subjects were given six products to evaluate: three types of dark chocolate (milk, dark with 70% cacao and dark chocolate with mint flavour) and three types of ginger bread (regular, a wholegrain variety that was slightly less sweet and a strong ginger flavoured gingerbread).

After a one-hour tasting session, data was collected using a questionnaire to measure self-reported food-evoked emotions. They were asked to rate liking on a nine point scale and then the intensity of a range of emotions, such as active, adventurous, bored, disgusted, nostalgic, joyful or wild, from 'not at all' to 'very strong'.

Modi names Sikkim as India's first fully organic state

Food Navigator Asia, 02Feb2016

India's prime minister has officially named Sikkim the country's first fully organic state 13 years after the local legislature set its sights on the title.

In a visit to the mountainous, northeastern hill state, Narendra Modhi heralded Sikkim's agricultural system, which has seen 75,000 hectares of land converted into certified organic farms under India's National Programme for Organic Production. Under the programme's rules, the state has outlawed the use of synthetic fertilisers and chemical pesticides and every farm is now certified organic.

"Sikkim has already achieved that feat of living in harmony with nature, and is therefore a model of development which also protects nature," said Modi. In 2003, Chief Minister Pawan Chamling began a crusade to transform Sikkim's approach to agriculture by banning the sale of nonorganic agriculture products. Still at the helm, Chamling has overseen the process and was present for Modi's announcement.

Over the last decade, the state has also improved the quality of its soil to produce the majority of India's 1.24m tonnes of annual organic production. It's most important crops include cardamom, ginger, turmeric, offseason vegetables, mandarin, kiwi, buckwheat, paddy maize and millet. Already, a burgeoning agri-tourism industry has been established, with organic resorts now selling their produce to visiting travellers.

With its population of just 600,000, Sikkim now joins the likes of California and Wisconsin in America as fully organic states, and is likely to be followed by Kerala, Andhra Pradesh and fellow hill state Mizoram, which have also been eyeing the title.

Image © iStock.com/smshoot

Commodity snapshot: More acreage and wet weather drive sesame prices down

Food Navigator Asia, 02 Feb 2016

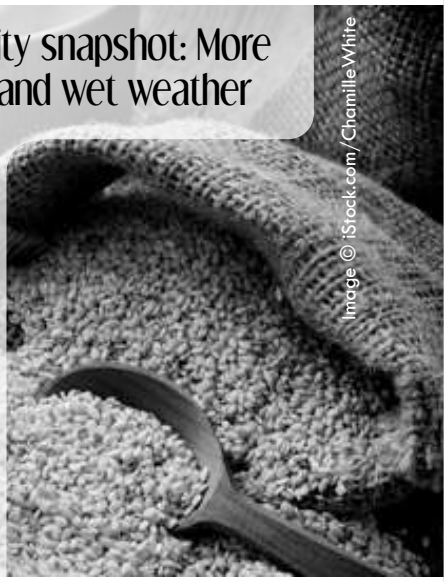


Image © iStock.com/ChamilleWhite

Sesame seed prices in India, the world's major producer and exporter, have declined significantly over the last year by over one third due to increased production and a reduction in demand.

According to Mintec, the commodities analyst, increased acreage, coupled with favourable wet weather conditions, led to an increase in production in 2015, which is estimated to have grown by 20% over the previous year. Planted acreage reached 924,000 ha, up almost 40% on the year.

Prices also fell due to weak export demand in April and July from China and Korea, India's main importers during this period, exports fell by 24% to 66,000 tonnes. Despite this, total exports for 2015 are estimated to have increased due to reduced production supplies from other major producers such as China.

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Regulatory & Safety News

New study finds simplified nutritional labels spur healthier choices in grocery stores

Medical News Today 3 February 2016

When it comes to making healthier food purchases in our nation's grocery stores, the simpler the nutritional packaging is, the better.

In fact, if one only has to look at a single number - a score that represents the nutritional value of what's inside the packaging - a consumer is more likely to buy healthier products.

That's the finding of a new study published in the Journal of Marketing Research: "Healthy Choice: The Effect of Simplified Point-of-Sale Nutritional Information on Consumer Food Choice Behavior," co-authored by Hristina Nikolova, the Coughlin Assistant Professor of Marketing at the Carroll School of Management at Boston College and J. Jeffrey Inman, Associate Dean for Research and Faculty and the Albert Wesley Frey Professor of Marketing at the University of Pittsburgh Joseph M. Katz Graduate School of Business. The study involved more than 535,000 shoppers, eight different food categories, and a major grocery store chain that utilized the NuVal (short for Nutritional Value) simplified scoring system.

"The benefit of the NuVal system is that it takes all the nutritional information available on the nutritional label and basically summarizes it into one score that is displayed on the shelf pricing tag," says Nikolova. "The NuVal scores allow shoppers to easily find healthier products. Consumers basically can very easily identify the healthier products."

The NuVal System scores food products on a scale of 1 to 100 - the higher the score, the better the nutrition. It was developed by a team of nutrition, public health, and medical experts after the 1990 Nutritional Labeling and Education Act (NLEA) failed to reduce the nation's obesity rate and is currently available in more than 1,600 stores in the US. NLEA mandated nutritional labels list ingredients such as fat content, sodium, calories, carbohydrates, etc. While well-intentioned, the labels "are somewhat difficult and time consuming to understand," according to the study, because shoppers look at the product packaging and have to "combine all the information into an overall evaluation."
Researchers cite a 2012 Nielsen study that found 59% of grocery shoppers experience difficulty in understanding nutritional facts on product packaging.

"Our study indicated that the NuVal nutritional scale had an immediate and powerful impact on shopper's decisions," says Inman. "They changed their purchasing behavior to pick healthier choices and they switched to higher-scoring products. In fact, the simplified nutritional information boosted healthy choices by over 20 percent."

Researchers worked with the grocery store chain that began implementing the NuVal scoring system in its stores in 2008. The chain provided dates for when the NuVal scores were introduced for the eight food categories examined - frozen pizza, tomato products, soup, salad dressing, yogurt, spaghetti sauce, granola bars, and ice cream. The study compared purchases of more than 535,000 frequent shoppers in the six-month pre-rollout period and the six-month post roll-out period. Researchers say NuVal - or any kind of POS nutritional scoring system - also helps save time.

"Thinking about the limited time that you have to go and do your grocery shopping, you don't have time to pick up every product, look at the label, take another product and compare the labels on all the different ingredients so it helps with that as well - it facilitates the shopping," says Nikolova.
Given the ease of use, and America's increased focus on health, the study found consumers using POS nutritional scoring systems tended to gravitate toward products with higher nutritional scores, regardless of the price. In fact, price sensitivity in the grocery chain the study examined decreased by 19%, while overall sales increased.

Additionally, researchers found that although consumers were paying less attention to price, they actually paid more attention to a store's promotions. "Our study also revealed that shoppers became less price-sensitive and more promotion-sensitive following the introduction of the food scoring system," says Inman.

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1982-2015

Cont'd from Pg 16

They also had lower levels of other protein markers. These results were published in the Feb. 19 edition of the journal EBioMedicine.
"This challenges the widespread assumption that children are getting enough protein in developing countries," says lead study author Richard Semba, M.D., M.P.H., the W. Richard Green Professor of Ophthalmology at the Johns Hopkins Wilmer Eye Institute.
"This could cause a huge shift in the aid community. We have to really think about trying to improve the diet. Children are not getting quality food."

Essential amino acids are considered essential because they cannot be synthesized by the body and must be obtained from diet, Semba says. The best food sources of essential amino acids are animal-derived foods, such as milk, eggs and meat; soybeans also are a good source. Insufficient intake of essential amino acids can not only impact growth but could also adversely affect multiple metabolic pathways in the body since they play diverse roles in human health.
"We are delighted that the resources and expertise at the National Institute on Aging could help facilitate this important work," says Luigi Ferrucci, scientific director of the National Institute on Aging.

