Editorial

The new act passed by our law maker in 2006 emphasised on safety and science. It replaced the earlier act which provided safety as an incidental. We are very lucky to have the new act which attempts to ensure safety as a purposeful phenomenon. For this we need risk assessment of ingredients and additives as well as processed used in food industry. This risk assessment by new act must be based on science and not on the impulse of a committee.

When an additive is to be considered for addition to food products, it will be evaluated on the basis of risk assessment. This is a totally scientific evaluation and science is same whether in India or in any other country. They find the research carried out in any place in the world along with the reports of toxicity studies on that particular additive. This needs scientists to understand the implications of adding that additive to a particular food in light of all the reported data.

Therefore several scientific panels were formed evaluate various facets of food industry. Each panel would only give risk assessment comments to the authority. The various members of each panel are all scientists. Science does not change whether it is educational and research institute or a government agency or an industrial unit. It is same for all and in various countries around the world.

Each of the panel has a few members who are employed by industry but an overwhelming majority is from non-industry organisations. Also chairman of each scientific panel is a respectable non-industry organisation with long years of experience and expertise in the area.

After the panel studies the risk assessment whether of an additive, of a process, of an ingredient, of package etc. this is then considered by Scientific Committee which does not have any industry representative as member.

Scientific committee and panels only comment on the risk assessment on the scientific basis evidence of which is provided by previous research studies and if data is inadequate, they can demand a fresh study to be carried out to establish the missing information on risk assessment.

This is then considered by the Food Safety & Standards Authority of India, which then make a rule or regulation based on the scientifically evaluated risk for that additive or process or package etc. Thus panels do not make any rules or regulations.

It is a misconception that industry members are sitting on rule-making committees. These panels only give information regarding risk assessment which is further considered by Scientific Committee which gives final inputs about the risk. The Authority then considers this and makes the final rule.

This is very fair and open system and all the members appointed after receiving applications to a notice which was on the website of the FSSAI and widely publicised to create the maximum circulation. The scientists were selected on the basis of their qualification, experience and expertise and were invited to become members of the panels.

We hope that all concerned will take note of this and appreciate the efforts of the Food Safety & Standards Authority of India to bring about a system of science based rules, regulations and standards that would make the foods safe and would also enable industry to adhere to them.
With best wishes for safe and nutritious foods of high quality to all.

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

PFNDAI Bulletin December 2010

INCREDIBLE EGG: Prof. Jagadish S. Pai

Eggs have been consumed as part of the diet by humans since early history not only for their highly acceptable taste but due to essential nutrients in them. Although eggs of many birds such as chicken, duck and ostrich, reptiles like turtles and fish eggs have been regularly consumed the chicken eggs are most common globally while fish eggs are used to prepare the delicacy caviar.

Today, eggs are consumed in many forms such as boiled, fried, scrambled, poached, omelette etc. and are used in many recipes including the popular egg fried rice. There are many Indian recipes such as bhurji, curry, biryani, pakoda and korma in which eggs may be used.

There are many food products in which eggs are important traditional ingredients including cakes & pastries, mayonnaise, sweet rolls like cinnamon roll, puddings, whipped topping, sauces, meatballs, meat loaf and pancakes wherein eggs are used for their properties including emulsifying, water holding capacity, binding, gelling, foaming properties.

Egg and Poultry Industry

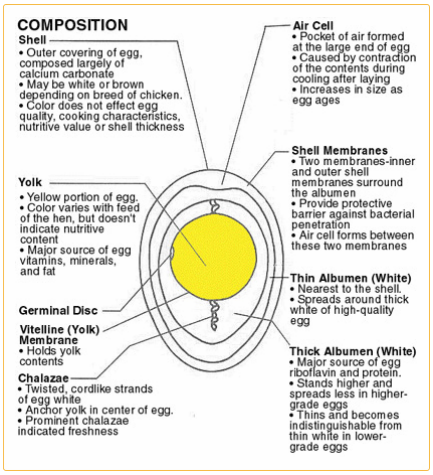
Global production of bird eggs in 2009 was about 67.4 million tonnes of which hen eggs were 62.4 million tonnes and rest were other bird eggs. India produced 3 million tonnes (mostly hen) while China produced about 27.9 million tonnes while USA produced over 5 million tonnes.

India has poultry population of about 500 million birds that give between 50 and 60 billion eggs per year. As per National Egg Coordination Committee (NECC) over 1 billion eggs are exported every year. APEDA states that the total poultry products export is over Rs. 422 crores. Thus most of the eggs are consumed by Indians and the recent figure as per NECC is about 52 eggs per year, which is far less than 180, the recommended intake by National Institute of Nutrition. Average egg consumption by other countries is Japan 346, China 312, Mexico 304 and USA 250.

The efforts of poultry industry to boost the poultry and egg production in India have maintained the egg prices quite stable and low. Thus eggs are not only nutritious; they are affordable sources of protein and many vitamins. Only hen eggs will be discussed below.

Composition of Egg

Egg has outer covering or egg shell which is mostly calcium carbonate. The white and brown eggs depend on the breed of chicken and colour has very little effect on egg quality, cooking characteristics and nutritive value of eggs. The shell protects the egg mechanically as well as from contamination. Edible portion of egg consists of yolk and egg white. The yolk is yellow due to carotenoids and contains fat, lecithin, cholesterol and fat soluble vitamins while major portion of protein is present in egg white along with B vitamins. Egg is a source of several essential nutrients and nutraceuticals.

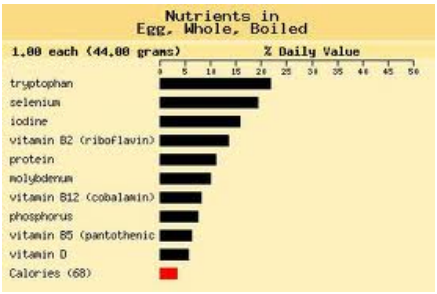


(From: Chemical Biological Net)

According to recent review published in Nutrition & Food Science, eggs are a rich source of protein and several essential nutrients particularly vitamins A (equivalent), D, B_2, B_{12}, panthothenic acid, folate, selenium, iodine and choline besides having good amounts of several other vitamins and minerals. Emerging evidence suggests that eating eggs helps with

satiety and weight management providing better diet quality. Nutraceuticals found in egg yolk may help prevent AMD (age-related macular disease). Regular consumption of egg with low red and processed meat (RPM) provided healthier diet with better micronutrient status compared to no eggs but high RPM intake. Egg consumption was associated with nutrition and health.

Nutrients in Eggs



As can be seen eggs provide many essential nutrients and the following table gives the nutrient contents of eggs

Chicken Eggs (whole hard-boiled)	
Nutritional value per 100 g	
Energy	155 kcal
Carbohydrates	1.12 g
Fat	10.6 g
Protein	12.6 g
Water	75 g
Vitamin A (RAE)	149 µg
Thiamine (Vit. B_1)	0.066 mg
Riboflavin (Vit. B_2)	0.5 mg
Niacin	0.064 mg
Pantothenic acid (B_5)	1.4 mg
Pyridoxine (B_6)	0.121 mg
Folate (Vit. B_9)	44 µg
Vitamin B_{12}	1.11 µg
Vitamin D_3	2.2 µg
Vitamin E (alpha)	1.03 mg
Calcium	50 mg
Iron	1.2 mg
Magnesium	10 mg
Phosphorus	172 mg
Potassium	126 mg
Sodium	124 mg
Zinc	1.0 mg
Choline	225 mg
Lutein + zeaxanthin	353 µg
Cholesterol	373 mg
For edible portion only. One large egg is 50 grams. Source: USDA Nutrient database	

Proteins: One large egg weighs about 50 g and contains about 6 g of protein. Egg protein is second only to mother's milk when quality of the various proteins is compared. Following table compares various common food proteins for their quality by different methods and they show highest ranking for egg protein.

Protein Quality Rankings

Protein Type	**Protein Efficiency Ratio (PER)**	**Biological Value (BV)**	**Net Protein Utilisation (NPU)**	**Protein Digestibility Corrected Amino Acid Score (PDCAAS)**
Beef	2.9	80	73	0.92
Black Beans	0		0	0.75
Casein	2.5	77	76	1.00
Egg	3.9	100	94	1.00
Milk	2.5	91	82	1.00
Peanuts	1.8			0.52
Soy protein	2.2	74	61	1.00
Wheat gluten	0.8	64	67	0.25
Whey protein	3.2	104	92	1.00

From: US Dairy Export Council, Reference Manual for US Whey Products 2nd Ed, 1999

Proteins in diet are needed so they would be digested to amino acids and then body makes its own proteins for various needs. Muscles, various organs including heart, kidney, stomach, lungs, pancreas, blood vessels etc., skin, hair, antibodies, enzymes, transport molecules like haemoglobin and various hormones like insulin are all composed of proteins as major components.

If high quality proteins are not consumed then body utilises less amount of lower quality protein and the body needs are not adequately met. As people become old, loss of muscle mass and strength (sarcopenia) increases with rise in body fat. This happens mostly due to poor protein intake and also to changes in body's ability to utilise amino acids with age. Adequate intake of high quality protein such as egg protein can help prevent the degeneration of skeletal muscle in elderly.

High quality proteins are also useful in recovery after a very strenuous physical exertion like a game of football or a rigorous workout in a gym. Egg proteins are not only or very high quality, they are very inexpensive compared to other high quality proteins. Following table gives the protein content of some of the common egg preparations

Proteins & Calories in Egg Preparations

Egg	Protein	Energy (kcal)
Raw	**6g**	**75**
Boiled average	**6g**	**80**
Fried in oil	**6g**	**120**
Scrambled (2 eggs + milk)	**14g**	**170**
Poached 1 egg	**6g**	**80**
Scotch egg	**7g**	**140**
Omelette (2 eggs)	**12g**	**200**
Quiche (egg & cheese)	**15g**	**300**
Egg Fried Rice	**6g**	**210**
Meringue	**7g**	**360**
Duck egg	**15g**	**170**
Quail egg	**2g**	**20**

Fats: Only the egg yolk contains fat and that too just over 5g per egg of about 50g. Here also, fat present in egg is just ⅓ as saturated whereas ⅔ is unsaturated, composed mostly of mono-unsaturated linoleic acid, as essential fatty acid (EFA), required for proper health. A lack or deficiency of EFA may cause dry hair, hair loss, dermatitis and poor wound healing. Children having essential fatty acid malabsorption exhibit deficiency and may suffer from cystic fibrosis affecting their growth. They require higher levels of EFA in their diets. Even diabetics require higher than normal linoleic acid. Egg is a good source of linoleic acid or EFA.

Vitamins & Minerals: Eggs are good sources of several vitamins and minerals. Among them are: vitamin A equivalent (25% of RDA per 100g egg or in 2 large eggs), vitamin D (22%), vitamin E (10%) and many B-vitamins including B_1 (5%), B_2 (37%), B_5 (28% of US RDA), B_6 (6%), folate (22%) and B_{12} (100%) as per the RDA for Indians. Eggs also supply fair amounts of iron and calcium.

Processing of Egg

Eggs are gathered by hand or by conveyors from hens. They are packed and chilled to 12°C at 70% RH and transported preferably in refrigerated trucks. In a processing plant they are washed, sanitised and dried before they are candled using UV light candler to remove cracked and defective eggs. The sound eggs may be size graded and cartooned for distribution in refrigerated temperature. Smaller cottage industry may not employ these practices.

Some eggs are broken on a machine which can separate yolks and whites and these are frozen for future use while other eggs are dried mostly by spray dryers. Powders are available as whole eggs, yolks, whites or different proportions of

these and sometimes additives may be added to improve their functional properties, depending on their ultimate use. Eggs have been used to produce many food products because of certain desirable characteristics. These include aeration, binding, thickening, emulsification, tenderising, retention of moisture, addition of flavour and colour, and improvement of nutrition.

Aeration, foaming or whipping property of eggs incorporates air in a product and holds the aerated structure long enough so it can be set by heat, drying etc. Proteins of egg coagulate by heat so it binds particles together thickening the food e.g. custard and pudding. Eggs are good emulsifiers wherein yolk is four times as effective as white. This allows mixing of oil and water like in making mayonnaise which contains 65% oil and has egg as the only emulsifying ingredient.

Eggs contribute smoothness, moistness and a desirable texture in baked products wherein they retard crystallisation of sugar. They also help retain moisture during baking and storage allowing cakes etc. to remain tender and moist for a long period.

Health Promotion through Eggs

The benefit of egg is because of lower fat content, presence of good fat and also the protein content provides satiety for a longer period. An egg for the breakfast keeps one going without hunger until lunch time.

