

# PFNDAI Bulletin March 2010

## Editorial

We do get many foods in the market nowadays that have some health benefits or the other. Foods are consumed in order to remain healthy. If we do not consume adequate proteins, essential fatty acids, vitamins, minerals etc. nutrients, we get deficiency disease. Hence, we need to keep the body nourished so we remain healthy.

It has been known for last couple of decades that there are certain substances when consumed might provide more than what nutrients provide, although there are examples of some nutrients capable of similar effects are higher quantities than the RDA. These substances are known to reduce the risk of certain diseases, so although they are not drugs but quite commonly the ingredients found in certain foods.

Such substances as omega-3 fatty acids, carotenoids, fibre, antioxidants, probiotics etc. are present in certain foods. Omega-3 fatty acids are found in fish, especially in fish oil and are useful in preventing cardiovascular diseases. Carotenoids like lutein and lycopene are useful against deterioration of vision especially in age-related macular degeneration while carotenes are useful along with antioxidants in reducing the risk of cancer. Fibre is present in many fruits and vegetables which not only are quite helpful in reducing risk of colon cancer. There are two types of fibre, soluble and insoluble. Soluble fibre is useful in reducing risk of cardiovascular disease by lowering cholesterol while insoluble fibre helps in gut health and proper motion. Fibre is quite useful in diabetic diet as they help in control of glucose rise in blood. Probiotics have been consumed in fermented dairy foods and have a range of health benefits from gut health to immunity.

While it is possible to carefully selecting the diet to obtain a variety of these substances naturally from our normal foods but as our diets have undergone a vast change, it is difficult to get these from our daily diet. Thus there is a need for such products that would provide these substances in diet and this has offered a huge opportunity to food industry to market food products called functional foods or nutraceuticals and a variety of other names which would go beyond the normal realm of nutrition and yield useful health benefits that would reduce the risks of various diseases.

If the substances are said to cure a disease then it is a medicine but nutraceuticals would stop short of this effect and would reduce the risk of certain diseases. They may also be useful in diets during certain ailment, not to cure but to provide diet that does not aggravate the disease and may provide nutrient essential during treatment. Thus there is a boundary although very thin and sometimes debatable, between food and medicine especially when such substances are present. When such foods are marketed there is normally an enthusiasm to promote them giving benefits in an attractive and aggressive manner for consumers to notice them. Sometimes such enthusiasm crosses the boundary and troubles begin so there are guidelines provided in Europe and in the US for making health claims. We are in the process of making these guidelines and soon we may provide some directions to manufacturers and consumers in order to get the right message across about the benefits of such products.

While the developments in health science are taking place at tremendous pace, using this for the benefit of consumers through food products is much slower as it is easier to see the effect of pure

substances in labs with animals and in controlled diet of small section of volunteers. However, to establish the benefit by consuming these products under a variety of uncontrolled conditions is very difficult and lengthy. Marketing has less patience than the R & D and sometimes we do see exaggeration of claims.

We do feel that ultimately these functional foods will become common part of our daily diet either through choice of foods or using conveniently these products in which such substances have been added in order to derive the benefits of nutraceuticals. There is plenty of scope for developers in the years to come to make innovative use of these substances to promote health.

With season's greetings,  
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## Booster Shots for Energy & Health

Multitasking has become a necessity in today's hectic world, trying to squeeze more into the same time and constantly looking for products that will make seemingly impossible task possible. One product popular with consumers is shot-style beverages less than 4 oz promising quick energy boost or vitamins and immune support in convenient quick-to-drink format. Its premium price doesn't turn consumers off possibly because everyone is working hard and long hours and if 5-Hour Energy (\$2.99) keeps them alert and DanActive (\$1) helps their immune system, maybe it is worth the price.

According to Innova's Food and Beverage Database (2009), 221 shot beverage products were in market globally in 2008, up from 159 in 2007. Two popular categories were energy shots and dairy-based probiotic shots offering live bacteria and other nutrients. Food scientists have been able to formulate these products so they are effective and palatable.

### Shifting Beverage Market

There has been a significant shift in consumer approach to beverages in past couple of years. From 2003 to 2008, carbonated soft drink market has lost 15.6 million adult drinkers in the US. People are no longer interested in "empty calories". Beverages have been upgraded to "lifestyle" items as health and wellness awareness is growing with more people are turning away from old-fashioned pop and looking for healthier lower calorie drinks that also offer functionality to meet their lifestyle needs.

An important growing trend is the convenience so the shot-size beverages addressing a number of nutritional and lifestyle needs in quick, convenient and portable format. Concept of non-alcoholic miniature drinks is not new as consumers in Europe and Asia have enjoyed dairy-based probiotic beverage shots for decades. However, increasing need for on-the-go, functional and healthy options have spurred shots market in the past year. According to Nielsen, sales for shot beverages in US convenience stores have soared 170% from \$105 million in 2008 to \$292 million in 2009.

Among vast variety of shot beverages, energy shots have taken the US by storm.

## **Energy Shots**

The concept of energy shot is straightforward. Consumers get functional “bang” from concentrated portion of caffeine, vitamins and amino acids that they receive from regular size energy drink without the volume and calories. These shot-style products also give appearance of dietary supplements. Leading message from such brands is that they are differentiated by “no added sugar” or being “low in sugar”. Energy shots have been mostly in US but are beginning to rollout in European markets. North America and Europe had 130% boost of sales to 188 million units in 2008 worth \$424 million. Sales have doubled in the US reaching \$67 million.