In the 1950s and 1960s, Semba says, international organizations were focused on protein malnutrition in children in developing countries. But in the 1970s, the emphasis shifted to micronutrient dietary supplements because the assumption was that most children received adequate protein. This study suggests that micronutrient supplements sprinkled on a typical diet of grain-based porridge are insufficient, he says. About 160 million children under age 5 suffer from chronic malnutrition worldwide, according to his study; nearly all children who are stunted live in poor areas of Africa, Asia and Latin America.
Semba and colleagues used an analytical chemistry technique called liquid chromatography-tandem mass spectrometry to measure blood levels of amino acids, as well as other essential compounds called glycerophospholipids, sphingolipids and other metabolites in blood samples from 313 children ages 1 to 5 from six villages in rural southern Malawi. Participants' height and weight were recorded by trained field workers.

Sixty-two percent of study participants were stunted. Children who were stunted had lower concentrations of all nine essential amino acids, including tryptophan (27 percent lower), isoleucine (15 percent lower), leucine (17 percent lower), valine (15 percent lower), methionine (13 percent lower), threonine (21 percent lower), histidine (15 percent lower), phenylalanine (6 percent lower) and lysine (22 percent lower), compared with nonstunted children. In addition, stunted children had 10 to 40 percent lower concentrations of other nutritional markers, such as conditionally essential amino acids (arginine, glycine, glutamine), nonessential amino acids (asparagine, glutamate, serine) and six different sphingolipids. Sphingolipids are fundamental components for development of the brain. In addition, stunting was associated with alterations in concentrations of glycerophospholipids, which are needed to make the membranes of all cells.

Semba, who also holds an appointment in the Johns Hopkins Bloomberg School of Public Health's departments of Molecular Microbiology and Immunology and of International Health, says the findings cannot necessarily be extrapolated to other children at risk of stunting, since there may be dietary, cultural and environmental factors that differ from the setting in rural Malawi. Semba and colleagues have plans for additional study in this population, including looking at younger children and following children over time.
Semba and his colleagues hope that this research will prompt a broader discussion on how to address child malnutrition.
"Providing high-quality protein with sufficient levels of essential amino acids in developing countries will be a major challenge and will require substantial investment in the agricultural sector," says Semba.

"No child should be stunted by the age of 2. The brain damage is nearly irreversible, and the child faces a lifetime of disadvantage," says Martin Bloem, senior nutrition advisor at the United Nations World Food Programme. "To provide high-quality food to fix this problem, it will cost $125 to $150 per child."

New research shows anti-inflammatory intestinal protection effect of human milk oligosaccharides can be synthetically replicated

Medical News Today 1 February 2016

New data published in The Journal of Nutrition show that Bimuno®, a unique galacto-oligosaccharide (GOS), is functionally similar to human milk oligosaccharides (HMOS) by producing comparable anti-inflammatory intestinal protection. It is the first time a synthetic GOS has shown this effect, highlighting an important milestone for infant formula

Image © iStock.com/Madhourse

development.

"The benefits of human milk in promoting healthy gut bacteria - providing protection from infection, reducing inflammation and supporting healthy gut development - are well documented. Scientists have long been trying to understand and replicate this functionality," said Dr David Newburg, Director, Program in Glycobiology at Boston College and lead investigator of the study. "The outcomes of this study suggest that HMOS are responsible for the critical anti-inflammatory protection of the very sensitive infant gut during its post-birth maturation, and that the specific synthetic GOS, Bimuno®, has a comparable effect. With further investigation, this form of GOS may be able to provide infants with similar intestinal protection. It may also have anti-inflammatory implications for the adult gut, such as protecting against inflammatory bowel disease (IBD)."

The study investigated the anti-inflammatory properties of HMOS and the unique GOS, Bimuno®, on gut inflammation using a human cell based model. Both HMOS and GOS were found to directly reduce inflammation, which is considered to be essential for healthy gut development in early life.

Further analysis of the data revealed both HMOS and the GOS, Bimuno®, which share the same major components (3'-,4-, and 6'-galactosyllactose), may:
• Help aid healthy development by protecting immature intestinal mucosa from inflammation during the important early stages of its maturation
• Help protect against infection by preserving the barrier function of the gut when subjected to pathogenic organisms
• Have an important protective role during early gut maturation

"We are excited by the results of this important study and are committed to further investigating the benefits Bimuno® could offer infants who cannot be breast fed. The next step in our robust scientific programme is an infant feeding study comparing the properties of human milk, Bimuno® and other GOS formulations," said Graham Waters, CEO at Clasado (the producers and suppliers of Bimuno®). "We hope it won't be long before infants who cannot be breast fed will be able to experience similar anti-inflammatory benefits as breast fed infants," he concluded.

Penn Nursing study answers: What's a good breakfast for kids?

Medical News Today 3 February 2016

A team of researchers, led by Tanja Kral, PhD, Associate Professor in the Department of Biobehavioral Health Sciences at the University of Pennsylvania School of Nursing, concluded that a breakfast high in protein - like eggs - keeps children fuller longer than cereal or oatmeal, causing them to eat fewer calories at lunch. The study, recently published in Eating Behaviors, also concludes that the effects of a protein-rich meal don't last throughout the day. It only impacts a mid-day meal.

The study recruited forty, 8- to 10-year-old children to consume one of three, 350-calorie breakfasts (eggs, oatmeal, or cereal), then played games with research staff and then ate lunch, once a week for three consecutive weeks. On each occasion, every participant had to eat their entire breakfast, but could eat as much or as little lunch as desired. Throughout the morning, they answered questions like, "How hungry are you?" and "How much food do you think you could eat right now?" Their parents also logged in a food journal what the children ate the remainder of the day.

According to the research, after consuming the egg breakfast (scrambled eggs, whole wheat toast, diced peaches, and one percent milk) children reduced their energy intake at lunch by seventy calories. That's roughly equivalent to one small chocolate-chip cookie.

Moderately active children in the same age range as those who participated in the study generally need between 1,600 and 1,800 calories daily. The 70-calorie drop at one meal equals about four percent of a child's daily caloric needs. Eating beyond the caloric threshold, even by a little, can cause excess weight gain and obesity in children, if sustained.

"I'm not surprised that the egg breakfast was the most satiating breakfast," said Kral. "What does surprise me is the fact that, according to the children's reports, eating the egg breakfast didn't make them feel fuller than cereal or oatmeal, even though they ate less for lunch. We expected that the reduced lunch intake would be accompanied by lower levels of hunger and greater fullness after eating the high protein breakfast, but this wasn't the case."

Future research should study children over a longer period of time as these findings could have important implications for the prevention of obesity, particularly

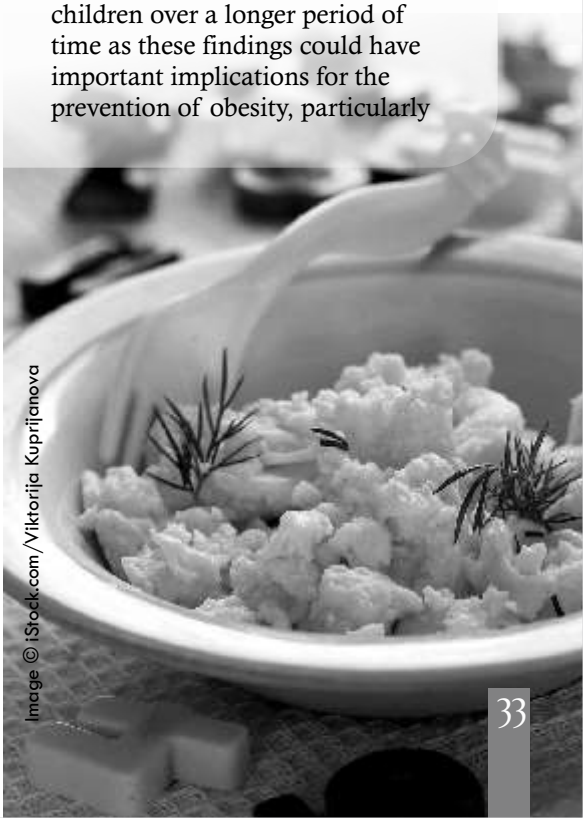

Image © iStock.com/Viktorija Kuprijanova

for young people. "Approximately 17 percent of US children and adolescents are considered obese," Kral says. "It's really important that we identify certain types of food that can help children feel full and also moderate caloric intake, especially in children who are prone to excess weight gain."