Dietary proteins are very important for elders so they get adequate high quality protein even when they have to reduce food intake. Eggs certainly help in providing high quality proteins. Dietary proteins are also important for elders in preventing osteoporosis and risk of hip fracture. This association was recently established to show that risk of hip fracture was reduced in upper quartiles of protein intake when compared with lowest quartile. Eggs certainly are useful in improving the quality and quantity of protein intake.

There are certain substances present in eggs that make them even more healthful. Lutein present in eggs in good amounts has been shown to prevent Age-related Macular Degeneration (AMD), a medical condition affecting elders resulting in loss of vision in the centre of visual field due to damage to retina.

Eggs are an excellent source of choline which is needed for normal functioning of all cells and for brain function. This is especially important in the diets of pregnant and lactating women as choline helps in brain and memory development of foetus and infants. Each egg contains roughly half the daily requirement of choline.

Safety Aspects

Eggs were earlier considered unacceptable because of its cholesterol content. Each egg would supply almost 200 mg of cholesterol. Those with high blood cholesterol are advised to reduce the cholesterol intake so physicians would advise heart patients to avoid consumption of eggs.

It has been shown that cholesterol response in blood is more sensitive to saturated fat intake rather than cholesterol in the diet. In fact when there is cholesterol in the diet body produces less cholesterol. Recent evidence shows that cholesterol intake has limited influence on serum cholesterol and cardiac risk. American Heart Association says one egg per day is acceptable but to keep in mind cholesterol in it along with that from all other foods.

UK’s Food Standards Agency states that there is no recommended limit on how many eggs people should eat. Eggs are a good choice as part of a healthy balanced diet. British Dietetic Association states that since the 1980s research has consistently shown that the amount of saturates in the diet is a major influence on blood cholesterol levels. The level of cholesterol in the diet is no longer considered a priority when trying to reduce blood cholesterol levels. And the British Heart Foundation states that one of the causes of high blood cholesterol levels among people is eating too much saturated fat. Cholesterol found in foods like eggs, liver, kidneys and certain seafood e.g. prawns, does not usually make a great contribution to the level of cholesterol in blood.

A study with elders examined relationship between egg consumption and risk of type 2 diabetes. Over a 13 year study, it was shown that no relationship existed between any amount of egg consumption and increased risk of type 2 diabetes.

Eggs can become unsafe if they are contaminated by pathogenic salmonella such as *S. enteritidis* and *S. typhimurium*. In industry, care is taken to prevent egg shell from becoming contaminated with fecal matter as well as eggs are washed with sanitising solution and refrigerated. To further minimise the risk, raw and undercooked eggs should not be consumed as cooking can destroy these pathogens. Egg allergy is also observed in some infants but usually they grow out of it.

Future

Poultry and egg industry in India has grown during last few decades rapidly due to the efforts of National Egg Coordination Committee (NECC), which created awareness about newer techniques and science and making them available to farmers, industry and retailers helping make products safe, nutritious and of high quality. Keeping an eye on demand and supply as well as price, consumers also have benefited so they get high quality nutritious product at a reasonable price. Newer findings in health science have dispelled some misconceptions about eggs so people will consume them without fear about its safety.

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IndiaMART Leaders of Tomorrow Awards 2010

After the television series on ET NOW where inspiring success stories from Small & Medium Scale Enterprises were told, IndiaMART.com and ET Now felicitated the most deserving entrepreneurs at the Leaders of Tomorrow awards 2010. In a glittering ceremony on December 3, these leaders of Tomorrow were awarded basis their innovation, talent and success in emerging victorious despite odds.

Union Minister of Home Affairs, P.Chidambaram, felicitated the winners at the prestigious event in New Delhi. Speaking on the occasion, he said, ‘I congratulate ET Now and India MART.com for recognizing leader in number of categories’. Highlighting the role of MSMEs in the Indian economy, he said, ‘MSMEs contribute about 8 percent of GDP, which is more than what agriculture contributes. They also contribute 45 percent of manufacturing output 40 percent of exports and provide employment to over 60 million persons. Without doubt this is the sector that ahs he highest potential to create employment”.

Mrs. Lalitha Rao Sahib, Managing Director, Nuthatch Nutricare Technologies Pvt. Ltd. was awarded for the category of the Woman Leader of Tomorrow. Mrs. Rao Sahib of Nuthatch is one of our prestigious members and we congratulate her for the achievement.

Give Me More!!! Energy:

Ms Nehal Bagga - Regulatory Affairs Executive, Nestle India

Everybody needs more energy these days. A healthy energy drink that not only provides us with the energy we need throughout the day, but give our bodies a great benefit as well.

Consuming fluids is critical to achieve fluid balance and optimal performance during exercise. Sports drinks, electrolyte drinks, plain water helps in keeping you hydrated and performing at your best.

One can make its own energy or sports drink, but there will still be times when it is more convenient to just buy it off the shelf. Eg. A glucon D may provide you enough energy when you feel drained out.

Energy or sports drink is more effective at maintaining hydration than plain water. This is especially true during hot and humid conditions and during long competitions. Also, a sport drink has the added benefit in achieving correct nutrition.

By contrast, energy drinks, which are popular among youth and some active people, contain large amounts of caffeine and sugar, along with ingredients like taurine, guarana, ginseng, green tea and vitamins. You see them advertised all over the place. They are found everywhere from health food stores to your common supermarket.

Milk based flavored beverages are commonly consumed by children and is used as a recovery drink for people of all ages. These beverages include carbohydrates, protein, vitamin A, vitamin D and minerals like calcium which contribute to rebuilding muscle. Also present are sodium and sugar, which help stabilize and restore the body's electrolyte balance.

So, which is better for refueling the body, a flavored milk drink or energy drinks?

Targeting Youth

Adolescents are among the fastest growing consumers of caffeine. Energy drinks are promoted to young people to boost energy and vitality particularly in times of added stress; in New Zealand, they are also promoted as alternatives to alcoholic drinks. In Asia, they are been sold as natural herbal cures to fatigue, sleepiness and laziness. Energy drinks are available in over 30 countries, and are well established in Europe and the United States of America.

Of particular concern are consumers who mix energy drinks and alcohol, research has demonstrated that individuals who combine energy drinks with alcohol underestimate their true level of impairment.

The trend

In recent years the up and go nature of society has changed and people are getting more dependent upon caffeine and other very similar supplements and stimulants to keep them going. First there was coffee, then coca cola, now there is monster, rock star and red bull all designed to give an extra kick.

Several countries have approved energy drinks as dietary supplements. For e.g. in New Zealand it is regulated under the New Zealand Dietary Supplement Regulations (1985), made under the New Zealand Food Act (1981). In the General Standard for Food additives Codex classify under Food Category No. 14.1.4 as Water-based flavored drinks, including "sport," "energy," or "electrolyte" drinks and particulated drinks.

A good proposal at the FSSAI to include energy drinks as ‘caffeinated drinks’ with appropriate consumption limits. This would include carbonated and non carbonated beverages energy drinks.

As noted above energy drinks are regulated in New Zealand under the *Dietary Supplements Regulations* 1985. However, similar products are manufactured in Australia following a re-formulation (and adherence to specified upper limits for ingredients such as vitamins and minerals) of the product under Standard R10-Formulated Supplementary Sports Foods. The caffeine content of such products is from guarana which is legally a food in the Australian regulations and so escapes the restrictions placed on addition of caffeine. Foods can be mixed with other foods without special permission under food laws.

Eat to complete

Energy drinks should be about fuelling your body with quality nutrients to balance energy output. A good diet is essential and should be strategically planned in terms of general meals and snacks. Energy drinks should be specifically formulated to aid nutrient and fluid requirements and are conveniently packaged, portable and palatable for consumption around training times making them it ideal adjunct to a well balanced diet for people of all age groups and especially sports people.

Energy drinks should suffice the following-

Hydration is vital for at all stages of competition as significant volumes of fluid are lost as sweat to cool the body during exercise. One also needs to replace electrolytes, sodium and potassium which are also lost through perspiration.

Recovery after exercise is vital. At this time a complex range of nutrition-related issues need to be addressed including: restoration of liver and muscle glycogen stores; replacement of fluid and electrolytes (lost in sweat) and regeneration, to support muscle repair following the stress and damage associated with intense physical activity. When devising a nutrition recovery strategy the key components are: fluid, electrolytes, carbohydrates and protein.

Young and Old can equally benefit from a specifically designed nutrition and supplementation program. Young people can have huge energy requirements support normal growth and development. Older people may have more specific requirements to help counteract the normal effects of aging.

No matter who you are the importance of a correct diet cannot be underestimated, and it’s an even bigger concern for those with active lifestyles and strenuous training regimes.

Food Science & Technology News

Innovation of the Week: Messages from One Rice Farmer to Another by Alex Tung

Some 80 percent of the world's rice production is grown by smallholder farmers in developing countries, according to the International Rice Research Institute (IRRI). From Bangladesh to Benin, these farmers continue to develop different solutions to improve the process of rice production. These methods include using flotation to sort seeds, and parboiling, which removes impurities and reduces grain breakage. The Africa Rice Centre (AfricaRice) has developed a simple solution to help farmers share this knowledge: Farmer to farmer videos

Working with researchers, rice farmers and processors, they have developed a series of videos to instruct farmers, including, manual seed sorting manually and by flotation, seed drying and preservation in Bangladesh; rice quality and parboiling in Benin; land preparation for planting rice in Burkina Faso; and seedbed preparation, transplanting, weeding and soil fertility management in Mali.

Farmers in Guinea watched videos of Bangladeshi women creating solutions to improve the quality of farm-saved rice-seed. "The farmers pay a lot of attention to the quality of their seed that they store for the next season," said Louis Béavogui, researcher at the Institut de recherche agronomique de Guinée (IRAG). "Watching the videos on seed has stimulated them to start looking for local solutions to common problems that farmers face. It is by drawing on local knowledge that sustainable solutions can often be found at almost no cost."

To pique farmers' interest in the project, AfricaRice researchers approach them with videos on topics relevant to that particular region. And farmers are involved in the production of the videos from the very beginning, helping researchers decide which methods should be highlighted. Edith Dah Tossounon, chairperson from a rice processing group in Southern Benin, was one of the many women who demonstrated how to parboil rice in a video.

The strong presence of women in the videos also helps local NGOs and extension offices—which tend to be made up mostly of male agents—engage women's groups. A survey of 160 women in Central Benin comparing the use of video with conventional training workshops showed that videos reached 74 percent of women compared with 27 percent in conventional training. Women who watched the videos worked with NGOs to formulate requests for training in building improved stoves and to seek financial assistance to buy inputs such as paddy rice and improved parboilers that allow rice to stay above the water during steaming, so more nutritional value is preserved. More than 95 percent of those who watched the video adopted drying their rice on tarpaulins and removed their shoes before stirring the rice to preserve cleanliness and avoid contamination, compared to about 50 percent of those who only received traditional training. In addition, illiterate woman could easily learn from the simple language and clear visuals of the examples shown in the videos.

"By giving rural women a voice through video, and disseminating these videos through grassroots organizations and rural radio stations," AfricaRice believes that they can "overcome local power structures and reduce conflict at the community level."

By 2009, 11 rice videos were available to communities in Africa. AfricaRice partners translated various rice videos into over 30 African languages and held open air video presentations. At least five hundred organizations and more than 130,000 farmers are involved. Distribution has been most successful through farmer associations, where initial distribution to nine associations led to making the videos available to 167 local farmer organizations and their members. Farmers would spontaneously start organizing video shows, taking the initiative to find video and dvd equipment and gathering around an available television in a village.

AfricaRice also paid attention to how the videos could complement existing rural radio to enhance learning, build additional connections and share information. In collaboration with Farm Radio International (FRI), the videos were also used for radio scripts, including information for listeners about how to obtain the rice videos. The scripts were sent to more than 300 rural radio stations, making the videos more widely known and linking different stakeholders who were previously strangers to each other, allowing them to explore their common interests.

Danielle Nierenberg Nourishing the Planet, State of the World 2011, Women 2010-06-10

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Innovation of the Week: Makutano Junction Soap Opera

The last place most of us look to for useful information is television soap operas. But Makutano Junction, a Kenyan-produced soap opera set in the fictional town of the same name is not your average TV drama. Broadcast in Kenya, Uganda, Tanzania, and throughout English-speaking Africa on Digital Satellite Television (DSTV), Makutano Junction doesn't deal with the evil twins, amnesia, and dark family secrets typical of U.S. daytime dramas. Instead, the show's plot lines revolve around more grounded (although not necessarily less dramatic) subjects like access to health care and education, sustainable income-generation, and citizens' rights.