Currently, 5-Hour Energy dominates the market in US with over 70% share. Sales for dietary supplement were over \$170 million in 2008 and are likely to surpass \$300 million in 2009. This product was introduced in 2004 when energy shot drinks were unheard of, enabling company to get retail distribution, market aggressively and build loyal customer base before others moved in. Whereas the popular full-size energy beverages were targeted at young males mostly teenage boys, this brand targeted working adults who really need energy. Top energy drink brands like Monster, Rockstar, Full Throttle, NOS and Red Bull have taken notice of this success and growing demand for energy shots. All majors have introduced energy shot products in last year or so attempting to benefit from new lifestyle needs. Today over 60 brands are competing for market share in energy shots.

Among the entrants have been Red Bull’s Energy Shot and Sugarfree Shot dietary supplements. Red Bull is the leading brand launched in 1997 and is successful at leading the market share. With its decision to enter energy shot market, potential and appeal of the market has been highlighted. The shot size products have the same taste and ingredients as full size drinks except shots are not carbonated and have just 25 and 2 calories respectively per bottle.

Energy shots category has seen a surge in the past two years and is likely to reach over 500 million units with retail value of \$1.2 billion by 2010 as the concept is spreading to other regions. There is a likelihood of brand differentiation on the use or avoidance of certain ingredients and use of more ‘natural’ energy shot in future as well as ‘good for you’ ingredients and flavours like acai, hemp, blood orange etc.

## **Probiotic Dairy Shots**

While energy shots offer a quick and low-calorie way to keep us energized through increasingly hectic days, consumers are also concerned about health and wellness. Busy schedules have less time for exercise and nutritionally balanced meals. Increasingly health conscious consumers only want pure functionality over refreshment and so concentrated shot drinks are ideal. Globally they are appearing mainly as dairy-based drinks containing probiotics for specific health concerns. Combined markets of Western Europe, US and Japan for functional dairy drinks rose 12% to 999 million L in 2006. In addition, 49% of reported 221 shot drink products worldwide were dairy/soy shot drinks.

Unlike energy shot, US has been slower to accept dairy shot beverages than Asia and Europe. Probiotic dairy shot’s success in Asia has been due to Japan’s Yakult, which first introduced 2.2 oz probiotic shot beverage in 1950s. The drink was created in 1935 by microbiologist Minoru Shirota and is available in 32 countries. Globally it sells over 25 million bottles of Yakult per day. It contains *Lactobacillus casei* Shirota that can only be used in Yakult Co.’s products and is supposed to suppress harmful bacteria in the intestines, improve digestive function and help maintain overall health.

Consumers are becoming more aware of benefits of probiotics in the US with most shoppers in a survey showing interest in probiotics for digestive health. As consumers become more educated on probiotics and their benefits these numbers will increase.

Similar to 5-Hour Energy in energy shot market, Yakult leads in dairy shots in Asia. Companies like Dannon known in US for healthful yogurts are well-positioned for probiotic dairy shots category. The company launched DanActive, a 3.1 oz cultured probiotic dairy drink in US which contains proprietary probiotic L. Casei Immunitas that is as per the company clinically proven to help naturally strengthen body's defences.

All probiotic dairy shots are marketed to be consumed daily for friendly bacteria to build up and really provide digestive and immunity benefits. Priced higher than average yogurt, health benefits outweigh the premium price. However, unlike energy shots where effects are felt almost immediately, consumers require more education on the long-term effects of probiotic shots in order to commit to daily consumption.

Although, dairy shot drinks have been addressing gut and digestive health, recently new areas like cardiovascular health, immune health, weight management, brain health, beauty and bone health have been targeted. Unilever's Promise brand launched Promise active SuperShots in US and contains natural plant sterols that help lower LDL cholesterol. According to the company, one shot contains same amount of sterols that may be present in 100 lbs of fruits, vegetables and nuts. The brand generated sales of \$31 million in one year of its launch. Then company launched Promise SuperShots for blood pressure that contains 350 mg potassium designed to help adults manage risk of high blood pressure. Netherland based Campina launched Optimel Control addressing weight control and claims to help you eat less. As aging population increases, such products addressing specific and targeted health needs will be more popular.

## **Formulation Challenges**

Growing popularity of shot beverages represents exciting opportunities for food and beverages manufacturers as well as its challenges. These offer high value opportunity as well as a way of responding to ever-changing consumer needs opening new distribution channels and product positioning. However, developing product containing high levels of vitamins, minerals, probiotics and other ingredients, leads to challenges in formulation as they affect taste, texture, stability, mouthfeel etc. so ingredients selection and their interactions become important.

Some of the ingredients that address specific health concerns include:

Cholesterol reduction: plant sterols, CoQ10, B vitamins, lycopene, vitamin E; Weight management: conjugated linoleic acid (CLA), 5-hydroxy tryptophan (5 HTP), garcinia, chromium, fibre, green tea; Energy/fatigue: taurine, B vitamins, omega-3, L-carnitine, rhodiola, caffeine; Bone health: calcium, vitamin K, manganese, boron, vitamin D; Enhanced cognition: gamma-amino butyric acid (GABA), L-theanine, omega-3, choline, Gingko biloba, phosphotidyl serine

Some of these present sensory challenges. For example, choline adds nutritional value but smells and tastes undesirable. Vitamin B1 has bitter taste as well as sulphurous egg odour, whereas minerals zinc, copper and iron give metallic taste. Consumers don't want just a couple of nutritious ingredients but want complex products formulated to deliver a health benefit to specific health problem. This means not just taking care of challenges of ingredients but overcoming issues of processing mixture of ingredients.

While working with several functional ingredients, the core challenge is complexity of food matrix with many different ingredients that together form uniformly balanced nutritional system. Many of these are multifunctional so their replacement may disrupt the balance. Some nutrients may affect taste, appearance, texture etc. so it is important to monitor these functional beverages through their shelf life both for their levels of nutraceuticals as well as changes in flavour, texture and separation problems.