Daily dose of beetroot juice improved endurance and blood pressure

Medical News Today 12 February 2016

Scientists at Wake Forest Baptist Medical Center have found that a daily dose of beetroot juice significantly improved exercise endurance and blood pressure in elderly patients with heart failure with preserved ejection fraction (HFPEF).


Image © iStock.com/olgakr

Exercise intolerance - shortness of breath and fatigue with normal amounts of exertion -- is the primary symptom of HFPEF and is due partly to non-cardiac factors that reduce oxygen delivery to active skeletal muscles. HFPEF is a recently recognized disease that reflects how the left ventricle of the heart pumps with each beat. It occurs primarily in older women and is the dominant form of heart failure, as well as the most rapidly increasing cardiovascular disorder in this country.

Emerging evidence suggests that dietary inorganic nitrate supplementation has beneficial effects on blood pressure control, vascular health, exercise capacity and oxygen metabolism.

The Wake Forest Baptist researchers enrolled 19 people in a double-blinded, randomized safety study to determine which was better at improving exercise intolerance, a single dose or a daily dose of the juice given over multiple days. The beetroot juice used is produced by a company in the United Kingdom and is not commercially available in this country.
First, aerobic endurance and blood pressure were measured after the participants received either a single dose of beetroot juice or a placebo.

The researchers then administered a daily dose of beetroot juice to all 19 patients for an average of seven days, and measured endurance and blood pressure again. The juice dose in the study was equivalent to 2.4 ounces containing approximately 6 millimoles of inorganic nitrate.

The team found that the daily dosing of beetroot juice improved aerobic endurance by 24 percent after one week, as compared to the single dose which produced no improvement. Aerobic endurance was measured as cycling time to exhaustion at a fixed workload lower than their maximum.

Another finding was that consumption of the juice significantly reduced resting systolic blood pressure in both the single and daily dose groups by 5 to 10 mmHg.

No adverse events were associated with either intervention. "Although larger trials need to be conducted, these initial findings suggest that one week of daily beetroot juice could be a potential therapeutic option to improve aerobic endurance in patients with HFPEF, which has implications for improving everyday activities and quality of life," said Dalane Kitzman, M.D., professor of internal medicine at Wake Forest Baptist and senior author of the study.

Absorption of polyphenolic compounds in mangos shows potential benefits to human health

Medical News Today 16 February 2016

Mangos contain numerous compounds that have been shown to exhibit antioxidant properties. These compounds include vitamin C and beta carotene, as well as several polyphenolic compounds including gallic acid and their larger polymers gallotannins, that have been linked to anti-cancer and anti-inflammatory activities in previous in vitro and in vivo studies.

The absorption, metabolism, and excretion of mango galloyl derivatives have not previously been investigated in humans. In this human pilot trial published in the journal of Molecular Nutrition and Food Research, 11 healthy volunteers between the ages of 21 and 38 years old consumed 400g/day of mango-pulp for 10 days, with blood and urine samples taken on days one and 10 of the study following mango consumption. Participants refrained from consuming dietary supplements and foods which could be sources of gallic acid such as berries, grapes, and tea for one week prior to the beginning of the study and during the 10 days of mango consumption.


Image © iStock.com/bhofack2

"In order to demine if these polyphenolic compounds have potential benefits to human health at realistic food consumption amounts, it was first necessary to study how these compounds are metabolized in the body," said lead researcher Susanne Mertens-Talcott, Ph.D. of the Department of Nutrition and Food Science, Texas A&M University.

Seven metabolites of gallic acid were identified in the urine of healthy volunteers, and of those two microbial metabolites were found to be significantly more excreted following 10 days of mango consumption. The presence of gallic acid and pyrogallol metabolites in human urine after the consumption 400g of mango indicates the absorption, metabolism, and excretion of mango galloyl derivative and confirms the bioavailability of these mango-derived metabolites.

"The results of this research show that mango has the potential to enhance the diet as a source of gallic acid and gallotannins which may possess anti-inflammatory and anti-carcinogenic properties," said Dr. Mertens-Talcott.

Apples, pears & berries rich in flavonoids could help weight management, study finds

Nutra Ingredients, 29Jan2016

If predictions are true that the future of weight management is less about what to cut out and more about eating healthy foods, then manufacturers and consumers should consider adding more apples, pears and berries to meals, which new research suggest can slow weight gain.If predictions are true that the future of weight management is less about what to cut out and more about eating healthy foods, then manufacturers and consumers should consider adding more apples, pears and berries to meals, which new research suggest can slow weight gain.

A team of researchers in Boston and the UK found consuming foods rich in flavonoids – bioactive compounds in fruit and vegetables – was associated with significantly less weight gain in men and women nationwide over 24 years. In particular, participants in the Health Professionals Follow Up Study, Nurses' Health Study and Nurses' Health Study II who consumed foods rich in three flavonoid subclasses – anthocyanins, flavonoid polymers and flavonols – gained 0.16 to 0.23 pounds less per four year intervals for each greater standard deviation of daily intake, according to the study published in The BMJ Jan. 28.

The main sources of anthocyanins recorded in the self-reported diets were blueberries and strawberries, while tea and apples provided the most flavan3ols and their polymers. Oranges, orange juice, onions and peppers also are good sources of flavonols, according to the study.

Notably, it doesn't take much of these foods to impact weight management, according to the study. For example, one half cup of blueberries provides about 121 mg of anthocyanins – or 12 standard deviations, the authors note.

While the magnitude of association is small, any reduction in weight gain offers significant benefits, they add.
"Preventing even small amounts of weight gain could have an important public health impact: gaining 10 lbs (4.5 kg) or more between the ages of 40 and 60 increased the risk of developing diabetes 4070% and a meta-analysis of 221 studies found a 2459% increased risk of several cancers," the study says.


Image © iStock.com/bonottomario

The authors acknowledge that the mechanisms to explain the benefits of these fruits and vegetables are unclear. But, fiber content – which can aid in weight management by making people feel full – does not seem to be a contributor, the authors note. They saw the same benefits even when they adjusted for fiber intake.
The study also is notable because it is larger than previous studies with more than 124,000 participants. Likewise, most previous research focused on flavonoids in green tea and this looks at more food sources.

Even though the study is observational – an therefore no definitive conclusions can be made – the results suggest that choosing high flavonoid fruits and vegetables may help with weight control.
"Most Americans consume less than one cup (less than two servings) of fruits and less than two cups of vegetables daily," the authors write. "Beyond increasing intake to current recommendations of two cups of fruit and 2.5 cups of vegetables per day, people may be able to maximize their health benefits by including optimal fruits and vegetables in their daily diets."

Carotenoids get a bioaccessibility boost in linseed oil nanosemulsions

Nutra Ingredients USA, 02Feb2016

Researchers test linseed oil nano-emulsions as a way to increase carotenoid's bioavailability and stability, bringing its

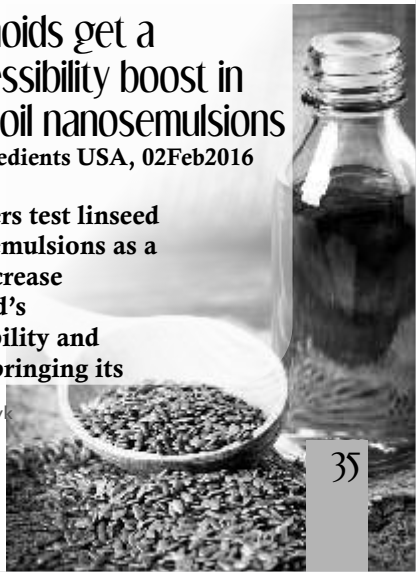
Image © iStock.com/piotr_malczyk

health benefits to more supplements and functional foods.