Funded by the U.K. Department for International Development, produced by the Mediae Trust, and broadcast by the Kenya Broadcast Corporation, the show was originally designed as a 13-part drama in 2004. But Makutano Junction was since developed into a six-season TV phenomenon, with over 7 million viewers in Kenya alone. Its website provides all the information one might expect from a television show site, including episode summaries and character profiles. It also features "extras" on themes from specific episodes and encourages viewers to text the producers for more information.

In Episode 8 of Season 6, which aired in 2008, the character Maspeedy gets into trouble for soaking seeds. Seed soaking works by essentially tricking the seed into thinking it has been planted, allowing it to soak up in one day as much water as it would in a week in the soil. This speeds up germination and significantly shortens the time between planting and growth, leading to a vegetable harvest in a quick amount of time.

But the other characters in the show are unfamiliar with this practice and, when they discover Maspeedy's project, have him thrown in jail because they are convinced that he is brewing alcohol illegally. After some plot twists and a little slapstick humor involving two trouble-making characters who attempt to drink the water in order to get drunk, the truth comes to light and Maspeedy is released from jail. He then teaches the rest of the town the simple technique of soaking seeds to speed plant-growth time.

After the episode aired in May 2008, thousands of viewers sent texts to Mediae requesting more information about seed-soaking techniques. These viewers were sent a pamphlet with detailed instructions on how to soak their own seeds. Follow-up calls— which were part of a study to test the effectiveness of the show's messaging— revealed that 95 percent of those who had texted for more information had found the pamphlets helpful. And 57 percent had tried out seed soaking even before the pamphlet arrived, just based on the information provided on the show. Ninety-four percent said that they had shared the information with up to five other people.

By peppering the drama-infused lives of its characters with demonstrations of agricultural practices, trips to the doctor for tuberculosis tests, and Kenyan history, Makutano Junction serves to both entertain and provide reliable information for families throughout sub-Saharan Africa. This is soap opera drama that people can actually relate to—and learn from.

Molly Theobald Nourishing Planet 2010-07-15
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Scientists Call for Tighter Regulations on Food Adverts during Children's TV Viewing

The researchers, in partnership with the Cancer Council, Australia, studied 12,618 food advertisements from 11 countries and found that 67 per cent endorsed unhealthy food. The research builds on a previous study at Liverpool which revealed that children would consume twice as many calories from snacks after watching food adverts compared to after viewing advertising for toys and games.

The research reveals that Germany, Spain and Greece have the highest frequency of adverts promoting unhealthy foods during children's peak viewing time, compared to other European countries and parts of the US, Canada and Australia. These adverts tend to feature child-orientated persuasive techniques, such as the use of popular animated characters and celebrities.

Although the US, Canada and Australia have a lower rate of unhealthy food advertising overall, broadcasters still air the adverts more frequently during a time when children are watching.

Dr Jason Halford, Director of the Kissileff Laboratory for the Study of Human Ingestive Behaviour at the University of Liverpool said: "Obesity in young children is now a major health concern all across the world. Our studies highlight that there are global connections between advertising, food preferences and consumption. Our previous research showed that snacking on unhealthy food doubled after a child had watched a series of 'junk' food adverts. This new study demonstrates that children are specifically targeted and repeatedly overexposed to large quantities of adverts for these

products.

"Young children are less aware of the persuasive intent of advertising, which makes them more susceptible to its marketing purposes. Current regulations on advertising only take into account the proportion of children watching, not the actual number. We hope this work will contribute to a review of regulations concerning the type and amount of advertisements shown during the times when children are most likely to be watching."

Emma Boyland, lead UK researcher on the project, added: "Regulations on unhealthy food advertisements were first enforced in Sweden, where companies must not generate television advertisements targeted specifically towards children under the age of 12. The UK has reformed its own regulations, but these restrictions only apply to programmes that have a certain proportion of children in the audience, rather than being based on the actual number of children watching. This means that a significant number of children could be watching among an adult audience.

"Our work suggests that further study is necessary to ensure that TV regulations are appropriate and effective at reducing children's exposure to unhealthy food advertising in the UK. An additional study would also indicate whether or not this legislation could be applied elsewhere to lessen the frequency of such advertising internationally."

Nutrition Horizon Oct 29 2010

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Omega 3 Expert Says EPA is Key to Fish Oil's Benefits

Dr. Barry Sears, founder and chairman of Zone Labs, has said the key to benefits from consumption of fish or fish oil supplements are due to the EPA, not the DHA. “Expectant mothers have always been told that fish is brain food not only for the developing child, but for the mother as well,” said Dr. Sears. “New research data questions that ancient wisdom, or does it?”

According to Dr. Sears, one of the leading experts in omega 3 fatty acids, “To understand this seeming paradox requires a detailed knowledge of fish oils and omega 3 fatty acid metabolism that is not available to most medical journalists.” Dr. Sears explained that there has been a growing body of knowledge that women who consume fish or fish oil supplements have less post-partum depression, and their children have improved cognitive development. However, fish and fish oil supplements always contain a mixture of EPA and DHA.

“Because the brain contains relatively low amounts of EPA compared to DHA, it has always been assumed that it was the DHA that gave rise to these benefits. In fact, an entire industry was built on the concept of supplementing infant formulas with DHA would improve the neurological health of both the mother and child. Of course, no one ever tested this hypothesis until now,” said Dr. Sears.

He noted, “The October issue of the *Journal of the American Medical Association* published an article looking at the dietary supplementation with a fish oil supplement exceptionally high in DHA and very low in EPA. Unfortunately, the results were the opposite of the prevailing thoughts. In fact, the researchers found no cognitive benefits for either the mother or child. This calls into question why we are supplementing infant formulas with DHA.”

Dr. Sears said, “The answer is that benefits of fish consumption or fish oil supplementation are due to the EPA, not the DHA.” He added that both EPA and DHA get into the brain, but the EPA is rapidly oxidized, whereas the DHA is shunted into long-term storage. “This explains why there is little EPA found in the brain, leading to the misconception that it isn’t important in the brain. However, while the EPA is present in the brain, it can act as a powerful anti-inflammatory agent.”

Dr. Sears hypothesized, “It is this anti-inflammatory action that is responsible for the neurological benefits. This is confirmed by numerous studies in which DHA has little, if any benefits, in treating depression or attention deficit hyperactivity disorder, whereas fish oils rich in EPA do have remarkable benefits. In his advice to expectant mothers, Dr. Sears said, “Eating fatty fish rich in EPA may not be the answer since those fish contain relatively high levels of pollutants, such as PCBs. On the other hand, fish oil supplements rich in EPA and with exceptional purity with regard to PCBs may be the answer.”
Published November 1, 2010
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The Raw Milk Debate

The debate over raw milk versus pasteurized milk is making headlines as consumers want the freedom to rebel against the industrialized by drinking locally grown, natural products but are being prevented from doing so by laws that prohibit the sale of raw milk.

Raw milk devotees don't mind paying a premium price for the unpasteurized beverage because they believe it is a more healthful option because it contains more nutrients and has a creamier and richer taste. They also say cheese, yogurt, butter, ice cream and sour cream made from raw milk tastes better than store-bought goods.

However, raw milk isn't easy to come by if you are not a dairy farmer. In states like Ohio and Wyoming it is illegal to sell raw milk so people drive to neighboring states like Pennsylvania or Colorado where it is legal.

In Wyoming, a group of legislators and raw milk proponents want to legalize raw milk sales with a bill next year that would allow people to purchase a share of a cow or goat, paying for a portion of its care in exchange for milk. The advocates say government has no business telling informed consumers what foods they can put in their bodies; however, health and agriculture officials dispute the perceived benefits of raw milk and say legalizing raw milk sales will lead to more foodborne illnesses.

According to one state epidemiologist, raw milk can contain several harmful organisms, including Salmonella, E. coli and brucellosis that can cause severe illness and even death. In fact, a number of states experienced outbreaks of foodborne illness this year that were tied to raw milk.

The raw milk movement has gained enough momentum that researchers at Ohio State University are conducting a study of milk drinkers to determine why people make the choice to drink raw or pasteurized milk. The researchers are looking for 60 participants and hope to complete the study in the next few months.

Food Product Design November 1, 2010
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Keeping Food Safe from Farm to Table

WASHINGTON—Food safety problems can arise at any of multiple stages of food production, and illnesses that result from them are frequently not detected or reported, according to a new report from the American Academy of Microbiology.

The report, "Global Food Safety: Keeping Food Safe from Farm to Table," is based on a colloquium convened by the academy in 2009. Colloquium participants with expertise in microbiology, public health, food science, and economics reviewed the current state of affairs in microbiological food safety around the world.

The path from food production to consumption is increasingly complicated. Each plate of food may contain ingredients from many countries—each of which may have passed through different processing facilities, and may have been handled by wholesalers, retailers and multiple transportation companies before finally reaching the consumer's shelf or refrigerator. No single agency regulates all of the steps in this process.

Each link in the food safety chain would benefit from further research and new technologies—specific examples of which are detailed in this report. Regulations that promote good agricultural and manufacturing practices would not only help decrease lapses in food safety, but would make it easier to trace problems back to their inception.

Consumer education is also an important component of food safety. Consumers are often unaware of safe food-handling practices, especially as new food products are introduced. Because consumer-caused foodborne illnesses are often not recognized as such, much less systematically reported, an important barrier to reducing their incidence is inadequate knowledge of which foods, agents and practices pose the greatest risk.

It is very difficult to know how many people are made sick by food, which foods are at fault, which pathogens are most widespread or dangerous, and where those pathogens entered the food production system. In such a situation, where should research, prevention and education efforts be directed? In this report, each step in our complicated food production and supply system is described, highlighting key points of vulnerability and making it clear that providing safe food is a shared responsibility.

Food safety is complex, and a perfectly safe food supply is an unrealistic goal. However, as this report explains, there are opportunities for improving food safety at each step of the production and consumption process and many areas where further research could help identify and quantify risks and generate solutions. The report also identifies food safety vulnerabilities that might be addressed through investments in new technologies or more effective education.

Food Product Design November 5, 2010

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Breakthroughs in Crop Breeding Show Promise for Improving Health

Experts are gathering here to plot the future of a worldwide initiative to reduce “hidden hunger” or micronutrient malnutrition, which causes widespread illness and death in the developing world. The First Global Conference on Biofortification, scheduled for November 9-11, is drawing scientists, policymakers, donors, and business leaders from around the world. Biofortification is the process of breeding higher levels of essential micronutrients such as vitamin A, iron, and zinc into food crops.

The event is organized by HarvestPlus, a global program dedicated to breeding more nutritious staple crops to improve nutrition in developing countries. HarvestPlus works with more than 200 agricultural and nutrition scientists in more than 40 countries.

The conference comes amid a number of breakthroughs. Research shows, for example, that biofortified orange sweet potato and orange maize can be effective in providing dietary vitamin A. These findings are especially encouraging because maize and sweet potato are staple foods for millions of people who are too poor to afford foods that are more nutritious but tend to be expensive.

“Agriculture is the primary source of essential vitamins and minerals but all too often, it does not supply the crucial micronutrients that poor people need in sufficient amounts,” said HarvestPlus Director Howarth Bouis. “HarvestPlus has been developing biofortified crops for seven years, and we have now reached the point where several nutrient-rich varieties are nearly ready for release. In fact, orange sweet potato has already been successfully disseminated in Mozambique and Uganda.”

In addition to maize, sweet potato, and cassava, all rich in vitamin A, HarvestPlus is developing iron-rich beans for Africa and pearl millet, rice, and wheat with iron and/or zinc for South Asia.

A lack of vitamin A blinds up to 500,000 preschool children a year and about two-thirds of them die within months of going blind. Zinc deficiency kills more than 400,000 children every year. Some 1.6 billion people, or about one-fourth the world’s population, suffer from anemia. Iron deficiency is a leading cause of anemia, which stunts growth, impairs mental development, and increases women’s risk of dying during childbirth. Most preschool children and pregnant women in the developing world and up to 40 percent in developed countries are thought to be deficient in iron.

Speakers at the conference span the worlds of policymaking and practice. They include Ambassador William J. Garvelink, deputy coordinator of development for the U.S. Government’s “Feed the Future” initiative; David Nabarro, the U.N. Secretary-General’s Special Representative for Food Security and Nutrition; Mahabub Hossain, executive director of the Bangladesh Rural Advancement Committee (BRAC); and Pulitzer Prize-winning New York Times columnist Nicholas Kristof.

“This conference gives us a chance to achieve consensus on the priorities necessary to take biofortification to the next level, so that it can deliver on its promise to improve health for the world’s poor people,” said Bouis.