Overall taste of the product is the major factor for consumer acceptance. Shot products seem to have slight flexibility as they are perceived as vitamin supplement or medicinal in nature. According to energy shot manufacturers, their taste should be just okay as consumers should not be consuming these for sheer pleasure of taste. It is not a beverage but functional energy shot and should only be used when needed. However, technologies today enable fortification possible with many nutrients and nutraceuticals that were problematic due to their smell and taste. Encapsulation has allowed certain components to be protected within the finished product where there might be flavour, mouthfeel problems or interaction with other components. Also, milder and effective processing has been used now instead of harsh heat treatments used earlier.

Use of probiotics in shot beverages also is challenging and the key challenge is to keep viable cell count throughout the product shelf life. Sometimes processors have to over-dose a functional ingredient to ensure that bioactive levels remain throughout the shelf life. This can negatively affect flavour, colour and mouthfeel or cause defects like grittiness.

Probiotics are often used in dairy-based foods and drinks as components from milk and dairy products protect probiotics from stomach acid and bile. Scientists are exploring innovative solutions like a probiotic straw to drink a beverage that would allow consumption of probiotic but keep it dry on straw well separated until use. Such new technologies will be important for growth and success of nutrient-dense shot drinks. Given the recent market trends, functional shots will stay giving manufacturers an opportunity to advance the science in these products. Consumer interest in health through shots will make manufacturers revisit challenging ingredients to find out how to make them work.

**Condensed from article by Kelly Frederick in Food Technology September 2009**



# Rulemaking Procedures: Transparency – WHERE ALL IS CLEAR

**Dr. J. I Lewis**  
**Chairman, Regulatory Affairs Committee, PFNDAI**

Transparency has now been mandated in the Food Safety and Standards Act 2006. Transparent decision-making processes are widely regarded as a prerequisite for the working of a representative democracy. It permeates all functions of governance and FSSAI is no exception. The Act makes the entire decision making process accessible to all and facilitates understanding of how rules are being made. This is a good thing to happen. This would now mean that discreet and opaque practices, untenable advocacy positions, or promulgation of regulations prior to investigating the issue will no longer be the legitimate processes of rulemaking.

## **PFA Retrospection:**

A brief retrospection in the way rules were made during the erstwhile regime under the Prevention of Food Adulteration Act 1954 is important if only to be alert to the pitfalls that may continue to lurk while executing the mandate of the Act. Stakeholders and experts within constituted bodies under the Act would need to reflect if actions taken while executing their functions are reminiscent of the PFA practice.

There are two regulatory inequities that need attention and removal from the present regime. Firstly, the practice of risk management preceding risk assessment whereby the regulator imposes its bias on subsequent discussions. Members of subcommittee's were engaged with the sole intent of preserving the 'rule' through deliberations despite overwhelming evidence to the contrary. Edits by way of provisos was a way of assuaging interests while attempting to continue with the regulatory measure. A good example is the presentation on the 'rules' on quantitative ingredient labeling enacted without allowing Codex deliberations to mature and one has only to compare the regulatory texts of GSR 491 (2006) and GSR 664 (2008) to realize regulatory haste and variance.

To date the clause *'is not within the name of the food but, is essential to characterize the food and is expected to be present in the food by consumers, if the omission of the quantitative ingredient declaration will mislead or deceive the consumer'* defies provision of an Indian example – so why was this rule made? A simple explanation is the pervasive desire to convert large chunks of Codex guidelines into verbatim Indian regulations.

The second contentious practice related to the group compositions where many members engaged at the sub-committee level reappeared at CCFS to preside over their own previous actions. It is indeed surprising that such procedures prevailed and reflects the weakness of procedural propriety.

So how is the principle of transparency embedded in the Act translated to procedure? This article looks at some of them.

## **1. Science preminent to Interests**

All members of the Scientific Committee and Panels are appointed for their expertise and that only scientific opinions emerge from discussions. In an ideal world, science is objective and leads to sound, ethical and knowledge based decision making. What makes science controversial is when data is interpreted towards a

predetermined point of view, consciously or otherwise. Bias enters decision making when conflicts of interest prevail. Interests arise from personal, professional or financial relationships with decision making of the subject under discussion. Some of them are:

- Personal interests where a member receives financial benefit from fee paid work, consultancies, shareholdings, memberships or affiliations to organizations with interests relevant to the work or subject matter of the Committee or Panel.
- Non personal interests where members receive payment which benefits a department for which the member is responsible but is not received by the member personally; examples are fellowships, grants etc which can be related directly to the work of the committee.

A conflict of interest should not be confused with a conflict of duty where a member may perform a public duty while holding a private one both being related. Conflict of duty is acceptable especially where the holding of the public position arises from the special knowledge or expertise that the member brings to enable good science.

To maintain the transparency of the process members are expected to bring to notice any circumstances that may be raised as contributory to a biased or prejudiced outcome. Such disclosures must be made at the first available opportunity to an appropriate senior officer of the Authority or the Chairperson of the Panel/Committee. All constituted bodies of the Authority are required to declare annually and prior to meetings the absence or presence of a conflict and this practice has been implemented by the Authority thus enabling one of the elements of transparency.

## **2. Risk Assessment Precedes Regulation:**

The Food Authority, while framing regulations or specifying standards under the Act, shall “undertake risk assessment based on the available scientific evidence and in an independent, objective and transparent manner”.

When regulatory action is initiated, the regulator must provide a meaningful justification for an action, explain why suggested alternative actions are less desirable in terms of the statutory mandate, and respond to criticisms of its action by those who disagree with it. It requires that the assessment process is deliberate and not a presumption of causes or extrapolation to a future event.