Multiple studies have linked carotenoids to many benefits for the human health, such as obesity prevention , ALS risk reduction , and cancer risk reduction . Demand for carotenoid has grown considerably, pushing some manufacturers to expand their facilities .

But carotenoids are also known for their limited bioavailability "due to their chemical, thermal, and shelf stability toward various processing conditions," a new report published in Food Chemistry said. The researchers behind this study, affiliated with Universidad de la Frontera in Temuco, Chile, and the Pacific Agri-Food Research Centre in Canada, studied how they can increase carotenoid bioaccessibility through linseed oil nano-emulsions, enhancing the organic pigment's physical and oxidative stability. Materials For this study, the researchers used astaxanthin oleoresin—a carotenoid found in seafood and yeast—from Acatama Bio Natural Products S.A., and Lycopene—a carotenoid found in tomatoes and strawberries—from PhytoLab GmBH & Co. KG in Germany. The linseed oil was purchased from Terrasol Ltda in Chile.

Three types of emulsions were prepared: Astaxanthin-enriched, lycopene-enriched, and a control. The carotenoid emulsions had a 0.5% mass fraction of the carotenoid with 0.5% linseed oil in distilled water, while the control had a 0.5% mass fraction of Tween 20 (polysorbate) in distilled water with 1% linseed oil. The mixtures were homogenized and then passed through a high pressure homogenizer. Investigation was done on droplet diameter during various homogenization pressures.

A bio-accessibility boost
An in vitro gastrointestinal tract model was used, stimulating mouth, gastric, and small intestine digestion. "Carotenoid nano-emulsions [under 200 nanometers] were partially (66%) digested and highly bio-accessible (70%)," the researchers wrote. Nano-emulsion droplets of 100 MPa in diameter were observed to have the fastest release and a lower amount of free fatty acids. The addition of the antioxidant Trolox, obtained from EMD Millipore Corp., increased the oxidative stability of nano-emulsions.

"Nano-emulsions provide an effective and stable system for efficient astaxanthin or lycopene delivery," the researchers concluded, adding that nanoemulsions in linseed oil can be a solution to increase carotenoid bioavailability in foods, beverages, nutraceuticals, and other agriproducts.


Image © iStock.com/deymos

Vitamin-enhanced whey drink 'can help lower cholesterol'

Nutra Ingredients, 01Feb2016

Adding calcium, vitamin D and prebiotic dietary fibre to a drink made of whey can offer huge health benefits, a team of Lithuanian scientists has discovered.

In CyTA Journal of Food, the scientists described how they created and tested two different versions of a whey-based drink. Both drinks had vitamin D and prebiotic dietary fibre added. One was enriched with calcium phosphate, the other with calcium lactate.

Lipoprotein decrease
After 21 days of drinking the beverage, volunteers' blood analyses showed a significant decrease in low-density lipoprotein cholesterol and triglyceride concentrations changes significant enough to have a beneficial impact. The study also found that the drink made with calcium phosphate "didn't taste as nice" after periods of storage.

Craving for calories trump taste in brain's battle for nutrients

Food Navigator, 29 Jan 2016


Image © iStock.com/CharlieAJA

The brain rewards calorie content over sweetness, and responds to nutrients and taste in very different ways, according to new animal research published in Nature.

Researchers found two different areas of the brain's reward centre, called the striatum, responds to different elements of food: the ventral striatum (VS) releases dopamine in response to sweet flavours while the dorsal striatum (DS) responds to nutrients. And when pressed, the DS response to calories trumps the VS response to

taste, according to the study by a team at Yale University.

Energy is brain's top priority
"It turns out the brain actually has two segregated sets of neurons to process sweetness and energy signals. If the brain is given the choice between pleasant taste and no energy, or unpleasant taste and energy, the brain picks energy," said Ivan de Araujo of the John B Pierce Laboratory and one of the study's authors.

Across various experiments, the researchers tested mice with bottles containing sweet or bitter-tasting substances and then separately supplied the mice with either sugar or artificial no-calorie sweetener directly to their stomachs, via a surgically-fitted catheter. The team would release the sugar or sweetener in response to how much the mice licked the bottles, measured via a "lickometer".

"Mice were initially tested on brief access two-bottle preferences involving a sucralose solution and an unpalatable bitter/sweet mixture. Not surprisingly, all mice preferred to lick the sweet-only solution. Next, mice were exposed to one-bottle learning sessions in which licks for the sweet solution were paired to intra-gastric infusions of the non-nutritive sweetener," wrote the authors in the study.

"Then, on a different day, licks for the bitter/sweet solution were paired to intra-gastric infusions of the nutritive glucose. Two-bottle preference tests were performed again on a fourth testing day. All mice markedly shifted preferences toward the unpalatable nutritive stimulus, except DScasp mice, which continued to prefer the non-nutritive, but palatable, solution," they added.

The "DScasp" mice were animals which had their dorsal striatum deactivated – so their brains no longer rewarded them for choosing the calorie-rich option.

Neurone-prodding confirms difference
In addition, when the team stimulated DS neurones artificially, this had the same effect as feeding the mice sugar, even while actually feeding them artificial sweetener. They also monitored the mice's brains, and confirmed the VS and DS areas responded differently and separately to taste and calories.

The researchers said hungry mice consumed a lot more of the bitter-tasting solution when this triggered the release of sugar, rather than artificial sweetener: "The activation of dorsal pathways was sufficient to override inhibitory signals generated by ventral pathways during the ingestion of aversive substances. Such circuit logic implemented in the striatum allows the organism to prioritise energy seeking over sensory quality."

According to the study's authors, the activation of the dorsal striatum should mean the consumption of calorific food is related to the body's motor function, which is also influenced by the same brain area. But they said more research was needed to confirm this hypothesis.

as socioeconomic data.

Tool for scientists
The evidence collated is designed to serve as a tool for scientists and health authorities to help them develop public health recommendations. It will also support advice on the benefits of healthy living and eating a balanced diet. The study suggested incorporating nutritional assessment and intervention as part of standard medical practice. Information on nutrient status throughout the course of a life may become "indispensable information for effective action", it found.

Nutritional requirements
Furthermore, nutritional requirements should not only be identified from a body weight and energy balance perspective – the impact of body composition abnormalities and nutrient insufficiencies on clinical outcomes should also be considered, the report claimed.

Professor Manfred Eggersdorfer, senior vice president for nutrition science and advocacy at Groningen University, said: "Scientists have been focusing on single nutrient intake ... linking nutrition to general health outcomes offers a broader perspective."

Nutrition is a major factor in health of ageing people

Nutra Ingredients, 16Feb2016

There is "convincing evidence" that nutritional depletion is a significant factor in adverse long-term health effects, according to a joint study by DSM and Groningen University.