HarvestPlus is developing micronutrient-rich staple food crops that can reduce hidden hunger in poorer countries. It is a program of the Consultative Group on International Agricultural Research that is co-convened by the International Center for Tropical Agriculture and the International Food Policy Research Institute (IFPRI).
Nutrition Horizon Nov 9 2010

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Less Salt in Teenagers’ Diet May Improve Heart Health in Adulthood

Eating smaller amounts of salt each day as a teenager could reduce high blood pressure, heart disease and stroke in adulthood, according to research presented at the American Heart Association’s Scientific Sessions 2010. Conducting a sophisticated computer modeling analysis, researchers projected the nationwide health effects of a 3-gram reduction in

dietary salt from processed foods consumed by adolescent boys and girls.

Teenagers eat more salt each day more than 9 grams (3,800 milligrams of sodium) than any other age group, researchers said. The American Heart Association recommends no more than 1,500 milligrams of sodium per day for most Americans.

By reducing the salt teenagers eat each day by 3 grams, researchers projected through modeling a 44 percent to 63 percent (380,000 to 550,000) decrease in the number of hypertensive teenagers and young adults. They estimated a 30 percent to 43 percent decrease (2.7 to 3.9 million) in the number of hypertensives at ages 35 to 50.

“Reducing the amount of salt that is already added to the food that we eat could mean that teenagers live many more years free of hypertension,” said Kirsten Bibbins-Domingo, Ph.D., M.D., lead author of the study and associate professor of medicine and epidemiology at the University of California, San Francisco. “The additional benefit of lowering salt consumption early is that we can hopefully change the expectations of how food should taste, ideally to something slightly less salty.”

A one-gram-per-day reduction in salt consumption results in a small drop of systolic blood pressure of 0.8 mm Hg, she said. “Reducing the salt in the teenage diet from an average of 9 grams to 6 grams would get teenage boys and girls to appropriate levels of salt intake.”

Measurable health benefits over time as teenagers reach age 50 would include:
- 7 percent to 12 percent reduction in coronary heart disease (120,000 to 210,000)
- 8 percent to14 percent reduction in heart attacks (36,000 to 64,000)
- 5 percent to 8 percent reduction in stroke (16,000 to 28,000)
- 5 percent to 9 percent reduction in death from any cause (69,000 to 120,000)

About 80 percent of salt comes from processed or prepared foods 35 percent of that in cereals, breads and pastries. “The hidden places of salt in our diet are in breads and cereals, canned foods and condiments, and of course fast foods,” said Bibbins-Domingo, also co-director of the UCSF Center for Vulnerable Populations. “Most of the salt that we eat is not from our salt shaker, but salt that is already added in food that we eat.” Pizza is the biggest culprit of salt for teens according to data from the National Center for Health Statistics.

Manufacturers should continue to reduce salt in their foods in cooperation with local, state, and federal regulatory agencies, she said. Many major companies have already joined the National Sodium Reduction initiative and have voluntarily agreed to work to lower the salt content that is already added to processed and prepared foods.

Nutrition Horizon 15 Nov 2010

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Trans-Free Shortenings and Margarines

November 15, 2010

Replacing *trans* fat in bakery items isn’t the headache it once was. Increasingly, ingredient suppliers are developing shortenings and oils that provide the functionality of fat, but without the *trans*. Enzymatic line of shortenings and margarines are made via a proprietary enzymatic-interesterification process, wherein the triglycerides are rearranged to provide optimal enzyme performance and product consistency.

“The Enzymatic products were developed to provide a domestic-oil solution without partial hydrogenation for the elimination of trans fatty acids in general bakery applications,” says Bob Johnson, team director, product development R&D. “The products allow the product developer to eliminate trans fats with a product that functions over a wide temperature range and has great taste. The performance is complemented by the logistical benefits of a short supply chain and the opportunity to hedge risk on soybean oil. The enzymatic approach to interesterification offers the opportunity to utilize a process that creates very little waste.”

The line includes a premium all-purpose shortening designed to be used and stored below 75°F; a firmer all-purpose shortening, which can be labeled as “interesterified soybean oil” for a cleaner label; Pie Shortening, developed for optimal performance in pie applications where a very cold dough is desired; Donut Frying Shortening, which provides clean taste, good sugar adhesion and low color formation in the fryer; and Bakers Grade Margarine, formulated for use in general bakery applications, including cookies, Danish and croissants. The next addition to the line will be Icing Shortening, which will produce a bright-white icing with good body and crystal stability over time.

“The products are not the silver bullet for all applications,” Johnson says. “They were designed to meet the needs of most general baking needs. The initial product offerings, being based upon soybean oil, have limitations on stability and shelf life. Specific needs of longer-shelf-life applications can be addressed via addition of antioxidants or incorporation of higher-stability oils, such as high-oleic canola.” In addition to their use in cookies and pie crust, the products in the line are also recommended for use in crackers, biscuits, popcorn, flatbreads and tortillas, and as dairy-fat replacers.

Food Product Design
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Research in Health & Nutrition

Probiotic Formula Alleviates Signs of Stress in Healthy Volunteers: New Randomized Study

According to a new study published ahead of print by the British Journal of Nutrition, Institut Rosell-Lallemand probiotic formula (a combination of Lactobacillus Rosell-52 and Bifidobacterium Rosell-175), significantly alleviates psychological distress in volunteers, in a double-blind randomized study. These results are supported by a pre-clinical behavioural study also described in the same publication, demonstrating the anxiolytic-like effects of this probiotics in rats. In a previous randomized study, this probiotics was shown as the first probiotic preparation to efficiently reduce stress-induced gastrointestinal symptoms in chronic stress sufferers.

This probiotic study was also communicated for the first time on October 28, 2010, at the 2nd World Congress on Immunity Ingredients in Malta, which was organized by the International Society of Antioxidant in Nutrition and Health (ISANH).

The clinical study was supervised by the team of Drs Messaoudi and Bisson in Nancy (France). It assessed the effect of one-month administration on anxiety, depression, stress and coping strategies in healthy human volunteers, thanks to a range of psychological self-assessment tests and a biomarker for stress and anxiety (24 hour urinary free cortisol monitoring). The study involved 55 healthy stressed subjects in total.

The randomized study showed that one month daily administration of preparation (equivalent to 3X109 CFU/day) had a beneficial effect on general signs of anxiety and depression (in particular the somatisation, depression and anger-hostility components, as shown by Hopkins Symptom Checklist-90, an instrument used to evaluate a broad range of psychological problems and symptoms of psychopathology).

The probiotic also improved the subject’s ability to cope with the stress of everyday’s life events (The Ways of Coping Checklist). Results of the self-assessment tests were correlated by a decrease of urinary free cortisol levels in the probiotic treated group, a biomarker for stress and anxiety. The investigators reported that it was the first time that free cortisol level was monitored during a probiotic clinical study.

The pre-clinical study that was described in the same publication was based on a rat model of anxiety which is commonly used to screen anxiolytic agents. After two weeks treatment, it showed a significant anxiolytic-like effect, comparable to that of Diazepam which was used as a positive control.

The authors concluded: “Consumption of this probiotics mitigated psychological distress in three tests without displaying any adverse event. These results provide further evidence that gut microflora plays a role in stress, anxiety, and depression, perhaps via the enteric nervous system as well as centrally. Subject to the confirmation of these results, probiotics might offer a useful novel therapeutic approach to neuropathologic disorders and/or as adjunct therapies in psychiatric disorders”.

A few months ago, another innovative pre-clinical study was presented by Professor Guy Rousseau at the New York Academy of Science. This behavioural study, performed in rats, showed the positive effects of the same probiotic preparation on behavioural signs of depression following myocardial infarction.

Three different mechanisms have been invoked to explain the beneficial effects of probiotics on anxiety and depression:

1) Competitive exclusion of gut pathogens by the probiotics (certain gut pathogens produce substances shown to induce anxiety and aggression in animals, e.g. propionic acid).
2) Decrease in pro-inflammatory cytokines (a link has been drawn between depression and high levels of certain

inflammatory markers).
3) Direct communication with the central nervous system via vagal sensory fibers, leading to changes in neurotransmitter levels or function.

The authors explain that it has been shown in the past that both Lactobacillus Rosell-52 and Bifidobacterium Rosell-175 exert anti-inflammatory properties on human intestinal epithelial cells.

Moreover, Lactobacillus Rosell-52 was also recently demonstrated to protect the gut microflora against the invasion of pathogenic bacteria and both strains are well known to reduce intestinal permeability thanks to their “barrier effect”.

The combination of these actions could lead to reduce the inflammation and neuro-inflammation caused by stress at the level of the gut mucosa and may explain the clinical effect of this probiotics on both physical and psychological symptoms of stress.

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Daily Dose of Beet Juice Promotes Brain Health in Older Adults

Researchers for the first time have shown that drinking beet juice can increase blood flow to the brain in older adults a finding that could hold great potential for combating the progression of dementia. The research findings are available online in Nitric Oxide: Biology and Chemistry, the peer-reviewed journal of the Nitric Oxide Society.

"There have been several very high-profile studies showing that drinking beet juice can lower blood pressure, but we wanted to show that drinking beet juice also increases perfusion, or blood flow, to the brain," said Daniel Kim-Shapiro, director of Wake Forest University's Translational Science Center; Fostering Independence in Aging. "There are areas in the brain that become poorly perfused as you age, and that's believed to be associated with dementia and poor cognition."

High concentrations of nitrates are found in beets, as well as in celery, cabbage and other leafy green vegetables like spinach and some lettuce. When you eat high-nitrate foods, good bacteria in the mouth turn nitrate into nitrite. Research has found that nitrites can help open up the blood vessels in the body, increasing blood flow and oxygen specifically to places that are lacking oxygen.

In this study, the first to find a link between consumption of nitrate-rich beet juice and increased blood flow to the brain, Translational Science Center researchers looked at how dietary nitrates affected 14 adults age 70 and older over a period of four days. On the first day, the study subjects reported to the lab after a 10-hour fast, completed a health status report, and consumed either a high- or low-nitrate breakfast. The high-nitrate breakfast included 16 ounces of beet juice. They were sent home with lunch, dinner and snacks conforming to their assigned diets.

The next day, following another 10-hour fast, the subjects returned to the lab, where they ate their assigned breakfasts. One hour after breakfast, an MRI recorded the blood flow in each subject's brain. Blood tests before and after breakfast confirmed nitrite levels in the body. For the third and fourth days of the study, the researchers switched the diets and repeated the process for each subject.

The MRIs showed that after eating a high-nitrate diet, the older adults had increased blood flow to the white matter of the frontal lobes the areas of the brain commonly associated with degeneration that leads to dementia and other cognitive conditions.

"I think these results are consistent and encouraging that good diet consisting of a lot of fruits and vegetables can contribute to overall good health," said Gary Miller, associate professor in the Department of Health and Exercise Science and one of the senior investigators on the project. To make the sometimes-bitter beet juice tastier so a greater number of people will drink it and reap its health benefits the university has worked with a company to create a new beet juice-based beverage. The university is currently looking into ways of marketing the beverage.

Nutrition Horizon Nov 3 2010

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Phytosterols May Reduce Triglyceride Levels

LA GRANGE, Ill.—Phytosterols may reduce triglycerides, as well as low-density lipoprotein (LDL) cholesterol, according to recent findings presented by Todd Rideout at SupplySide West 2010. Rideout, adjunct professor, Department of Human Nutritional Sciences, Richardson Centre for Functional Foods & Nutraceuticals, Canada, shared research showing the promising benefits of phytosterols for reducing triglycerides, for use in personalized nutritional programs, and for combination therapies with other dietary supplements and drugs.

Specifically, the triglyceride lowering effects of phytosterols have been recently suggested in several human trials including a meta-analysis *(J Nutr 2009, 139, 1143-1149 and J Am Coll Nutr 2008, 27, 117-126)*. Rideout pointed out that results from previous animal studies have been inconsistent and is encouraging more research in this area to understand the utility of phytosterols in lowering triglyceride concentrations.

“We are very excited about the potential of sterols in safely and effectively combating heart-related conditions worldwide," he said. “The totality of evidence supports phytosterols in lowering LDL cholesterol and now we have new information suggesting benefits on a broader scale."

Understanding why some patients respond to phytosterols better than others is driving his studies into the factors affecting response to lipid-lowering therapies. “We have to move away from a one-size fits all mentality," he said. “Instead we need to break it down by individual and look at things like metabolic variations, genotype, diet, dose and baseline LDL." He said individual factors affecting cholesterol synthesis will give doctors detailed information so they can prescribe the best therapy for a patient.