In order to bring public participation and thereby consumer confidence in the Authority, scientific opinions are required to be published immediately they are adopted by the Scientific Committee or the Scientific Panel.

## **3. Constituted Bodies and Defined Tasks**

When constituting a group under the Act specific conditions are to be followed in terms of scope, constitution and outputs. Of special mention are the Food Authority [22 members] the Scientific Committee [14 members] and the Scientific Panels [12-15 members]. How is transparency evident in the constitution, scope and role?

Roles of the constituted bodies are to be functionally separate so that member’s performance is the expertise they are chosen for. Specifically the Scientific Committee and Panels shall be responsible for providing scientific opinions while the Food Authority alone will engage in risk assessment. This functional separation will ensure that persons or groups do not sit in judgment over their own actions, thereby removing inherent bias from the system.

Secondly the creation of working groups under the Act is formed only under the Scientific Committee or Panels. In case where there is need for competencies outside the established Panels, the Authority shall create such working groups to provide scientific opinions. There is no provision for creation of any extraneous expert groups as it is deemed that this function will be served by the scientific complement within the Scientific Committee or Panels. Such detailed rules in the Act on the formation of constituted bodies will reduce overlap or concurrent influence by parallel groups. There may be occasions where “shadow experts” are called to prepare assessments. For the sake of transparency and conflict of interest issues, such experts should be clearly identified in the reports or documents that may be presented for consideration.

Thirdly the Food Authority should ensure that working procedures and scope of the Panels are well defined; otherwise there is a tendency for Panels to stray into other regulatory areas through the practice of ‘self tasking’. The Food Authority should preemptively identify and resolve in a timely and forthright manner whenever disagreements on the scope of work arise between Panels. The self-tasking process that invades or strays into another Panel’s regulatory turf is particularly difficult for any industry to deal with since it literally can come out of the blue.

#### **4. Public Participation:**

The underlying purpose for transparent process is to give the public an early and meaningful opportunity to participate in the development of regulations. The Act requires the Authority to consider a variety of ways to provide this opportunity including (1) holding public hearings (2) inviting industry and consumer groups to its deliberations in the Scientific Committee and Panels (3) publishing scientific opinions as soon as they are adopted, including minority (4) the information on which opinions are based bodies, etc. The stated purpose of this and other requirements is to maximize consultation and the resolution of potential issues at an early stage rather than after the regulation is finalized for notification.

#### **5. Role of the Secretariat:**

The primary function of the secretariat is to support the Committee or Panels – it does not engage in rulemaking, but may advise the Committee and Panels on processes and procedures under the Act. The secretariat is also expected to provide technical support by assembling, analyzing and recording conclusions. It should do so in a manner that reveals a clear audit trail showing how the committee or panels reached their decisions without introducing any bias while preparing papers or reporting deliberations.

All participants other than members of the Panel, including Secretariat personnel, observers, and advisers should respect the independence of the Committee and Panels.

#### **6. Observers and Public Hearing:**

The Act provides for interested parties to be invited at technical hearing to present their views and discuss with scientific experts. The hearing is intended to present scientific evidence that will help develop the scientific opinion. This is particularly required where associations or other professional groups may have significant data that may be of use to the Committee or Panel.

Observers may also be invited or selected upon application to observe the procedures of risk assessment and scientific discussions and the manner in which these are being conducted and provide inputs aimed at improving the objectiveness and transparency of the procedures.

Transparency is a process. As with any democratic process, stakeholder participation with self correcting mechanisms is paramount to maintaining the system in a healthy condition and faithful to the tenets of the Act. There should be collective intolerance to individual, lobbyist or interested party interferences or those seeking deviations in the legitimate processes for short term or selfish gains.

Whenever members believe the committee's or panel's method of working is not rigorous enough they have the right to ask and put on record their observations. All members and the secretariat should regard it as part of their role to examine and challenge if necessary the assumptions on which scientific advice are formulated and ask for explanations of any scientific terms and concepts which are not clear.

If hitherto we do not find a predictable and fair rulemaking process – it would not be for want of wisdom or foresight of the founding members that made the Act.



## Boosting Nutrient Profiles

With consumers become more aware of nutrition through labelling and regulators encouraging giving information about nutrients, product designers are looking for increasing range of nutrient-boosting ingredients and ways to reduce calories, fat, cholesterol and sodium.

### Prominently Protein

Protein is useful in health but protein choice can affect texture, flavour, water binding or solubility. Choice may also depend on specific application. Soy proteins have 1.00 on PDCAAS scale containing all essential amino acids. While it is nutritionally comparable to egg, milk and fish, it is most cost-effective. Also it is the only protein having health claim when levels are 6.25g soy protein per serving with product being low fat and meeting general health-claim requirements, one can claim that reduces cardiovascular disease risk.

In beverages, the pH of the product determines the choice of soy protein isolate. It will also depend on whether the product is powdered or RTD. Over 25 isolates are available each with unique functional characteristics for a particular application. For acid beverages, the protein will be stabilised with pectin, for protein should provide minimal viscosity changes in the beverage.

Soy flour, concentrate etc. can add protein to baked goods, meat analogues, snacks and meal-replacement bars. As protein content increases soy flavour decreases. Isolate with 90% protein gives less flavour than flour with 50% protein. Use of glutamine-rich, wheat derived protein hydrolysate with 79% protein can also be used to boost protein in RTD beverages, instant mixes, powders and bars at levels from 1 to 4%. Higher usage level is recommended for post-exercise recovery as glutamine plays significant role in it.

While using proteins, interactions with other ingredients need consideration. Protein interactions may be beneficial for example in viscosity so less thickener is needed. However, if the goal is just increased protein content, then casein may be useful as it is the most stable of milk proteins and caseinates are soluble.