The study, which mapped the reasons why some populations age healthier than others, highlighted how the nutrient profile of individuals is connected to biological characteristics associated with hypertension or obesity, as well

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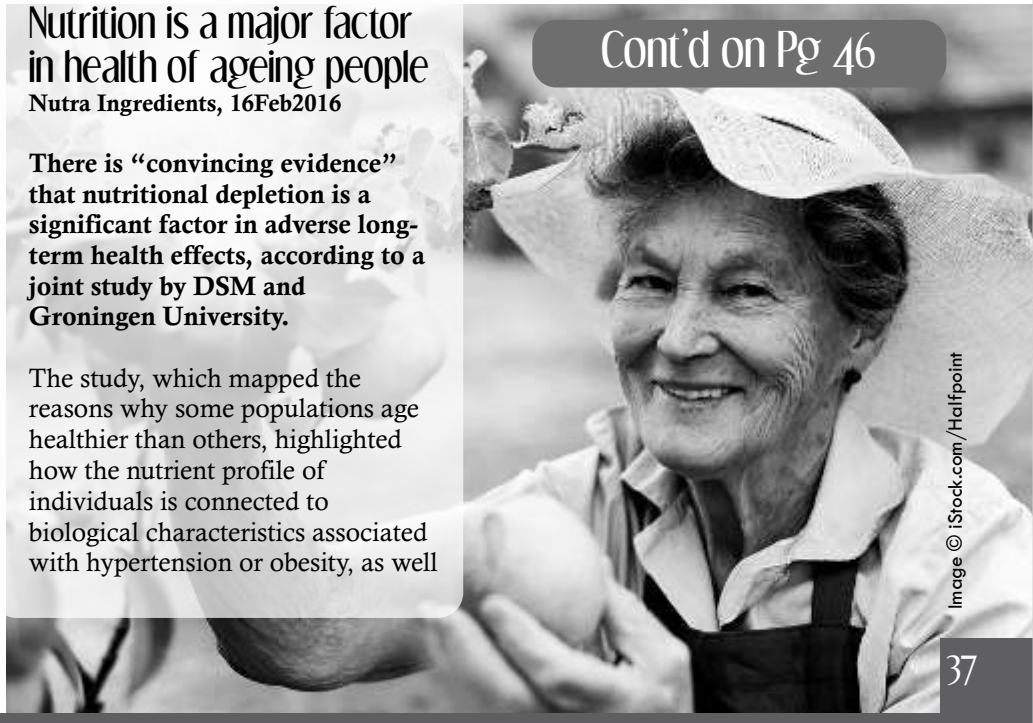

Image © iStock.com/Halfpoint

Cont'd from Pg 30

"The new nutrition scores help to justify the price. This means that grocery stores were able to create a win-win by helping their customers make healthier choices, while also increasing sales at their store."

"Instead of thinking about reducing prices as a way to increase sales, stores can think about highlighting their promotions in the store," says Nikolova. "After the introduction of a POS simplified nutrition scoring system, shoppers start paying more attention to nutrition and they have less attention to devote to other factors in their shopping decisions, such as price for example. They are then looking for shopping heuristics that would save them mental energy - anything that makes their decisions easier. Promotions, which are usually prominently highlighted in the store, are one such heuristic. Thus, shoppers become more sensitive to promotions." The study's authors say not only should the rest of the nation's approximately 37,000 supermarkets consider POS nutritional scoring implementation, but the U.S. government might want to consider a new standardized nutritional scoring system.
For now, the study's message is aimed at creating healthier choices for consumers and a healthier bottom line for retailers.

"It's a big initiative," summarize Inman and Nikolova. "Stores that don't implement a simplified nutrition scoring system risk being at a competitive disadvantage if a nearby competitor implements a simplified nutrition scoring system. Stores that already have NuVal are doing something beneficial for their customers."

Energy drinks: adverse heart reactions linked to more than two per day

By Marie Ellis Medical News Today 4 February 2016

Energy drinks have become an increasingly popular beverage of choice, particularly among young people. Energy drinks have become an increasingly popular beverage of choice, particularly among young people.

According to the Centers for Disease Control and Prevention (CDC), 31% of 12-17-year-olds regularly consume energy drinks and 34% of 18-24-year-olds reach for the stimulant-infused drinks on a regular basis.
"Energy drinks have become enormously popular in the past decade and half are consumed extensively by people who wish to reduce fatigue, increase wakefulness, and improve concentration and performance," says Dr. Ian Musgrave, from the University of Adelaide's Discipline of Pharmacology in Australia.
His colleagues from the university publish their results in the International Journal of Cardiology.

Though caffeine is typically present in energy drinks, they can also contain plant-based stimulants, simple sugars and other additives. Medical News Today previously examined how energy drinks affect our bodies within 24 hours. Most revelatory was the finding that it takes an average of 12 hours for our bodies to completely remove the caffeine from the bloodstream that energy drinks provide.

High consumers of energy drinks had more adverse heart reactions

To investigate and observe how energy drinks affect patients presenting to a hospital, the researchers surveyed patients who were attending a hospital emergency department in South Australia between 2014-2015 and who presented with heart palpitations.
According to the team, 70% of them had previously consumed some type of energy drink in their lifetime.

However, the study found a more direct link; of the patients surveyed, 36% had ingested at least one energy drink in the 24 hours before going to the hospital.

Of these patients, eight had consumed more than five energy drinks, and one had consumed 12 energy drinks along with alcohol. Furthermore, the patients who heavily consumed energy drinks had a significantly higher occurrence of heart palpitations, compared with those who drank less than one drink per day.
The researchers add that "fast heartbeat, heart palpitations and chest pain was seen in energy drink consumers who were healthy and had no risk factors for heart disease."

Adding alcohol increases danger

Dr. Musgrave says there has been increasing concern that caffeinated alcoholic beverages (CABs) are harmful.
In November 2010, the Food and Drug Administration (FDA) instructed seven manufacturers of CABs that their drinks had to be pulled from the market, adding that the "FDA does not find support for the claim that the addition of caffeine to these alcoholic beverages is 'generally recognized as safe,' which is the legal standard." Dr. Musgrave adds: "One of the problems with alcohol is that not only does it reduce your ability to make sensible decisions about energy drinks, it actually slows the breakdown of caffeine in energy drinks and therefore is likely to increase the concentration to levels which may be dangerous."

Image © iStock.com/Mauro Matacchione

Though drinking more than two energy drinks per day increases heart risks, adding alcohol slows down the breakdown of the caffeine, adding further dangers.

THE ONE THING THAT MAKES ALL OUR PRODUCTS DELIGHTFULLY DELICIOUS IS THE GOODNESS OF OUR MILK.

MOTHER DAIRY

happy food
happy people

happy mix of real fruits with delicious curd

sweet rich creamy happiness

happiness of juicy mangoes with mishti doi

thick rich fruity happiness

cheesy wholesome tasty happy

soft creamy delicious happiness

the happiest mix of healthy and tasty

consumer.services@motherdairy.com
www.motherdairy.com


Image © iStock.com/xavigm

He says that although caffeine is one of the safest stimulants, caffeinated beverages seem to be more problematic for individuals who are predisposed to heart conditions. "People are unlikely to slam down seven espressos one after the other," he says, "but people are more likely to - especially under the influence - misuse energy drinks in that way."

According to Dr. Musgrave, the study shines a light on the need for better education about the dangers of consuming more than the recommended maximum amount of energy drinks per day, which is two. "Anyone feeling unwell after consuming energy drinks should seek medical advice," he concludes. MNT previously reported on a study published in JAMA that suggested a *single energy drink could raise cardiovascular risk for young adults.*

Children's beliefs and emotional reactions altered by food advertising, paper finds

Food Navigator, 26 Jan 2016

Food-related advertisements and other marketing communications can have significant and measurable effects on children's cognitions, emotions, and behaviours, encouraging unhealthy or risky consumption, a review paper has found.

The findings are sure to shed further light on the factors influencing the nutritional choices of individuals, especially children, and reinforce ongoing concerns about childhood obesity, which has more than doubled in children and quadrupled in adolescents in the past 30 years.

Researchers from the University of California and California State University began reviewing literature on advertising and marketing communications, to assess how they affected consumer health. Particular attention was paid to how children responded to food-related advertising and product labelling. Individual differences in consumer response were also examined.

Advertiser's tricks of the trade

One study found that promotional materials that highlighted a healthy kid's meal came with a toy increased its choice share, but only when the unhealthy alternative meal did not include a toy. Another study found that materials depicting overweight (versus normal weight) cartoon characters activated an overweight stereotype and increased children's food intake.

The researchers also found evidence that food public service announcements (PSAs) for children were more effective when they talked about the positive benefits of consuming more, rather than talk about the negative consequences of consuming less; and when they used affirmation rather than negation language, for example, "more healthy" as compared to "more unhealthy".