Phytosterols are found naturally in vegetables, fruits, vegetable oils, legumes, nuts and grains.

Dr. Rideout suggested that patients may see even greater benefits when combining sterols with other therapies. “Omega-3 fatty acids appear to work well with plant sterols and in these combination studies we have seen a 20- to 25-percent drop in triglycerides and a 5- to 15-percent increase in high-density lipoprotein HDL cholesterol."

Food Product Design November 5, 2010

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Sufficient Vitamin D Boosts Leukemia Survival

ROCHESTER, Minn.—Patients with insufficient levels of vitamin D when diagnosed with chronic lymphocytic leukemia (CLL) progressed much faster and were about twice as likely to die as were patients with adequate levels of vitamin D, according to a new study published online the journal *Blood*.

Researchers at Mayo Clinic found increasing vitamin D levels across patients matched longer survival times and decreasing levels matched shortening intervals between diagnosis and cancer progression. The association also remained after controlling for other prognostic factors associated with leukemia progression.

Vitamin D can be obtained from a number of sources, including skin exposure to sunlight, certain foods such as fatty fish and eggs, and dietary supplements.

“This finding may be particularly relevant for this kind of leukemia because although we often identify it at an early stage, the standard approach is to wait until symptoms develop before treating patients with chemotherapy," said Tait Shanafelt, M.D., a Mayo Clinic hematologist. “This watch-and-wait approach is difficult for patients because they feel there is nothing they can do to help themselves. It appears vitamin D levels may be a modifiable risk factor for leukemia progression. It is simple for patients to have their vitamin D levels checked by their physicians with a blood test. And if they are deficient, vitamin D supplements are widely available and have minimal side effects."

Studies have suggested that low blood vitamin D levels may be associated with increased incidence and poor outcomes of lymphoma and colorectal, breast, melanoma, lung cancers. According to the researchers, replacing vitamin D in some patients has proven to be beneficial. For example, they cite a placebo-controlled clinical trial that found women who increased their vitamin D intake reduced their risk of cancer development.

Food Product Design November 4, 2010

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Vitamin Deficiencies Decrease Lung Function

VANCOUVER, Canada—Low dietary intake of certain antioxidants increases the chance of decreased lung function in people with COPD, especially men, according to new research presented at CHEST 2010, the 76th annual meeting of the American College of Chest Physicians (ACCP). “Our study, along with other research, suggests that strategies for dietary modification and supplementation should be considered in patients with COPD," said researcher M. Salman Khan, DO, Summa Akron City Hospital.

Twenty patients (13 men and seven women) who suffer with COPD, which includes emphysema and chronic bronchitis, were asked about daily nutrient intakes based on specific foods, portion size and preparation methods. The researchers found the following percentages of deficiencies: 25 percent (selenium), 45 percent (vitamin C), 90 percent (vitamin E), 55 percent (vitamin A) and 70 percent (vitamin D). Additionally, a diet lower in antioxidants than the nationally recognized dietary reference intakes (DRIs) was common among the patients.

Researchers also measured the maximum amount of air the patients could exhale with force. All the patients with a selenium-deficient diet had decreased lung function. Men who were deficient in vitamins C, A and D, also had decreased lung function. Khan said the difference in lung function between males and females could be attributed to the specific study population or a number of other factors.

"Further studies are needed to clarify the role gender has on the loss of lung function in COPD and the impact of antioxidant nutrient intake. The older male population studied may have been exposed to more lifestyle risks than our female population, including, but not limited to, primary or secondhand smoke," Khan explained there also could be a sex-related difference in the antioxidant function of the lung due to levels of estrogen or testosterone. Women are smaller than men, as well, with proportionately decreased lung power, so the difference attributed to antioxidant intake is lesser and more difficult to detect.

Food Product Design November 4, 2010

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Study Links Fructose-Rich Beverages with Increased Risk of Gout in Women

Consumption of fructose-rich beverages, such as sugar-sweetened sodas and orange juice is associated with an increased risk of gout among women, although their contribution to the risk of gout in the population is likely modest because of the low incidence rate among women, according to a study that will appear in the November 24 print edition of JAMA. The study is being released early online to coincide with its presentation at the American College of Rheumatology annual scientific meeting.

Gout is a common and very painful inflammatory arthritis. "The increasing disease burden of gout in the United States over the last few decades (e.g., an annual incidence of 16/100,000 in 1977 vs. 42/100,000 in 1996) coincided with a substantial increase in soft drink and fructose consumption," the authors write. "Fructose-rich beverages such as sugar-sweetened soda and orange juice can increase serum uric acid levels and, thus, the risk of gout, but prospective data on the relationship are limited."

Hyon K. Choi, M.D., Dr.P.H., of the Boston University School of Medicine, and colleagues examined the relationship between intake of fructose-rich beverages and fructose and incidence of gout in a large group of women. The study consisted of data from the Nurses' Health Study, a U.S. prospective cohort study spanning 22 years (1984-2006). The researchers analyzed data from 78,906 women with no history of gout at the beginning of the study and who provided information on intake of beverages and fructose through validated food frequency questionnaires.

During 22 years of follow-up, the researchers documented 778 newly diagnosed cases meeting American College of Rheumatology survey criteria for gout. They found that increasing intake of sugar-sweetened soda was associated with increasing risk of gout. Compared with consumption of less than 1 serving per month, women who consumed one serving per day had a 74 percent increased risk of gout; and those with 2 or more servings per day had a 2.4 times higher risk. Diet soft drinks were not associated with the risk of gout.

Orange juice intake was also associated with risk of gout. Compared with women who consumed less than a glass (6 oz.)

of orange juice per month, women who consumed 1 serving per day had a 41 percent higher risk of gout, and there was a 2.4 times higher risk with 2 or more servings per day. Also, compared with women in the lowest quintile (fifth) of free fructose intake, women in the highest quintile had a 62 percent higher risk of gout.

The authors note that although the relative risks of gout associated with fructose-rich beverages among women were substantial, the corresponding absolute risk differences were modest given the low incidence rate of gout among women.

The researchers add that their findings have practical implications for the prevention of gout in women, and that physicians should be aware of the potential effect of these beverages on the risk of gout. "Our data provide prospective evidence that fructose poses an increased risk of gout among women, thus supporting the importance of reducing fructose intake."

In response to "Fructose-Rich Beverages and Risk of Gout in Women," a study published online today in the Journal of the American Medical Association, Dr. Richard Adamson, former director, Division of Cancer Etiology and scientific director, National Cancer Institute of the National Institutes of Health; former vice president of Scientific and Technical Affairs for the American Beverage Association; current president of TPN Associates, LLC, and consultant to the American Beverage Association, said: "This study fails to be meaningful when it comes to informing Americans about the real causes of gout. In fact, suggesting that fructose intake causes gout is not based on modern day science, but rather centuries-old theory. In reality, the compendium of research conducted on gout shows foods and beverages high in purines - such as alcohol, beer and certain meats - are strongly linked to uric acid metabolism, and therefore gout. As the authors themselves note, neither soft drinks nor orange juice - the beverages discussed in this study - contain purines.

Moreover, it is misleading to label these beverages as ‘fructose-rich' given that at least 45 percent, and possibly as much as 58 percent, of the sweeteners they contain are in fact glucose, not fructose. Even so, for the authors to reference the effects of fructose infusion as compared to oral intake of a sweetened beverage is like comparing apples to oranges. The physiological effects of injecting something versus ingesting it are worlds apart. Furthermore, the authors also suggest that consuming fruit juices, but not eating whole fruit, would lead to increased risk for gout. Yet, the percentage of fructose content in both fruit and fruit juice are identical. This clearly suggests that it is not the fructose content that is leading to the increased risk for gout.

Equally as important, the authors of this paper look at association, not causation. They also note that the contribution, if any, of these ‘fructose-rich' beverages to incidence of gout is ‘likely modest given the low incidence rate among women.'

The fact remains that the strongest risk factor for developing gout is family history - if your mom or your dad has gout, you are at a greater risk of developing it. Those who have a family history of gout, or are interested in learning the facts about this arthritic condition, should visit the website of the National Institutes of Health National Institute for Arthritis and Musculoskeletal and Skin Diseases."

Nutrition Horizon 11 Nov 2010

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Whey Beverages Decrease Elevated Blood Pressure in Younger People

PULLMAN, WA—A number of bioactive peptides have been found in whey protein, including peptides with angiotensin-converting enzyme (ACE)-inhibitory activity. Isolating these peptides and using them as ingredients might lead to the development of beverages with an antihypertensive effect, says research published this month in the *International Dairy Journal*.

ACE-inhibiting peptides derived from whey are called lactokinins and can be derived from both a-lactalbumin and b-lactoglobulin by using various enzymes. Peptides derived from food sources are thought to be safer and to have fewer side effects than drugs currently prescribed for hypertension treatment, according to the U.S. Dairy Export Council.

Researchers at Washington State University, Pullman, WA, found that whey protein beverages reduced blood pressure in young men and women in a six-week controlled intervention. Test groups consumed 28 grams per day of either hydrolyzed or nonhydrolyzed whey protein in a beverage. While researchers found no significant differences in systolic blood pressure (SBP), diastolic blood pressure (DBP), or mean arterial pressure (MAP) in the group as a whole, in young adults that exhibited elevated DBP and SBP, the whey beverage consumption significantly decreased SBP, DBP, and MAP by 8.0, 8.6, and 6.4 mm Hg, respectively. In those persons with elevated SBP only, SBP significantly decreased by 3.8 mm Hg after the whey beverage trial. There was no change in SBP, DBP, and MAP in test subjects with normal blood

pressure. In addition, researchers found the whey-fortified beverages also significantly decreased total and low-density lipoprotein cholesterol concentrations.

The scientists concluded that whey protein beverages might be useful for the dietary treatment of prehypertension and/or stage 1 hypertension. Excessive pressure on artery walls caused by hypertension can damage blood vessels, as well as organs in the body. Uncontrolled high blood pressure can lead to heart attack or stroke, as well as other conditions.

Food Product Design November 16, 2010

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Pomegranate Juice Reduces Damage to Tissues, Inflammation and Infections

Studies in recent years have claimed multiple health benefits of pomegranate juice, including that it is a good source of antioxidants and lowers both cholesterol and blood pressure, especially in diabetic and hypertensive patients. A preliminary study now suggests that it can ward off a number of complications in kidney disease patients on dialysis, including the high morbidity rate due to infections and cardiovascular events, according to a paper being presented at the American Society of Nephrology's 43rd Annual Meeting and Scientific Exposition in Denver, CO.

Batya Kristal, MD, FASN (Western Galilee Hospital, in Nahariya, Ruth & Bruce Rappaport Faculty of Medicine, Technion-Israel Institute of Technology, Haifa, Israel), PhD candidate, Lilach Shema, and colleagues studied 101 dialysis patients who received either pomegranate juice or another placebo drink at the beginning of each dialysis session, three times a week for one year.

Laboratory tests showed that patients who drank pomegranate juice experienced reduced inflammation and the damage of oxidative stress caused by free radicals, was minimized. Furthermore, pomegranate juice drinkers were less likely to be hospitalized due to infections. These findings support other studies that suggest pomegranate juice has potent antioxidant properties.

Recent analyses of data not included in this abstract, revealed that those who drank pomegranate juice also showed an improvement in cardiovascular risk factors, such as reduced blood pressure, improvement in lipid profile and fewer cardiovascular events, suggesting that they had better heart health. These results are in agreement with other studied populations and particularly important for hemodialysis patients, because most kidney disease patients die either from cardiovascular-related causes or infections.

The authors say their findings suggest that drinking a controlled amount of pomegranate juice with a safe and monitored content of potassium may help reduce the complications that often occur in dialysis patients. It is important to consider the risk involved in potassium overload, especially in chronic kidney disease (CKD) patients with dietary potassium restriction.

"Considering the expected epidemic of CKD in the next decade, further clinical trials using pomegranate juice aimed at reducing the high cardiovascular morbidity of CKD patients and their deterioration to end-stage renal disease should be conducted," said Dr. Kristal.

Nutrition Horizon 19 Nov 2010

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High Alpha-Carotene Levels Associated with Longer Life

Nutrition Horizon

23 Nov 2010 --- High blood levels of the antioxidant alpha-carotene appear to be associated with a reduced risk of dying over a 14-year period, according to a report posted online that will be published in the March 28 print issue of Archives of Internal Medicine, one of the JAMA/Archives journals.

Oxygen-related damage to DNA, proteins and fats may play a role in the development of chronic diseases like heart disease and cancer, according to background information in the article. Carotenoids including beta-carotene, alpha-carotene and lycopene are produced by plants and microorganisms and act as antioxidants, counteracting this damage. Carotenoids in the human body are obtained mainly through eating fruits and vegetables rich in the nutrients, or through

antioxidant supplements.