Milk protein concentrate is available with 70% protein which is stable to heat and shear processing and suited to neutral pH systems. An instantised milk protein with 87% protein is also available for use in a range of products like beverages, soft bars and shakes.

Whey proteins can tolerate wide pH range from acidic to neutral making them suitable for acidic applications like yogurts, drinkable yogurts and sports beverages. In many foods, whey protein can provide valuable functional properties like emulsification, moisture binding, gelling and aeration. Whey proteins are subject to browning in baked goods. As whey proteins are often modified to improve their functionality, it is better to consult supplier. Whey protein concentrates have 34 to 78.5% protein and can be added to protein bars, baked goods, dairy and frozen desserts, soups, sauces and dressings. Whey protein isolates have 94% protein and can fortify juices, sports beverages and nutrition bars.

### Trimming the Fat

Not all proteins are used just to increase protein content. Functional whey protein can enhance mouthfeel and creaminess in foods by creating fatlike mouthfeel and texture while increasing very little fat. Depending on

application, usage levels range from 1 to 2% and can replace fats, oils and eggs in bakery products. It helps make lower-fat product retaining moisture and juiciness in meat products.

Another way of reducing fat is using dried plums which can boost fibre and potassium levels while fat and calories are reduced. There are examples of this in digestive-related products which improve due to sorbitol and fibre in them. In reduced carbohydrate baked goods, use of dried plums yields sweetness due to sorbitol without contributing to carbohydrates. As dried plums contain virtually no sucrose, they are also used in low GI formulations. Calories reduction is added benefit as dried plum add only 2 calories per 100 g due to virtual absence of sucrose due to conversion of small amount of sucrose to glucose and fructose during drying and because of presence of 15 to 17% natural sorbitol in dried plums adding sweetness with minimal calories.

### **Boosting Fibre**

US FDA recommends consumption of over 25 g fibre in 2000 calorie daily diet. Incorporating vegetables can add fibre while affecting positively the ingredients list. Label stating “provides full serving of vegetables” helps consumers select products that fit their nutrition needs. One company offers frozen vegetables with reduced water, which deliver one vegetable serving with 33% less vegetables compared to IQF. Controlled moisture also helps reduce problems of weeping in applications especially for eggs and dough-enrobed products. Reduced moisture peppers and tomatoes will contribute 2.7 to 3.2g fibre per 100g.

Whole-grain ingredients can also impact fibre declaration but whole grains contain insoluble fibre and excepting oats and barley, contribute only small amounts of soluble fibre. Whole grain barley has highest fibre in whole grains with 3 times total and soluble fibre of oats. It is available as flakes and ultra-fine flour and can be used in bars, cereals, pasta, meat emulsions and many bakery products. One preparation of whole-wheat flour provides 4 times the fibre of refined yet delivers texture, taste and appearance of refined flour and can be used for partial or complete replacement of refined flour.

Formulators may need to use additional water to compensate for moisture absorbed by added fibre in whole-grain flours. It may also be necessary to add gluten or alter dough conditioner to carry added fibre and maximise volume. Care should also be taken not to overmix which might damage gluten structure leading to lower volumes.

Direct fortification may be done with various plant-based or cellulose fibres. Cellulose fibre is most cost effective and it is the whitest, contributes insoluble fibre which reduces calories as it adds bulk but no calories while soluble fibre may add some calories. Water-binding capacity of fibre is important when increasing fibre content. Prebiotic fibre like inulin or fructo-oligosaccharide (FOS) adds soluble fibre with digestive benefit of enhancing naturally occurring beneficial bacteria. These fibres do not absorb as much water as others. Also FOS is compatible with high-intensity sweeteners.

Developers may also consider non-viscous soluble fibre solution like digestion-resistant maltodextrin, which contributes only 1.6 calories per gram and is useful in products already containing some fibre that could be boosted to make claim of “good source of fibre” or “excellent source of fibre” without making other changes in formulation. It is easy to apply and can be added at any point of process as it is stable to high heat and acid.

### **Building Bones**

Recent knowledge about bone health and immunity has spurred interest in products with vitamin D fortification. Vitamin D is added to many foods and beverages to make them good (10%) to excellent (20 to 25%) source of Daily Value (400 IU). Foods where vitamin D fortification is permissible include juices and juice drinks with appropriate addition of calcium, processed cheese, hot cereal and nutritional bars that are positioned as meal replacements or for special dietary use. FDA allows claim of calcium or calcium with vitamin D with reduced risk of osteoporosis if food contains at least 200mg digestible calcium and at least 80 IU vitamin D to qualify for this claim.

A patented mixture of calcium acid pyrophosphate and monocalcium phosphate (anhydrous) designed to replace sodium acid pyrophosphate to cut sodium levels, provides a calcium boost in baked goods. Proper leavening choice helps formulators prepare healthier products. The ingredient reduces sodium and significantly increases calcium to 10 to 25% of Daily Value. In muffins calcium will elevate from 1% to 10% allowing “good source of calcium” claim. In biscuits or pancakes calcium can be increased to 25% RDA. The daily reference amount of calcium is 1,000 mg.

Formulators should not confuse solubility with bioavailability. Some inorganic calcium sources are sparingly soluble in water but they are just as bioavailable as water-soluble ones once they reach the gut which is acidic. Additionally, some inorganic sources like tricalcium phosphate (TCP) have a much higher calcium concentration making them more cost effective. Also, TCP not only adds calcium but also phosphorus which is also necessary for good bone health. With high calcium content, TCP provides up to 4 times calcium than other alternatives.

Calcium fortification is very common now and it is no longer only focused on meal-replacement beverages or supplements. Calcium fortification is found in baked goods, cereals, snack products, dairy products, beverages, condiments and candies.