However, the opposite effects were found for PSAs to discourage unhealthy lollipop eating. Older children were found to be more affected by these linguistic variations. In different work involving field studies at schools, pledges, incentives, and competitions were found to encourage children to eat healthier; however, competitions and incentives were better for younger than older children. Yet another study found that a ban on ads directly aimed at children (food or otherwise) was found to be related to less fast food consumption. *"While a single overarching theory of advertising effects remains elusive, it is clear that advertising influences the health of consumers of all ages including children,"* the paper said.

"It is also evident that responses to advertising often depend on various consumer characteristics; thus, tailoring the message content and execution to consumers in the target audience is critically important," the paper added.

Broken vows

The researcher's findings echo those from a study carried out by the NGO Foodwatch last year. They found that European manufacturers continued to almost exclusively advertise unhealthy products to children, despite pledges to change their ways.

In 2007, many of the largest European food companies committed to an 'EU Pledge' in which they promised to "change the way they advertise to children". As part of the pledge, they made promises to only advertise foodstuffs to children under 12 if the products fulfil specific nutritional criteria. However, Foodwatch's study suggested that manufacturers continued to market almost exclusively unhealthy foods – with 90% of products surveyed failing to meet nutritional standards that the companies signed up to.

The "Smart Snacks"

FOOD NEWS LATAM FEBRUARY 1, 2016

Vending machines are an important part in the lives of students. They offer a variety of different snacks that students can take quickly between classes.


Image © iStock.com/Yuko Hirao

During the last decade vending machines in schools they have been known to provide the classic elements of junk food like chips, cookies and soft drinks. Given the increase in obesity in young adults, health agencies in the United States they have taken steps to ensure that these unhealthy snacks are out of school and potentially life of students. The Department of Agriculture has launched United regulation for vending machines in schools. The regulations were implemented in the school year 2015 to improve the selection of snack options for students and thus promote a healthier lifestyle.

USDA's efforts to regulate snacks in vending machines school called "Smart Snacks". Some of the most notable changes in the new nutrition standards state that snacks should be:
A product of grain "whole grain"
Having as an ingredient a fruit, a vegetable, a dairy product, or a food rich in protein
Make it a combined food containing at least ¼ cup of fruit and / or vegetables
Less than 200 calories
Having less than 35% calories from fat

The new regulations should be offered smart snack vending in schools and apply only during school hours, but the USDA expects this new law will help students choose best sandwiches out of school. Most students do not know how to calculate calories or fat per snack. Most nutritional fact labels are on the back of most packages of snacks. It is a small black box containing information about the product, calories, calories from fat, sodium, carbohydrates and proteins.

The USDA has taken into account all options. Not only for Snacks is restricted, there are also regulations for drinks. All options in vending in schools should be:
✓ The water should be pure and may be carbonated
✓ Free milk low fat flavour
✓ 100% vegetable or fruit juices
✓ Containers less than 20 ounces, flavoured water and calorie-free carbonated drinks

The USDA is determined to create a healthy environment for schools at all levels so also provides nutritious and delicious snacks and drinks. All USDA regulations were developed from nutrition standards, because, for some schools, this can be a big change.

New tests needed to detect GM soy, says Cert ID

Food Navigator, 01Feb2016

New GM crops such as CV127 soybean are not detectable with older testing methods, and food producers must update their testing protocols to avoid GM ingredients going undetected and undeclared in the food chain, according to Cert ID Europe.

The new soy variant, which the EU approved for use in food and feed in 2014, does not carry "classic" markers of genetic modification in soy, according to Richard Werran, managing director of Cert ID Europe. This means tests should be updated to look for markers specific to CV127. "If companies are buying in non-GM soy, it's very important that the supplier is using up-to-date protocols and an event-specific test for CV127, to ensure that it's been excluded from the supply chain," said Werran. "Unless testing protocols and risk assessments are brought up to date, it could fly under the radar, so to speak, for companies that want to make sure the products they source and purchase are non-GM."

Supply-chain risks must be assessed
When asked if he believed there were potential issues with soy supply chains, he said this was not the case, and all of Cert ID's clients will automatically be required to update their risk assessments and testing protocols. He said he couldn't speak for other non-GMO programmes, but that organisations in general were aware of the need for a new approach to tests.

"It all depends on the individual supply chain – some supply chains are at an elevated risk than others. But essentially, all sampling and testing should be risk-based – that means there has to be an up-to-date risk assessment in place," said Werran. "It may be that there is a high level of testing is required, to ensure systems and procedures are working as they should be. But it's very difficult to say carteblanche what a testing protocol should be – it's completely dependent on the individual supply chain and supplier," he added.

Testing technology evolves
Grown in Brazil, CV127 soy – more formally known as BPSCV1279 soybean, or Cultivance – is engineered to be tolerant of imidazolinone herbicides. It is the first GMO which is not detectable by traditional tests for GM markers such as 35S promoter or NOS terminator, according to Werran. But he said while testing protocols required may be getting more complex, testing technology has also improved.

"[Polymerase chain reaction] testing itself has advanced enormously over the past 10 to 15 years, and we are seeing new types of PCR testing such as digital PCR, multiplexing, which is going to mean that testing in the future will become more accurate, quicker – it will also become cheaper, and more GMOs can be tested for at the same time. So I think we're also seeing advances in detection technology of all kinds, particularly PCR," said Werran.

Could consumers see GM as an eco-friendly food choice?

Nutra Ingredients USA, 03 Feb 2016

Swedish researchers have suggested that food labelled both GM and eco-friendly may become commonplace in the future but is this an idea consumers will buy into?

According to the University of Gävle researchers, as the demand for eco-friendly food — produced without pesticides and environmentally harmful chemicals — increases, the need to develop genetically modified (GM) organisms that are more resistant to parasites and other environmental crop threats may increase. "Because of this, products labelled both 'ecofriendly' and 'genetically modified' could become commonly available on the market," they write.

Sustainable GM: perfect match or oxymoron?

Patrik Sörqvist, professor of environmental psychology and lead author of the study told FoodNavigator he believed the concepts of genetic modification and sustainability could be reconciled. "The way I see it, environmentally friendly production, that is, less pesticides in the production process, for example, may well require biotechnology to improve the crop's parasite resistance, to allow for proper harvest even without pesticides. That way, GM food becomes a necessity for the production of eco-friendly food. I see no conflict in that."

But there are others who see the two as mutually incompatible. Alexander Hissting, managing director of Ohne Gentechnik, an association which represents food manufacturers and retailers and advocates food production without the use of GMOs, said: "GM can definitely not [be seen as an eco-friendly choice] from my perspective, not from the perspective of the 320 companies we represent and not from the perspective of German consumers. GM plants have way too many negative eco impacts to be considered even close to ecofriendly."

But a Eurobarometer survey from 2010 which questioned Europeans on their attitudes to GM foods and biotechnology found that the picture is not as clear cut. Overall only 23% of respondents said they believed GM did no harm to the environment, but a breakdown shows attitudes vary per country. Greeks were the most GMsceptic with 88% saying it made them feel uneasy while 45% of Icelanders said it didn't and 40% of Maltese respondents were undecided.

Some believe that food producers and retailers need to communicate more openly about the challenges of food production and distribution in order to make consumers more receptive to GM: in an open letter to Prime Minister David Cameron in 2014, the chair and co-chair of the Council for Science and Technology Sir Mark Walport and Professor Dame Nancy Rothwell said: "The case must be made that food developed from GM is the product of sustainable agriculture, is of the highest nutritional quality, and can meet the needs of communities in different parts of the world," the letter read.