Although studies suggest eating more fruits and vegetables is associated with lower risk of chronic diseases, randomized controlled trials have not shown any benefit for beta-carotene supplements, the authors note. "Therefore, carotenoids other than beta-carotene may contribute to the reduction in disease risk, and their effects on risk of disease merit investigation," the authors write.

Chaoyang Li, M.D., Ph.D., of the Centers for Disease Control and Prevention, Atlanta, and colleagues assessed the relationship between alpha-carotene and the risk of death among 15,318 adults age 20 and older who participated in the Third National Health and Nutrition Examination Survey Follow-up Study. Participants underwent a medical examination and provided blood samples between 1988 and 1994, and were followed through 2006 to determine whether and how they died.

Over the course of the study, 3,810 participants died; the risk for dying was lower with higher levels of alpha-carotene in the blood. Compared with individuals with blood alpha-carotene levels between 0 and 1 micrograms per deciliter, the risk of death during the study period was 23 percent lower among who had concentrations between 2 and 3 micrograms per deciliter, 27 percent lower with levels between 4 and 5 micrograms per deciliter, 34 percent lower with levels between 6 and 8 micrograms per deciliter and 39 percent lower with levels of 9 micrograms per deciliter or higher.

Higher alpha-carotene concentration also appeared to be associated with lower risk of dying from cardiovascular disease or cancer individually, and of all other causes. "The association between serum alpha-carotene concentrations and risk of death from all causes was significant in most subgroups stratified by demographic characteristics, lifestyle habits and health risk factors," the authors write.

Alpha-carotene is chemically similar to beta-carotene but may be more effective at inhibiting the growth of cancer cells in the brain, liver and skin, they note. "Moreover, results from a population-based case-control study of the association between the consumption of fruits and vegetables and risk of lung cancer suggest that consumption of yellow-orange (carrots, sweet potatoes or pumpkin and winter squash) and dark-green (broccoli, green beans, green peas, spinach, turnips greens, collards and leaf lettuce) vegetables, which have a high alpha-carotene content, was more strongly associated with a decreased risk of lung cancer than was consumption of all other types of vegetables," the authors write.

The results support increasing fruit and vegetable consumption as a way of preventing premature death, and suggest a need for clinical research into the health benefits of alpha-carotene, they conclude.

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High Fructose Diet May Play Role in Diabetes, Obesity and Other Health Conditions

More and more people have become aware of the dangers of excessive fructose in diet. A new review on fructose in an upcoming issue of the Journal of the American Society of Nephrology (JASN) indicates just how dangerous this simple sugar may be.

Richard J. Johnson, MD and Takahiko Nakagawa, MD (Division of Renal Diseases and Hypertension, University of Colorado) provide a concise overview of recent clinical and experimental studies to understand how excessive amounts of fructose, present in added sugars, may play a role in high blood pressure, diabetes, obesity, and chronic kidney disease (CKD).

Dietary fructose is present primarily in added dietary sugars, honey, and fruit. Americans most frequently ingest fructose from sucrose, a disaccharide containing 50% fructose and 50% glucose bonded together, and high fructose corn syrup (HFCS), a mixture of free fructose and free glucose, usually in a 55/45 proportion. With the introduction of HFCS in the 1970s, an increased intake of fructose has occurred and obesity rates have risen simultaneously.

The link between excessive intake of fructose and metabolic syndrome is becoming increasingly established. However, in this review of the literature, the authors conclude that there is also increasing evidence that fructose may play a role in hypertension and renal disease. "Science shows us there is a potentially negative impact of excessive amounts of sugar and high fructose corn syrup on cardiovascular and kidney health," explains Dr. Johnson. He continues that "excessive fructose intake could be viewed as an increasingly risky food and beverage additive."

Concerned that physicians may be overlooking this health problem when advising CKD patients to follow a low protein diet, Dr. Johnson and Dr. Nakagawa recommend that low protein diets include an attempt to restrict added sugars

containing fructose.

Nutrition Horizon 24 Nov 2010 ---

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Polyphenols Benefit Brain Health

MURCIA, Spain—Consuming a diet rich in polyphenols may reduce elevated homocysteine levels in adults with Alzheimer's disease, possibly reducing the oxidative stress load and benefiting brain health, according to a new study published in the *Journal of the Neurological Sciences*.

After noting hyperhomocysteinemia and related oxidative stress is often observed in patients with Alzheimer's disease (AD), researchers from the Catholic University of San Antonio looked to determine the effect of an antioxidant beverage rich in polyphenols on plasma total homocysteine (tHcy) in Alzheimer's patients.

For the multicenter, randomized, double blind, controlled clinical trial, the team recruited 100 subjects (52 control, 24 AD patients in initial phase, 24 AD patients in moderate phase) who received either the antioxidant drink (200 mL/d) or an equivalent size placebo drink daily for eight months. Researchers assessed plasma concentrations of tHcy, folate and vitamin B12 at baseline and at the end of the study.

At baseline, patients with moderate AD had higher tHcy levels and lower folate levels than the initial AD patients or control subjects. After the intervention, the researchers found the antioxidant drink attenuated tHcy increases in the control subjects and AD patients, particularly those in the moderate phase.

Food Product Design November 19, 2010
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Cocoa Flavonols Benefit Digestive Health

Consuming beverages high in cocoa flavonols benefits digestive health by increasing both *lactobacilli* and *bifidobacteria* while reducing bad bacteria in the gut, according to a new study published in the *American Journal of Clinical Nutrition*.

University of Reading researchers said cocoa flavanols undergo limited absorption in the small intestines, so they amply reach to the large intestines, where they deliver their digestive benefits. In the study, 22 healthy volunteers were randomly assigned to take either a high-cocoa flavanol (HCF) drink (494 mg cocoa flavanols/d) or a control low-cocoa flavanol (LCF) drink (23 mg cocoa flavanols/d) for four weeks. A four-week washout was then followed by a crossover to the other arm. Researchers collected fecal samples before and after each intervention and measured bacterial counts using fluorescent in situ hybridization. Other biochemical and physiologic markers were also measured.

Daily consumption of the HCF drink significantly increased the *bifidobacterial* ($P < 0.01$) and *lactobacilli* ($P < 0.001$) populations but significantly decreased *clostridia* counts ($P < 0.001$), compared to consumption of the control (LCF) drink. In addition, HCF also reduced plasma triacylglycerol ($P < 0.05$) levels and C-reactive protein (CRP, $P < 0.05$) concentration, which was linked to changes in *lactobacilli* counts ($P < 0.05$, $R(2) = -0.33$ for the model). These results were accompanied by cocoa flavanol-induced bacterial changes in mixed-batch culture experiments.

"This study shows, for the first time to our knowledge, that consumption of cocoa flavanols can significantly affect the growth of select gut microflora in humans, which suggests the potential prebiotic benefits associated with the dietary inclusion of flavanol-rich foods," the researchers concluded.

Food Product Design November 17, 2010
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Lutein, Zeaxanthin and Omega-3 Fatty Acids are Essential for Keeping Eyes Healthy

A current scientific review article has confirmed that an optimal supply of the carotenoids lutein and zeaxanthin, as well as the omega-3 fatty acids DHA and EPA, is essential for keeping our eyes healthy. The authors emphasise the potential of these nutrients for protection of the retinal cells and the prevention and treatment of age-related degenerative eye diseases, such as macular degeneration (AMD) in the elderly. Additionally, the European Food Safety Authority (EFSA) recently asserted that taking a dose of 250 milligrams of the omega-3 fatty acid DHA each day, can make an important contribution towards maintaining vision. It is generally difficult to ensure an adequate supply of the aforementioned micronutrients in one's diet, particularly at an older age. For seniors, a risk group, experts recommend an appropriate dosage of food supplements of a similar composition.

Lutein and zeaxanthin play an especially important role in eye function: Both carotenoids form the pigment of the macula ("yellow spot") in the centre of the retina. The macula is responsible for sharp vision. Just like "internal sunglasses," both micronutrients filter out damaging blue light from the sun and UV light. This leads to improved contrast sensitivity and reduced susceptibility to glare, according to scientists. Moreover, both substances keep the retina healthy due to their anti-oxidative, or cytoprotective, and anti-inflammatory effects.

Lutein and zeaxanthin against macula degeneration

The macula pigment breaks down throughout one's life, however, and the function degenerates due to various influences, such as UV light or prolonged computer work. This process - age conditional macula degeneration (AMD) - is insidious and painless. Normally, reading becomes difficult at some point because grey shadows appear in the middle of the text and distort the letters. AMD can lead to blindness and, at 50%, is the most common cause for severe visual impairment in Germany. About 20% of 65-74 year olds suffer from an early form of AMD. A basic differentiation is made between the most common yet treatable "dry" form of AMD and the less common, aggressive "wet" form, which is incurable and can develop from the "dry" form.

All studies have confirmed that preventing AMD depends on a sufficient storage of lutein and zeaxanthin as pigment in the macula. For "dry" AMD, balancing deficits of these carotenoids through diet and supplements improves the vision of those affected. It is therefore important to maintain an adequate supply of lutein and zeaxanthin, researchers say.

Omega-3 fatty acids protect the retina

The omega-3 fatty acids alpha-linolenic acid (ALA), eicosapentaenoic acid (EPA) and docasehexaenoic acid (DHA) are long-chain, polyunsaturated fatty acids. EPA and DHA are important building blocks for cell membranes and are essential for cell growth and regeneration. They also make many contributions to eye health. DHA plays an especially important role in the retina. It keeps the cell membranes flexible (fluidity), which is a vital cell function. It also supports rhodopsin formation and activity, which is a component of "visual purple" in the rod cells (photoreceptors)of the eye's retina and is important for light and dark perception. At the same time, DHA can protect the photoreceptors from "biological cell death" (apoptosis) by oxidative stress. Another protective mechanism of the omega-3 fatty acids could be based on anti-inflammatory characters, such as the formation of anti-inflammatory active substances.

Adequate supply of micronutrients, even using supplementation

The macula pigment density (MPD) is dependent on dietary supply and can be enhanced through an increased intake of lutein and zeaxanthin. Kale, spinach, broccoli, lamb's lettuce and corn are good sources of both carotenoids. On average, we ingest 0.5 - 2 mg of lutein and about 0.2 - 1.8 mg of zeaxanthin every day. 10 mg of lutein is recommended daily for prevention or dietary treatment of eye diseases such as AMD. Up to 20 mg of lutein daily is considered safe.

We obtain most of our omega-3 fatty acids from rich sea fish. The recommended intake is currently being discussed internationally and is somewhere between 100 mg and 1 gram per day. Up to 3 grams a day is considered safe. The European Food Safety Authority (EFSA) recently stated that a 250 mg daily dose of the omega-3 fatty acid DHA is an important component in maintaining normal vision.

When one considers Germany's average fruit, vegetable and fish consumption (which needs to be improved greatly), it becomes clear that for many, especially older people, it is not easy to achieve the recommended daily intake values of the aforementioned micronutrients. Consequently, the experts recommend that older people take food supplements with these substances in nutritive doses. This generally means an amount that would be reached through an appropriate targeted food selection and amount.

Nutrition Horizon 26 Nov 2010

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Elderly could benefit from functional foods, says think-tank

Functional foods could play an important role in improving the health of the elderly, according to a report by UK-based think-tank the International Longevity Centre (ILC).

The report, entitled 'Older people and functional foods', states that the most common health concerns among older people – cardiovascular disease, bone health and gut health – are also the main areas targeted by the most popular functional foods, which are enriched with cholesterol-lowering ingredients, probiotic bacteria and calcium and vitamin D.

In the report ILC says more research is needed into older consumers' relationship with functional foods and the effectiveness of nutritional advice and messages for this group. Research should also be undertaken to discover the attitudes of doctors and other health professionals towards functional foods, it said.

Sally Greengross, chief executive of ILC, said: "This report shows that alongside a healthy diet, functional foods can play a role in supporting the nutritional needs of older people including the prevention and management of chronic disease. There is, however, a need for further research into older people and functional foods and ILC calls on government and the public and private sectors to support such research."

Functional Ingredients November 19, 2010

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Curcumin may prevent liver damage

A study published in *Endocrinology* shows that curcumin may help prevent or treat liver damage from an advanced form of a fatty liver disease called non-alcoholic steatohepatitis (NASH). Curcumin is contained in turmeric, a plant used by the Chinese to make traditional medicines for thousands of years. Linked to obesity and weight gain, NASH affects 3–4% of U.S. adults and can lead to a type of liver damage called liver fibrosis and possibly cirrhosis, liver cancer, and death.