### **Label Watch**

FDA wants to educate consumers about how to use Nutrition Facts panel. Also it is analysing health claims and Front of Package (FOP) Labelling especially when related to nutrition. In guidance issued to industry in October 2009 it says, “FDA’s research has found that, with FOP labelling, people are less likely to check the Nutrition Facts label.... The agency is currently analysing FOP labels that appear to be misleading. The agency is also looking for symbols that either expressly or by implication are nutrient content claims.”

### **Miscellaneous Fortificants**

Many essential nutrients like vitamins A, C, D also mineral iron etc. are available for in powdered forms suitable for application in food and beverage products. The specific form will depend on application, processing conditions, other factors like taste, colour and possible interactions with other ingredients. Consideration is also given to packaging type and storage conditions like dry shelf, refrigerated or frozen and shelf life.

Adding multiple micronutrients becomes easier with nutrient premix when nutrients are delivered in powdered form for direct batch addition suitable for finished product’s shelf life. The amounts to be added depend on product formulation. A dairy based beverage with 10% RDI of vitamins A, C, D and iron may contain anywhere from 35 to 120 mg per serving of premix depending on what nutritional forms are used. Vitamin A can also be added as beta-carotene that also offers antioxidant and colour benefits.

Adding nutrients at good (10%) to excellent (20 to 25%) source is a great, responsible way of contributing to recommended daily intakes of nutrients in processed foods and beverages.

**Condensed from article by Cindy Hazen in Food Product Design December 18, 2009**



## Research in Food & Nutrition

### Remember Magnesium if You Want to Remember

Those who live in industrialized countries have easy access to healthy food and nutritional supplements, but magnesium deficiencies are still common. That's a problem because new research from Tel Aviv University suggests that magnesium, a key nutrient for the functioning of memory, may be even more critical than previously thought for the neurons of children and healthy brain cells in adults.

Begun at MIT, the research started as a part of a post-doctoral project by Dr. Inna Slutsky of TAU's Sackler School of Medicine and evolved to become a multi-center experiment focused on a new magnesium supplement, magnesium-L-threonate (MgT), that effectively crosses the blood-brain barrier to inhibit calcium flux in brain neurons. Published recently in the scientific journal *Neuron*, the new study found that the synthetic magnesium compound works on both young and aging animals to enhance memory or prevent its impairment. The research was carried out over a five-year period and has significant implications for the use of over-the-counter magnesium supplements.

In the study, two groups of rats ate normal diets containing a healthy amount of magnesium from natural sources. The first group was given a supplement of MgT, while the control group had only its regular diet. Behavioral tests showed that cognitive functioning improved in the rats in the first group and also demonstrated an increase of synapses in the brain — connective nerve endings that carry memories in the form of electrical impulses from one part of the brain to the other.

Bad news for today's magnesium supplements

"We are really pleased with the positive results of our studies," says Dr. Slutsky. "But on the negative side, we've also been able to show that today's over-the-counter magnesium supplements don't really work. They do not get into the brain. We've developed a promising new compound which has now taken the first important step towards clinical trials by Prof. Guosong Liu, Director of the Center for Learning and Memory at Tsinghua University and cofounder of Magceutics company," she says.

While the effects were not immediate, the researchers in the study — from Tel Aviv University, MIT, the University of Toronto, and Tsinghua University in Beijing -- were able to assess that the new compound shows improved permeability of the blood-brain barrier. After two weeks of oral administration of the compound in mice, magnesium levels in the cerebral-spinal fluid increased.

Toward a more "plastic" brain

"It seems counterintuitive to use magnesium for memory improvement because magnesium is a natural blocker of the NMDA receptor, a molecule critical for memory function. But our compound blocks the receptor only during background neuronal activity. As a result, it enhances the brain's 'plasticity' and increases the number of brain synapses that can be switched on," says Dr. Slutsky. "Our results suggest that commercially available magnesium supplements are not effective in boosting magnesium in cerebro-spinal fluid," she says. "Magnesium is the fourth most abundant mineral in the body, but today half of all people in industrialized countries are living with magnesium deficiencies that may generally impair human health, including cognitive functioning."

Before the new compound becomes commercially available, Dr. Slutsky advises people to get their magnesium the old-fashioned way -- by eating lots of green leaves, broccoli, almonds, cashews and fruit. The effects on memory won't appear overnight, she cautions, but with this persistent change in diet, memory should improve, and the effects of dementia and other cognitive impairment diseases related to aging may be considerably delayed.

Source: Nutrition Horizon 23 Feb 2010

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### **Preliminary Data Show Possible Health Benefits of Eating Chocolate**

Giving chocolates to your Valentine on February 14th may help lower their risk of stroke based on a preliminary study from researchers at St. Michael's Hospital. The study, which is being presented at the American Academy of Neurology in April, also found that eating chocolate may lower the risk of death after suffering a stroke. "Though more research is needed to determine whether chocolate is the contributing factor to lowering stroke risk, it is rich in anti-oxidants and that may have a protective effect against stroke," explains Dr. Gustavo Saposnik, a neurologist at St. Michael's Hospital.

Chocolate is rich in antioxidants called flavonoids which may help lower the risk of strokes.

Authored by Sarah Sahib, the research analyzed three studies involving chocolate consumption and stroke risk. One showed there was no association between flavonoid intake and risk of stroke or death. In contrast, a second study found an association with stroke for chocolate consumption once a week as opposed to none per week. The third study suggested flavonoid intake from eating chocolate weekly lowered death caused by a stroke. "We are continuing to investigate the correlation between chocolate and the risk of stroke," says Dr. Saposnik. "The preliminary data is interesting but we need to determine whether consumption truly lowers the risk of a stroke or whether the benefit is biased based on those who are on average healthier than the general population when enrolling in a clinical trial."