This is in line with the position being pushed by EuropaBio, the European Association for Bioindustries, which says that biotech can decrease the pressure on shrinking water resources. But it believes that before GM can be associated with sustainable shopping choices, consumers need to know what is GM and what isn't. "In Europe, all food and feed products consisting of, containing, or obtained from GM plants when this is above 0.9% of an ingredient need to be labelled as GMO. This should allow consumers to make an informed choice, but in practice many European supermarkets do not put GM labelled foods on their shelves, even if it has been proven that when given the choice, people buy GMlabelled food according to the EU Research Project ConsumerChoice from 2008 . It is hence difficult to speak about a campaign informing people of the products' sustainable characteristics when European consumers are actually not given the choice to access these products in the first place," a spokesperson said.

Putting it to the test

To test consumer acceptability, researchers showed Swedish and British consumers packets of raisins that were labelled as bearing either a GM label an eco-friendly one both together or none at all, and measured the impact on taste, health perception, environmental concern and willingness to pay.

They found that the raisins with both GM and eco-friendly labels were rated almost level with the non-labelled alternatives, suggesting the association with GM removes the psychological benefits of the eco-label.

This effect was larger for the Swedes than the British respondents.

"Interestingly, the Swedish and the UK samples did not differ in overall environmental concern and still the magnitude of the eco-label effect was (much) more substantial in the Swedish sample," write the authors. "This pattern suggests that environmental concern, per se, is not the mechanism underpinning the label effect. Rather, the positive effects of an eco-label appear to be underpinned by positive attitudes toward eco-friendly food more specifically, without necessarily involving concern for the environment."

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One of the Home fortification programs with MNP conducted in refugee camp, Nepal between 2007-2010 for the age group 6-59 months. The outcome of the program shows that prevalence of stunting and diarrhoea morbidity significant decreased, and prevalence of moderate anaemia is also decreased. MNP supplementation study conducted in India through ICDS for assessing its effect on reduction of anaemia among 6 months to 6year age group for the duration of four months, the results showed significant reduction in anemia (50% to 33% in boys and 47.4% to 34.2% in girls).

Food fortification approach

The approach to introduce fortified products includes:

• **Selection of micronutrients for fortification:** Nutrients selected for fortification should have good bioavailability, should not interfere with flavour and colour of food, it should be affordable, commercially available in food grade.

• **Selection of food vehicles for fortification:** Food vehicle should be selected based on criteria such as it should cover large proportion of population, regular consumable, minimum regional variation in consumption pattern, low potential for excessive intake (to avoid any probable toxicity), no change in consumer acceptability and in quality after fortification.

• **Deciding on the levels of fortification:** Level of fortification is decided based on Recommended dietary intake (RDI) of the micronutrient, Prevalence of the micronutrient deficiency, Per capita consumption of the food vehicle, Extent of processing, transit, storage, and food preparation losses and Other dietary ingredients affecting its absorption and bioavailability.

• **Selection of delivery channels:** In India, there are two major delivery channels for staple foods, the commercial channel and the government supported public distribution system. The Public Distribution System sells cereals and edible oil to populations below the poverty line in fixed quantities and at highly subsidised rates. Other programs such the Integrated Child Development Services (ICDS) and Mid-day Meal (MDM) program provides supplemental food to children, pregnant and lactating women. Commercially the manufacturer freely chooses to fortify particular foods in response to permission given in food law, or under special circumstances.

Point of addition of micronutrient

Point of fortification is depend on processing stages involved, food preservation systems, commodity to be fortify and fortificants to be added and processors preference. Stability of micronutrient is mainly affected by point of addition. Operations such as cooking, extrusion, drying has great impact on micronutrients stability.
As a general guideline, addition is preferred at that point in the process that will:

• Provide sufficient agitation to ensure that the nutrients are uniformly distributed,
• Present the food at some fixed, known volume or weight,
• Provide for ease of addition, and
• Eliminate as many adverse processing conditions as possible

Stability of micronutrients in processed food

Some of the vitamins are sensitive to heat, light, oxygen and humidity conditions. Stability of micronutrients can alter during distribution chain at any time point due to the exposure to heat, light, oxygen and humidity. Also the micronutrients losses can occur at household level during storage and food preparation. In recent years technology has improved to develop stable vitamins by encapsulation, this also helps to mask the undesirable flavour and colour of the micronutrient making them suitable for food fortification.

Analysis of vitamins and minerals

Analysis of potency of micronutrient is important component for fortification process. Appropriate analytical methodologies should be selected based on accuracy and precision of measurements, available equipments, simplicity of procedure and rapidity of determination. HPLC is the preferred choice of technique for vitamins analysis because of the reliability of the method, the rapidity of the determination and the often reduced requirement for rigorous preliminary clean up steps.

Conclusion

Micronutrient deficiencies are widespread in India especially Vitamin A, iron, folic acid and vitamin D. Iodine deficiency disorder control program in India decreased the cases of goitre significantly this success story shown that Food fortification is the potential strategy to combat nutritional deficiencies and to improve health of large population of India. Other food fortification program such as oil, wheat flour, rice, double fortified salt taking momentum in India although many projects are at pilot level. MNP supplementation has shown positive health benefits in many developing countries, study conducted in India through ICDS also shown significant decrease in anaemia among children by home fortification making it potential strategy for future.

(References will be available on request)


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Folate supplementation during pregnancy may improve child's attention system

Nutra Ingredients USA, 01Feb2016

After a study that took almost a decade to complete, researchers in Europe found that supplementing mothers with folate during pregnancy may help improve their child's attention system 8.5 years later.

Children 8.5 years of age, whose mothers have been supplemented with 5methyltetrahydrofolate (5MTHF) while pregnant, performed faster during an electroencephalography test compared to children whose mothers were supplemented with either fish oil, fish oil and 5MTHF, or a placebo.

So goes the results of a study conducted on 312 women in three European countries (Germany, Hungary, and Spain). The study was a followup of the Nutraceuticals for a Healthy Life (NUHEAL) cohort, "a multicentre, randomized, doubleblind, 2 x 2 factorial placebo-controlled trial aimed at determining the longterm effects of [fish oil] and folate supplementation during the second half of pregnancy," the researchers wrote.

Researchers were affiliated with various institutions across the continent, including the University of Granada, Spain; Ludwig Maximilians University of Munich Medical Center, Germany; Trinity College, Ireland; and University of Pécs, Hungary.

Supplementation

Pregnant mothers were supplemented with 1 sachet of a milk-based supplement called Blemil Plus Matter by Ordesa Laboratories S.L. The sachet contained one of four formulas: modified fish oil with 500mg of DHA + 150mg EPA (Pronova Biocare) 400 micrograms of 5MTHF (BASF) a mixture of the aforementioned two or a placebo.

"Detailed instructions were given on the label of each sachet," the researchers wrote. "Sufficient supplement was provided at each visit to last until the next one or, in the last visit until delivery. Subjects were instructed to return leftover sachets to the study center."

For accountability, the subjects were given standardized questionnaires at gestation week 30 and at delivery which asked how many days of dosing she had missed.

Interdisciplinary data

Not all the children of the 312 mothers were included in the study 8.5 years later. Only 136 children accepted to participate in the followup assessment—the main reasons for dropping out included relocation, loss of contact, and unwillingness to continue. Moreover, several children weren't considered for the followup study due to premature births or developmental illnesses.

A study expanding borders means cultural and sociodemographic influences must be taken into account as much as the clinical and biochemical ones. Mothers filled out a survey at the beginning of the study for sociodemographic data children filled out a similar survey during the present evaluation time. In addition, maternal blood samples were obtained by venipuncture at different stages of pregnancy—20 and 30 weeks into pregnancy, at delivery, and from the umbilical cord.

The last stage of the study involved an electroencephalographic test that recorded reaction times and response accuracy of children using the child version of the Attention Network Test.

Catching fish

"The test was designed to evaluate the three attention networks: Executive, alerting, and orienting," the researchers explained in their paper. On a screen, children saw a target horizontal array of either five fish (a central target flanked on each side by two distractors) or a single fish displayed above or below a central fixation cross.

One of four warning cues would then appear: A single central asterisk, a double asterisk above and below the fixation, no asterisk, or a single asterisk located at the same position as the incoming target. The child then had to click on a mouse indicating whether the central target fish pointed to the left or the right. The whole task takes around 25 minutes.