High levels of blood leptin, glucose, and insulin are commonly found in human patients with obesity and type 2 diabetes, which might contribute to NASH-associated liver fibrosis. In the study, the researchers tested the effect of curcumin on the role of high levels of leptin in causing liver fibrosis in vitro, or in a controlled lab setting. High levels of leptin activate hepatic stellate cells, which are the cells that cause overproduction of the collagen protein, a major feature of liver fibrosis. The researchers found that among other activities, curcumin eliminated the effects of leptin on activating hepatic stellate cells, which short-circuited the development of liver damage.

The researchers concluded: “While research in an animal model and human clinical trials are needed, our study suggests that curcumin may be an effective therapy to treat and prevent liver fibrosis, which is associated with non-alcoholic steatohepatitis (NASH).”

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Chocolate may protect elderly women from heart problems

According to a study published in the *Archives of Internal Medicine*, older women who eat more chocolate are less likely to develop heart problems.

The researchers reviewed data collected from 1,216 older women, who estimated how often they ate chocolate and the amount. One serving consisted of the equivalent amount of cocoa in 1 cup of hot cocoa. The authors tracked the women for almost a decade, noting who was hospitalized or died from heart disease.

Almost half of the women said they ate less than one serving of chocolate per week. Nearly 90 of those who ate chocolate rarely were hospitalized or died from heart disease during the study period, versus 65 women who ate chocolate more frequently. Another 35 of the infrequent consumers experienced heart failure, while only 18 women who reported eating chocolate at least once per week were hospitalized or died from the same condition.

The authors found that women older than 70 who ate chocolate at least once per week were 35% less likely to be hospitalized or die from heart disease over the course of the study, and nearly 60% less likely to be hospitalized or die from heart failure.

The study's nature means researchers can't prove any cause-effect relationship. Given the growing body of evidence suggesting the benefits of chocolate, the next step should be a large clinical trial that vigorously tests chocolate's benefits.

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New Study Suggests More Research Necessary to Determine Safety, Efficacy of Plant-Based Antioxidants

Scientists have raised concerns about the safety of 'healthful' plant-based antioxidants', including those renowned for their apparent ability to prevent cancer.

They are calling for more research on the possibility that some antioxidants may actually aggravate or even cause cancer in some individuals.

Their recommendation follows a study in which two such antioxidants - quercetin and ferulic acid - appeared to aggravate kidney cancer in severely diabetic laboratory rats.

Kuan-Chou Chen, Robert Peng, and colleagues note that vegetables, fruits, and other plant-based foods are rich in antioxidants that appear to fight cancer, diabetes, heart disease, and other disorders.

Among those antioxidants is quercetin, especially abundant in onions and black tea, and ferulic acid, found in corn, tomatoes, and rice bran.

Both also are ingredients in certain herbal remedies and dietary supplements. But questions remain about the safety and effectiveness of some antioxidants, with research suggesting that quercetin could contribute to the development of cancer, the scientists note.

They found that diabetic laboratory rats fed either quercetin or ferulic acid developed more advanced forms of kidney cancer, and concluded the two antioxidants appear to aggravate or possibly cause kidney cancer. "Some researchers believe that quercetin should not be used by healthy people for prevention until it can be shown that quercetin does not itself cause cancer," the report states.

"In this study we report that quercetin aggravated, at least, if not directly caused, kidney cancer in rats," it adds, suggesting that health agencies like the U. S. Food and Drug Administration should reevaluate the safety of plant-based antioxidants.

SoyTech eNews October 28, 2010
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Polyunsaturated Fatty Acids May Lower Incidence of Gum Disease: New Research

Periodontitis, a common inflammatory disease in which gum tissue separates from teeth, leads to accumulation of bacteria and potential bone and tooth loss. Although traditional treatments concentrate on the bacterial infection, more recent strategies target the inflammatory response. In an article in the November issue of the Journal of the American Dietetic Association, researchers from Harvard Medical School and Harvard School of Public Health found that dietary intake of polyunsaturated fatty acids (PUFAs) like fish oil, known to have anti-inflammatory properties, shows promise for the effective treatment and prevention of periodontitis.

"We found that n-3 fatty acid intake, particularly docosahexaenoic acid (DHA) and eicosapentaenoic acid (EPA), are inversely associated with periodontitis in the US population," commented Asghar Z. Naqvi, MPH, MNS, Department of Medicine, Beth Israel Deaconess Medical Center. "To date, the treatment of periodontitis has primarily involved mechanical cleaning and local antibiotic application. Thus, a dietary therapy, if effective, might be a less expensive and safer method for the prevention and treatment of periodontitis. Given the evidence indicating a role for n-3 fatty acids in other chronic inflammatory conditions, it is possible that treating periodontitis with n-3 fatty acids could have the added benefit of preventing other chronic diseases associated with inflammation, including stoke as well."

Using data from the National Health and Nutrition Examination Survey (NHANES), a nationally representative survey with

a complex multistage, stratified probability sample, investigators found that dietary intake of the PUFAs DHA and (EPA) were associated with a decreased prevalence of periodontitis, although linolenic acid (LNA) did not show this association.

The study involved over 9,000 adults who participated in NHANES between 1999 and 2004 who had received dental examinations. Dietary DHA, EPA and LNA intake were estimated from 24-hour food recall interviews and data regarding supplementary use of PUFAs were captured as well. The NHANES study also collected extensive demographic, ethnic, educational and socioeconomic data, allowing the researchers to take other factors into consideration that might obscure the results.

The prevalence of periodontitis in the study sample was 8.2%. There was an approximately 20% reduction in periodontitis prevalence in those subjects who consumed the highest amount of dietary DHA. The reduction correlated with EPA was smaller, while the correlation to LNA was not statistically significant.

In an accompanying commentary, Elizabeth Krall Kaye, PhD, Professor, Boston University Henry M. Goldman School of Dental Medicine, notes that three interesting results emerged from this study. One was that significantly reduced odds of periodontal disease were observed at relatively modest intakes of DHA and EPA. Another result of note was the suggestion of a threshold dose; that is, there seemed to be no further reduction in odds or periodontal disease conferred by intakes at the highest levels. Third, the results were no different when dietary plus supplemental intakes were examined. These findings are encouraging in that they suggest it may be possible to attain clinically meaningful benefits for periodontal disease at modest levels of n-3 fatty acid intakes from foods.

Foods that contain significant amounts of polyunsaturated fats include fatty fish like salmon, peanut butter, margarine, and nuts.
SoyTech eNews October 26, 2010
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Coffee, tea consumption may protect against brain cancer

A study published in the *American Journal of Clinical Nutrition* shows that regular consumption of coffee and tea may shield against a form of brain cancer. The researchers explored the possibility that coffee and tea may protect against brain cancer, specifically in the form of glioma, a cancer of the central nervous system that originates in the brain and/or spinal cord.

Data concerning the dietary habits of more than 410,000 men and women between the ages of 25 and 70 was drawn from the European Prospective Investigation into Cancer and Nutrition study, which included participants from France, the Netherlands, Italy, Spain, Great Britain, Greece, Denmark, Norway, Sweden, and Germany. Participants were recruited between 1991 and 2000, and were tracked over the course of about 8.5 years. During that time, food surveys were completed to gauge, among other things, the amount of tea and coffee each participant consumed. During the study, 343 new cases of glioma were diagnosed, as were 245 new cases of meningioma, another cancer that affects tissue surrounding the brain and spinal cord.

Decaffeinated coffee consumption was found to be very low overall, while regular coffee and tea drinking patterns varied greatly from country to country. For example, while the Danish (the biggest consumers of coffee) drank on average nearly 3.5 cups per day, Italians (the lowest consumers) averaged less than a half-cup daily. Tea consumption was highest in Great Britain, and lowest in Spain.

By stacking drinking patterns against brain cancer incidence, the research team found that drinking at least 100 mL (or 0.4 cups) per day lowered the risk of gliomas by 34%. The protective effect appears to be slightly stronger among men, the authors observed, and seems to apply solely to gliomas.

Further research needs to be conducted to determine if the link between coffee and tea and gliomas is causative.

IFT Newletter November 24, 2011
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Key Trends in Functional Food Products

Imagine taste, function and nutrition all rolled up into one product—that is exactly what consumers are demanding nowadays. Consumers don’t just want juice; they want natural juice that contains added vitamins and minerals. They have

come to realize the effects of diet on health, and are actively seeking functional food products that enhance health beyond basic nutritional needs.

To help food manufacturers in their product-development endeavors, *New Nutrition Business*, a global nutrition business researcher and publisher, has identified 10 key functional products trends leading the market:

1. Digestive health–mega-trend moves beyond tipping point. Topping the list is digestive health, which isn't surprising given the marketing blitz featuring prebiotics, probiotics and fiber. Despite a recessionary climate, the cash register continues to get a workout as it registers escalating sales for products that help consumers achieve excellent digestive health.
2. Intrinsic health benefit that's also convenient. 'Convenience' ranked as the second most important market trend. We've seen many beverages claim to have health benefits or to provide some sort of functional value. But the major reason for its strong growth is likely its convenience to consumers. The ability to get healthy benefits in a conveniently sized beverage on-the-go is very appealing to consumers, particularly those with fast-paced lifestyles.
3. Feel the benefit. Functional foods and beverages that provide a benefit consumers can actually feel was ranked as the third most important functional food trend. When people can feel the benefit offered to them, they see that they are getting value for money. For example, consumers can quickly measure the benefit of fiber-fortified or probiotic products by experiencing improvements to their digestive health.
4. Energy trend continues upward trajectory. The energy trend is ranked as the fourth most significant key trend. Energy drinks are typically attractive to young people, with the energy drink market in the U.S. worth over $6 billion and growing at 10% annually. Teenagers and young adults looking to study—or party—all night count on the shot of energy derived from popular energy drinks such as Red Bull. The market also attracts multitasking executives and time-pressed parents, and anyone looking for a caffeine- and vitamin-fueled kick to jumpstart a sleepy afternoon.
5. Fruit and superfruit drive functional food trend. The fifth most significant functional food trend focuses on fruits and superfruit, a marketing-derived term coined by the food and beverage industry about five years ago to refer to a fruit that combines antioxidants with high nutrient value and appealing taste,. The term "superfruit" is applied to a wide variety of fruits, including mango, blueberry, cranberry, grape and pomegrante. The health halo that surrounds fruit focuses on its innate health benefits and the role of powerful superfruits, which are forecast to become a $10 billion global industry by 2011.
6. Antioxidant becomes primary wellness ingredient. "High in antioxidants" is a ubiquitous marketing message featured by scores of drinks, foods and supplements. Ranking sixth on the functional food list, antioxidants have become a primary wellness ingredient, touted to improve heart health, mood and beauty. The researchers indicate that the antioxidant message has an increasingly limited affect in increasing sales. And increasing FDA label scrutiny, as evidenced by the FDA warning letter regarding Dr Pepper Snapple Group's "Sparkling Green Tea Ginger Ale" antioxidant claim, make it difficult to use antioxidant fortification as a marketing tool.
7. Weight management trend broadens as obesity rates rise. A new study released by the Organization for Economic Cooperation indicates that three out of four Americans will be overweight by 2020, unless comprehensive measures are taken to fight the obesity epidemic. As obesity rates climb in the U.S. and globally, it is no surprise that "weight management"was the seventh most significant food trend, with a focus on satiety, calorie-burning and fat-burning ingredient properties.
8. Healthy snacking fuels metabolism. Healthy snacking can complement a weight-loss plan and is a convenient way to satisfy hunger while getting the vitamins and nutrients one's body needs. "A focus on building markets for new snack concepts rather than simply following on with predictable products has already led to the creation of some innovative snacking concepts," says Julian Mellentin, the author of the New Nutrition report and co-author of "The Functional Foods Revolution: Healthy People, Healthy Profits?" and "Commercializing Innovation: The Food & Health Marketing Handbook."
9. Looks matter—packaging. Packaging innovation is key to attracting and retaining higher-margin loyal consumers to food and health-product innovations. "Companies who target the niches of the most health-conscious consumers find loyal consumers with high levels of repeat purchase—80% repeat purchase rates are common," says Mellentin. "Brands targeted at the most health-conscious niches have thrived even in recession, even in very price-sensitive markets, even at premium prices."
10. Bones and movement. As our population of people over the age of 40 grows exponentially, the bones and movement category gathers momentum as an increasing number of people have reason to be aware of the health of their bones and joints and are turning to products that support joint and bone health.