Source: Nutrition Horizon 15 Feb 2010

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### **Clinical Study Shows Sustamine L-Alanyl-L-Glutamine Increases Performance in Endurance, Exercise and Activity**

A clinical study by Dr. Jay Hoffman, PhD, professor and chair of the Department of Health and Exercise Science at the College of New Jersey, has shown Sustamine L-Alanyl-L-Glutamine, increases performance in endurance exercise and activity. The study was published on February 3, 2010, in the Journal of the International Society of Sports Nutrition (JISSN), a peer-reviewed journal covering various aspects of sports nutrition, supplementation, exercise metabolism, and/or scientific policies related to sports nutrition.

The data published in the Journal of ISSN shows:

-Significant performance reduction occurred when exercising to exhaustion in subjects' hypohydrated to

2.5% of body mass.

-When subjects ingested the Sustamine supplement during the rehydration period the magnitude of performance reduction was significantly less compared to the dehydrated condition.

-Water alone did not appear to significantly off-set the performance reduction.

The study showed the efficacy of Sustamine L-Alanyl-L-Glutamine ingestion during Hydration Stress under intense exercise. The clinical study covered the ability of Sustamine L-Alanyl-L-Glutamine to enhance fluid regulation in healthy, active individuals in relation to both endurance and high intensity exercise. Further discussion focuses on the potential ergogenic benefit that Sustamine has under these exercise and hydration stresses. The role that this dipeptide has on the inflammatory, immune and recovery responses to these stresses was also examined.

Sustamine is the only GRAS (Generally Recognized As Safe) form of L-Alanyl-L-Glutamine for a variety of food, beverage and healthcare applications. It appears to increase electrolyte and fluid uptake across the intestines by increasing ion transport through an enhanced signaling pathway within the intestinal mucosal cells. Its implications for exercise are enhancement of fluid regulation during prolonged exercise in the heat, maintaining or enhancing performance during a hydration/heat stress, and enhancing recovery from exercise by modulating immune, inflammatory and oxidative stress responses to physical activity.

Sustamine, manufactured by Kyowa Hakko Bio Co. Ltd., is considered a "high-tech" amino acid dipeptide that promotes muscle rehydration, recovery and can be used as a source for energy refueling. Produced by a novel and cost effective patented fermentation technology, Sustamine L-Alanyl-L-Glutamine is available in powder form and is water-soluble into a clear solution. It is also odorless and tasteless.

Additional Sustamine highlights include:

1. Patent pending for improved endurance performance
2. Only stable form of glutamine for solutions or ready to drink beverages
3. Stable in beverages with broad pH ranges
4. Stable in beverages for over one year at room temperature

Source: Nutrition Horizon 12 Feb 2010

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### **Researchers Develop Dietary Formula that Maintains Youthful Function into Old Age**

Researchers at McMaster University have developed a cocktail of ingredients that forestalls major aspects of the aging process. The findings are published in the current issue of *Experimental Biology and Medicine*.

"As we all eventually learn, ageing diminishes our mind, fades our perception of the world and compromises our physical capacity," says David Rollo, associate professor of biology at McMaster.

"Declining physical activity—think of grandparents versus toddlers—is one of the most reliable expressions of ageing and is also a good indicator of obesity and general mortality risk."

The study found that a complex dietary supplement powerfully offsets this key symptom of ageing in old mice by increasing the activity of the cellular furnaces that supply energy—or mitochondria—and by

reducing emissions from these furnaces—or free radicals—that are thought to be the basic cause of ageing itself. Most of the primary causes of human mortality and decline are strongly correlated with age and free-radical processes, including heart disease, stroke, Type II diabetes, many cancers, neurodegenerative diseases, and inflammatory and autoimmune conditions. Successful intervention into the ageing process could consequently prevent or forestall all of these.

Using bagel bits soaked in the supplement to ensure consistent and accurate dosing, the formula maintained youthful levels of locomotor activity into old age whereas old mice that were not given the supplement showed a 50 per cent loss in daily movement, a similar dramatic loss in the activity of the cellular furnaces that make our energy, and declines in brain signaling chemicals relevant to locomotion. This builds on the team's findings that the supplement extends longevity, prevents cognitive declines, and protects mice from radiation.

Ingredients consists of items that were purchased in local stores selling vitamin and health supplements for people, including vitamins B1, C, D, E, acetylsalicylic acid, beta carotene, folic acid, garlic, ginger root, ginkgo biloba, ginseng, green tea extract, magnesium, melatonin, potassium, cod liver oil, and flax seed oil. Multiple ingredients were combined based on their ability to offset five mechanisms involved in ageing. For Rollo, the results go beyond simply prolonging the lifespan.

"For ageing humans maintaining zestful living into later years may provide greater social and economic benefits than simply extending years of likely decrepitude," he says. "This study obtained a truly remarkable extension of physical function in old mice, far greater than the respectable extension of longevity that we previous documented. This holds great promise for extending the quality of life of "health span" of humans." Development of new and hopefully more effective supplements is ongoing.

Source: Nutrition Horizon 12 Feb 2010

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### **Butter Leads to Lower Blood Fats than Olive Oil –Swedish Study**

High blood fat levels normally raise the cholesterol values in the blood, which in turn elevates the risk of atherosclerosis and heart attack. Now a new study from Lund University in Sweden shows that butter leads to considerably less elevation of blood fats after a meal compared with olive oil and a new type of canola and flaxseed oil. The difference was clear above all in men, whereas in women it was more marginal. The main explanation for the relatively low increase of blood fat levels with butter is that about 20 percent of the fat in butter consists of short and medium-length fatty acids. These are used directly as energy and therefore never affect the blood fat level to any great extent. Health care uses these fatty acids with patients who have difficulty taking up nutrition – in other words, they are good fatty acids.