Findings

"Our study showed that 5MTHF supplementation during pregnancy, rather than [fish oil] alone or the combination of [fish oil] and 5MTHF, improves children's ability to solve conflicts," the researchers concluded.
However, children whose mothers were supplemented with 5MTHF

during pregnancy showed a reduced readiness to respond to an incoming target, which leads the researchers to argue that "this conflict-resolution advantage seems to be based on the activation of the cingulate cortex, a core area in the executive network."

The researchers contend that further studies should be conducted to improve the knowledge on how plasma folate concentrations during pregnancy affect the cingulate cortex, "as well as the direct influence of early folic acid and [fish oil] supplementation on cingulate cortex function and the optimal doses at different stages."

Indian black chicken producers seek geographical indication to boost trade

Raghavendra Verma for Food Navigator Asia, 01Feb2016

Authorities in the central Indian state of Madhya Pradesh are trying to acquire national geographical indication (GI) protection for a nutritious variety of 'black chicken' called 'Kadaknath', to promote national and maybe overseas sales.

Its dark meat is prized and priced highly for its low cholesterol, low fat and high protein content. A kilogramme of 'Kadaknath' meat is sold in India at US$15 in comparison to US$3.80 for standard chicken, breeders told GlobalMeatNews. "With GI protection, the farmers would be able to establish their identity at an international level and develop market linkages," said Fauzia Karim, monitoring and evaluation officer at Gramin Vikas Trust, a Madhya Pradesh nongovernmental organisation.

Promote local livestock

Karim told GlobalMeatNews that the GI application had been lodged with the Indian government's Geographical Indications Registry, in Chennai, as part of a Jhabua district administration project to promote indigenous breed conservation, and the GI tag maybe approved by March. If approved as currently proposed, the GI rule would insist that the application 'Kadaknath' chicken would only describe meat reared in the Jhabua district of Madhya Pradesh, from the correct breed of chicken, delivering an appropriate nutritional profile.

According to India's National Research Centre on Meat, in Hyderabad, 'Kadaknath' chicken contains 23% protein, 2% fat and 0.6% cholesterol. A normal broiler chicken's meat and skin, according to the US Department of Agriculture, holds 18.7% protein, 15% fat and 0.75% cholesterol. The local belief in the medicinal properties of this chicken and its different taste in the past fostered overconsumption, which, coupled with breeding difficulties, almost wiped out its supply in the 1990s. "Kadaknath birds do not do enough sitting [on the eggs], therefore half of their eggs do not hatch [naturally]," Hari Shankar Yadava, director at agricultural research centre, Rajmata Vijayaraje Scindia Krishi Vishwa Vidyalaya, in Gwalior told GlobalMeatNews.

'Not massproduced'

Furthermore, 'Kadaknath' chicks require 105 to 120 days to grow full body weight of 1.25kg on a special maize-based diet their balanced diet, without which it could take six to seven months to attain full size, said Yadava. A normal broiler chicken in India attains its full weight in just 42 days. To overcome some of these difficulties, in 2011 the authorities set up a central hatchery in Jhabua and provided solar incubating machines to the farmers, following which the bird population revived.

However, still the 'Kadaknath' chickens are not mass produced as the biggest sheds in Jhabua hold only 100 to 150 birds, said Yadava. Most of this production, he said, was consumed in the local market and nearby towns. "Mostly the big hotels take away the produce directly from the farmers," he said.

'Plenty of demand'

Meanwhile, 'Kadaknath' chicken farming has been spreading out of Jhabua to farms in other states, and as a result, the GI application as it stands could cause a problem because of its geographical restriction. As a result, some objections have been raised – for instance, by K Sathiamoorthy, proprietor of Rudras Breeders, which runs a farm of 150 'Kadaknath' birds in Jolarpettai, Tamil Nadu. He said: "Consumers will have a misconception that if this chicken has grown outside Jhabua, it will lose its quality," he told GlobalMeatNews. He added that there was plenty of demand anyway. "Consumers call us from Delhi and Maharashtra to place orders and there is four months' waiting time before they get the meat," said Sathiamoorthy. "There are lot of people who want to eat very different tasty meat," he said.

However, the very dark – almost black – colour of 'Kadaknath' chicken meat still causes

apprehension among many consumers, said Sathiamoorthy, but it could be overcome with an increased awareness after getting a GI tag. The same problem was faced when broilers were introduced in India, which has white meat, while standard rural supplies of chicken has red to brown meat, he said.

Breeders are also looking for international trade in 'Kadaknath' as, according to Yadava, a few years ago, poultry breeders in Arabian countries demanded chicks of this breed, but there were very few of them at that time. "Now the shortage has been overcome and the business can grow," he said.

Study: Obese Indian teens getting a fraction of required nutrients

Food Navigator Asia, 02 Feb 2016

Obese adolescents suffer from a lack of essential nutrients, according to research that criticises modern Indian diets.

The All India Institute of Medical Sciences (AIIMS) study was released just after World Health Organisation-backed figures reported that more than one fifth of Indian children and teenagers are now obese, due largely to the "marketing of unhealthy foods and non-alcoholic beverages".

At the same time, health experts in India have demanded a new system of pictorial health warnings on junk foods to make it harder to ignore the potential harm such products might cause. The AIIMS study on obese adolescents found that teenagers with weight issues consumed more refined and processed foods than meals containing healthy fruit and vegetables.

It found that a sample of 134 adolescents aged 10-16 lacked the iron, zinc, fibre and vitamin D they needed to stay healthy, causing their bodies to crave even more food to gain the required amount of nutrients. "While the adolescents lacked in many nutrients, shortage of fibre and vitamin D was very stark," said Babita Upadhyay, a dietician at AIIMS.

The subjects consumed from 5.6-9.4g of fibre each day, compared to the recommended 25g, while against the required 600 international units of vitamin D, they consumed just 0.15-0.3IU. According to the Indian Council of Medical Research, Indian adolescents need at least 21mg of iron per day, though the AIIMS's subjects' intake was the range of 6.5-16.3mg. The consumption of zinc was 0.7-2.8 mg as against the required 9-12 mg.

"If the overweight adolescents have a deficiency of important nutrients, then it shows that they are not eating nutritious food. It is a scary scenario," said Vandana Jain, the study's lead researcher. The research also found that average intake of fruit and leafy vegetables was only 50g and 150g respectively, and 29% of subjects ate junk food every day. Also, 23% of them skipped breakfast every morning, especially girls.

Over the last five years, India has witnessed an obesity prevalence rate of around 22% among young people aged 5-19, according to a commission formed by the WHO. Among those under the age of five, the rate is still low, at around 5%, though the Commission on Ending Childhood Obesity believes this is increasing at the fastest pace of all the 100 developing countries it studied.

To address India's childhood obesity epidemic, a panel of health experts from public institutions and health bodies has called for warnings on junk food packaging that better inform consumers of the health issues the products can cause.

"We have recommended pictorial warnings on junk foods like chips, colas, pizzas and burgers, or health warnings saying that this product contains fat and salt in excess of what is recommended—or even a picture of a liver may on pack indicating that consuming them may led to fatty liver in children and adults," said Vandana Jain, additional professor of paediatrics at All India Institute of Medical Science.

"What's the big message? It's not the kid's fault," said the WHO commission's co-chair, Peter Gluckman, whose comments highlighted India's need to enforce draft dietary guidelines prepared by its food regulator covering the availability of wholesome and nutritious food in schools and restricting the sale of foods which are high in fat, salt or sugar content within 50 metres of a school's premises. If not reversed, "the obesity epidemic has the potential to negate many of the health benefits that have contributed to the increased longevity observed in the world," the commission added in its report.

Asia currently accounts for almost half of young children categorised as overweight or obese in the world. In India, an official report released last week by the Health Ministry's National Family Health Survey, revealed that the number of obese people had doubled in India over the last decade, with most states witnessing the trend.

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