Just ask yourself, are you more aware of what you eat than, say, a year ago? We will most likely continue to see strong demand for functional foods and beverages in many categories for years to come. Take functional protein products, for example. They continue to gain market share in the sports-nutrition market. I wouldn't be surprised to see that market follow closely behind digestive-health products in the near future.

Taste is definitely a priority for consumers, but with the growth and increasing awareness of health and wellness, people are searching for foods and beverages that go beyond their basic nutritional needs. The food industry constantly evolves and introduces new products that acknowledge concerns, including obesity and weight management. Since the food industry evolves and trends do change, it is important for manufacturer's to identify, incorporate and balance what the consumer wants and what is required for healthy living.

Healthy living encompasses more than just a healthy body. The world population is growing, food supply is shrinking, water supplies are becoming more limited, and food production is competing for land with housing and the production of fuel crops. In the coming decades, as global agriculture faces the prospect of a changing climate and the challenge of feeding the world's growing population, renewable plant protein may be part of the solution to deliver food to regions vulnerable to food deficits

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By Sarah Medina, Food Product Design November 8, 2010

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Carotenoids Market to Exceed $1 Billion by 2015

The global carotenoids market is expected to reach $1.2 billion by the year 2015, driven by rising consumer awareness about health benefits offered by various carotenoids and the shift toward healthy and natural food products, according to a report from GIA. The availability of research supporting benefits offered by various ingredients is also fueling demand. Interest in natural food products and natural colorings is also helping grow the market worldwide. Moreover, rising demand for functional and processed food products is expected to increase carotenoid utilization by the food industry. The market is also expected to benefit from the discovery of new health benefits for various carotenoids.

Natural carotenoids are expected to find increased acceptance among consumers, taking share away from the synthetic carotenoids market, due to the increasing demand for fortified and natural food products. The advent of fermentation process for natural carotenoids is also expected to significantly affect trends in the market. The method is likely to gain popularity in the future.

The U.S. and Europe collectively account for a major share of sales in the global carotenoids market, according to the report. Developing countries are also expected to perform well with stronger growth rates. China, India, Japan and Malaysia are some of the Asian markets expected to post significant sales over the next few years. Asian companies are posing huge threats to European and U.S. manufacturers.

The popularity of beta-carotene, the largest product segment, is attributed to health benefits offered by the pigment and its extensive use as a food-coloring agent. Beta-carotene is extensively used in foods and supplements. The segment, however, is facing tough times owing to the consumer shift toward natural products such as carrot juice, particularly in the European market. Canthaxanthin is expected to make rapid gains in the global carotenoids market, due to the ingredient's continued usage as a coloring agent for imparting red coloration to egg yolks, and for providing red background color in shrimp and fish.

Animal Feed represents the largest end-use segment for carotenoids, while the food segment is expected to witness robust growth, driven largely by the use of carotenoids as antioxidants. Astaxanthin, lutein and canthaxanthin are expected to garner popularity due to their growing utilization in animal feed and food industries. Over-the-counter (OTC) health supplements are also posting considerable growth for carotenoids due to their antioxidative properties.

Nutraceuticals World November 2010
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Sustainability Efforts Go Largely Unnoticed

Considering the magnitude of corporate sustainability initiatives in the marketplace today and the vast sums of dollars backing them, companies aren't getting much credit for their efforts, according to a new report from The Hartman Group, Bellevue, WA. Titled "Marketing Sustainability 2010: Bridging the Gap Between Consumers and Companies," the report indicates 15% more consumers are now aware of the term "sustainability" compared to three years ago (69% in 2010 say

they are familiar with “sustainability” vs. 54% in 2007) but only 21% can identify a sustainable product. Even fewer, 12%, can name specific companies as “sustainable.”

“We’re seeing a broad gap in the way consumers and companies think about and approach sustainability,” said Laurie Demeritt, Hartman Group president & COO. “That very few consumers today can name a sustainable company underscores the fact that so many Corporate Social Responsibility (CSR) and sustainability activities go relatively unnoticed by consumers.”

Closing the divide represents significant opportunities for companies. “Industry typically places great emphasis on energy and the environment projecting an image of being stewards of the planet,” Ms. Demeritt said. “But consumers are focused on more personal benefits like whether a product is healthy for their families or how a company invests in the welfare of their local community; above all consumers are looking for companies that are good citizens. From this perspective, we say that consumers equate sustainability with the golden rule, or a reciprocal notion of fair treatment of communities, people or animals, and look through this lens when evaluating companies or thinking about which brands to use.”
From: Nutraceuticals World November 2010
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Regulatory News

EFSA Approves Lactose Digestion Claim for Yoghurt

The European Food Safety Authority (EFSA) has approved the generic claim that yoghurt cultures promote better lactose digestion (the breakdown of lactose in the body). EFSA investigated the claim at the request of the European Commission, together with other generic health claims, FrieslandCampina noted.

The generic yoghurt claim is that yoghurt helps to promote lactose digestion. It relates to live yoghurt cultures containing the micro-organisms Lactobacillus delbrueckii, Lactobacillus bulgaricus and Lactobacillus Streptococcus.

EFSA’s NDA panel concluded that improved lactose digestion has a beneficial physiological effect on individuals with lactose maldigestion (i.e. people who have difficulty absorbing lactose). The panel’s conclusions were based on 14 humane studies. In 13 of these, improved lactose digestion was found in people with lactose maldigestion whose diet included yoghurt containing live starter cultures. In the study that did not show this beneficial effect, the symptoms of those who took part nevertheless improved.

To qualify for the health claim, the yoghurt must contain at least 108 cfes (colony-forming units) for each starter culture portion served, the NDA panel has specified. This is equivalent to one portion of yoghurt (minimum of 100ml).
Nutrition Horizon Nov 8 2010

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Suit Filed Over Breyers Ice Cream ‘All Natural’ Claim

HACKENSACK, N.J.—Three New Jersey residents filed a class-action lawsuit in U.S. District Court in Newark on Nov. 4 accusing Unilever of violating the state Consumer Fraud Act by falsely claiming its Breyers ice cream is “all natural," according to the *Bergen County Record*. The lawsuit also charges the company with unjust enrichment, and breach of implied and express warranty.

According to the lawsuit, Breyers Smooth and Dreamy ½ Fat All Natural Ice Cream contains alkalized cocoa power, a “chemically altered cocoa powder which contains potassium carbonate, sodium carbonate or other alkaline substances."

The complaint said the plaintiffs paid a “premium" for the ice cream, believing it to be “all natural" and would not have bought it if they had known it contained alkalized cocoa. According to the lawsuit, “natural" is not defined by the FDA, but is “regularly used by manufacturers, and understood by consumers, to describe a product that does not have any chemically altered or man-made ingredients."

In September 2010, Ben & Jerry’s announced it would begin phasing out its use of “all natural" claims on labels on ice creams and frozen yogurts containing alkalized cocoa, corn syrup, partially hydrogenated soybean oil, or other ingredients that aren’t natural, The agreement resolved a dispute arising from a letter that Center for Science in the Public Interest

(CSPI) sent earlier in the year Unilever claiming at least 48 of Ben & Jerry's products were improperly labeled with the term all natural.

Food Product Design November 15, 2010
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European Food Safety Authority Approves Health Claims for Vitamin E, DHA

The European Food Safety Authority (EFSA) recently published its third batch of article 13.1 health claim opinions. This included a total of 75 opinions, relating to 808 health claims. Regarding the claims submitted by specialty chemicals supplier Cognis, the opinions on DHA and Vitamin E were positive, while the company's health claims in relation to CLA seem not to have been evaluated yet.

The EFSA's third batch of article 13.1 health claim opinions included good news for Cognis. There were three positive opinions on health claims concerning DHA – claims relating to normal brain function, normal vision, and maintaining normal (fasting) blood concentrations of triglycerides were all upheld – and various health claims for Vitamin E were also approved, relating to its ability to protect DNA, proteins and lipids against oxidative damage.

While the EFSA panel rejected some health claims relating to conjugated linoleic acid (CLA), it did not give any specific opinion about the relationship between CLA and body fat reduction.
SoyTech eNews October 21, 2010
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Food, beverage industry announces front-of-pack nutrition labeling initiative

America's leading food and beverage manufacturers and retailers have joined forces in the fight against obesity and announced their commitment to develop a new front-of-package nutrition labeling system. The consumer initiative will make it easier for busy consumers to make informed choices when they shop.

This program will add nutrition information on calories and other nutrients to the front of the packages of many of the country's most popular food and beverage products. To appeal to busy consumers, the information will be presented in a fact-based, simple, and easy-to-use format. In the coming months, the Grocery Manufacturers Association (GMA) and the Food Marketing Institute (FMI) will finalize the details of the initiative, including the technical and design elements. In addition, details will be finalized on how to provide consumers with information on nutrients needed to build a "nutrient-dense" diet and on "shortfall nutrients" that are under-consumed in the diets of most Americans. GMA and FMI will continue to consult stakeholders on these and other details in the coming weeks.

Consumers will begin to see the new label in the marketplace early next year.

"Thanks to this initiative and many other innovative industry programs, consumers will now have access to more information about their food than ever before," said FMI President and CEO Leslie G. Sarasin. "This unprecedented partnership with manufacturers will expand access to nutrition information for all Americans and give shoppers a powerful tool to assist them in selecting nutritious products."

To build consumer awareness and promote use of the new label, America's food and beverage manufacturers and retailers have agreed to support the change to their product labels with a $50 million consumer education campaign. The campaign, to be launched in 2011, will be aimed at parents who are primary household shoppers.

IFT Newsletter November 3, 2011
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FDA to conduct survey on potential changes for Nutrition Facts label

The U.S. Food and Drug Administration (FDA) is proposing to conduct an experimental study to quantitatively assess consumer reactions to potential options for modifying the Nutrition Facts label format. The purpose of the study is to help enhance FDA's understanding of consumer comprehension and acceptance of modifications to the Nutrition Facts label format. The study is part of the Agency's continuing effort to enable consumers to make informed dietary choices and construct healthful diets.

The proposed study will use a Web-based experiment to collect information from a sample of adult members in an online consumer panel established by a contractor. The study plans to randomly assign each of 10,000 participants to view Nutrition Facts labels from a set of Nutrition Facts labels that vary by the format, the type of food product, and the quality of nutritional attributes of the product. The study will focus on the following types of consumer reactions: (1) Judgments about a food product in terms of its nutritional attributes and overall healthfulness and (2) ability to use the Nutrition Facts label to, for example, calculate calories and estimate serving sizes needed to meet objectives. To help understand consumer reactions, the study will also collect information on participants' background, including but not limited to use of the Nutrition Facts label and health status. The study results will be used to help the Agency to understand whether modifications to the Nutrition Facts label format could help consumers make more informed food choices.

IFT Newsletter November 24, 2011
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Report Covers Nutrition Labeling Issues

Published November 10, 2010
The food and drinks market has seen double-digit growth, developing into one of the biggest success stories in the past 10 years, according to a Business Insights report. However, the market is experiencing a significant drop in the huge growth that has been typical over the past decade.

Health claims and labeling issues have become a major concern and regulators seem ready to act. The report, titled "The Future of Nutrition Labeling for Food and Drinks in Europe: Evolving consumer needs, manufacturer and retailer strategies and market opportunities," says that regulators now feel the need to step in and act because health claims within the food and drink market vary widely. Concerns about the consumer's ability to understand health claims have arisen with many consumers still being confused, misled and even deliberately duped by food and drink manufacturers who suggest unfounded health benefits of their products.

As a result of this deliberate attempt to mislead consumers regulators are insisting that products make honest health claims and that these claims are supported by credible scientific evidence. There is also a demand for a unified system of labeling that could help consumers understand the product and allow consumers to make informed decisions. The new unified system of labeling will specifically help consumers who are looking to make healthier food and drink decisions.

The primary focus for regulars is the front of pack labeling (FOP) as it will help the consumer considerably when making informed food and drink selections. Sweden's Keyhole front of pack labeling system has been the most frequently referenced best-practice example in the global debate. The front of pack labeling system was first established in Sweden in 1989 and has become accepted as a Nordic label for food and drink in Demark, Sweden and Norway.

The European Consumers' Association, BEUC, research shows consumers will understand a color-coding system on the front of processed food packaging that displays key nutrients such as fat, saturated fats, sugars and salt. Products that are high in unhealthy nutrients will have red labels, and products that have lower amounts of unhealthy ingredients will have amber and green "traffic light" labels.

The FDA reports that 54% percent of consumers in the U.S. read food labels when purchasing a product for the first time, an increase of 10% since 2002. Consumers who read food labels before purchasing a product are increasingly aware of the link between their diets and heart disease.

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