“A further explanation, which we are speculating about, is that intestinal cells prefer to store butter fat rather than long-chain fatty acids from vegetable oils. However, butter leads to a slightly higher content of free fatty acids in the blood, which is a burden on the body,” explains Julia Svensson, a doctoral candidate in Biotechnology and Nutrition at Lund University. The greater difference in men is due to, among other things, hormones, the size of fat stores, and fundamental differences in metabolism between men and women, which was previously known. This situation complicates the testing of women, since they need to

be tested during the same period in the menstruation cycle each time in order to yield reliable results.

“The findings provide a more nuanced picture of various dietary fats. Olive oil has been studied very thoroughly, and its benefits are often extolled. The fact that butter raises blood cholesterol in the long term is well known, whereas its short-term effects are not as well investigated. Olive oil is good, to be sure, but our findings indicate that different food fats can have different advantages,” emphasizes Julia Svensson. “Finally, all fats have high energy content, and if you don’t burn what you ingest, your weight will go up, as will your risk of developing diseases in the long run,” she reminds us.

Here’s how the test was done: 19 women and 28 men participated in the study. Each individual ate three test meals containing canola-flaxseed oil, butter, or olive oil. The day before the test they had to fast after 9 p.m. The following morning a fasting blood sample was drawn to check their health status and all blood fats. The test meal consisted of the test fat mixed into hot cream of wheat, 1.5-% milk, blackberry jam, and a slice of bread with ham. The meal contained 35 g of test fat and about 810 Kcal. Blood samples were then drawn 1, 3, 5, and 7 h after the meal, and all blood fats were analyzed. The participants fasted during the day.

Source: Nutrition Horizon 10 Feb 2010

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### **Low-Carb Diet May Lead to Similar Benefits as Weight Loss Medication**

A low-carbohydrate diet appears to be associated with substantial weight loss similar to that produced by a combination of the weight-loss drug orlistat and a low-fat diet, but may be more effective in reducing blood pressure. William S. Yancy Jr., M.D., M.H.S., and colleagues at the Department of Veterans Affairs Medical Center and Duke University Medical Center, Durham, N.C., examined body weight, metabolic and adverse effects in obese or overweight outpatients ages 18 to 70 who were randomly assigned to one therapy or the other for 48 weeks. Of the participants, 57 in the low-carb diet group and 65 in the orlistat and low-fat diet group completed the study. Weight loss was similar for both groups (an average of 8.5 percent to 9.5 percent of body weight), but the low-carb diet resulted in greater reductions to systolic (top number) and diastolic (bottom number) blood pressures. High-density lipoprotein cholesterol and triglyceride levels improved similarly in both groups. "In conclusion, the low-carbohydrate ketogenic diet and the orlistat plus low-fat diet were equally effective for weight loss and several cardiovascular disease risk factors, although the low-carbohydrate diet was more effective for lowering blood pressure," the authors conclude. "Efforts should be made to incorporate similarly intensive weight loss programs into medical practice."

Source: Nutrition Horizon 5 Feb 2010

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### **Cholesterol's Link to Heart Disease Gets Clearer and More Complicated**

By considering molecular-level events on a broader scale, researchers now have a clearer, if more complicated, picture of how one class of immune cells goes wrong when loaded with cholesterol. The findings reported in the February 3rd issue of *Cell Metabolism*, a Cell Press publication, show that, when it comes to the development of atherosclerosis and heart disease, it's not about any one bad actor—it's about a network gone awry. The new findings also highlight a pretty remarkable thing, Heinecke says: "Despite 30

years of study, we still don't know how cholesterol causes heart disease." But, with the new findings, scientists are getting closer.

Earlier studies had shown that heart disease is about more than just high LDL ("bad") cholesterol. Cells known as macrophages also play a critical role. Macrophages are part of the innate immune system that typically gobble up pathogens and clear away dead cells. But they also take up and degrade cholesterol derivatives. When they get overloaded with those lipoproteins, they take on a foamy appearance under the microscope to become what scientists aptly refer to as foam cells. Those foam cells are the ones that seem to have critical importance in the development of atherosclerosis. People had typically thought about this problem in terms of linear pathways, Heinecke explained. In essence, macrophages end up with too much cholesterol going in and not enough coming out. The macrophages get overwhelmed and trapped in the artery wall, and somehow plaques form as a result.

But the new results show that it isn't really about simple paths in and out; rather, there is an integrated network of macrophage proteins involved. When that network gets disrupted, as it does when too much cholesterol comes in, atherosclerosis forms. "It's definitely a different way to think about what is going on," Heinecke says.

Heinecke's group applied sophisticated technologies and statistical tools to get a global view of what happens to macrophage proteins when they turn into foam cells. Their analysis revealed what they call a macrophage sterol-responsive network (MSRN), including proteins already known to work together. Most of them are also found in one place, within microvesicles outside the macrophage cells. The researchers further found that drugs used to lower cholesterol and inflammation, including statins and rosiglitazone, restore the macrophage network to almost normal, even in mice that don't have the LDL receptors that are considered the usual targets of the drugs. On the other hand, mice lacking single proteins in the network, including APOE and so-called complement proteins of the immune system, have macrophages that look like foam cells even when they aren't loaded with cholesterol.

The findings suggest that anything that sends the macrophage network off kilter could promote heart disease, Heinecke said. They also change the way researchers should think about how heart disease is treated. The key may be how to best restore the function of an integrated network rather than to lower cholesterol levels or ratchet individual proteins up or down. "We propose that the atherogenic actions of cholesterol-loaded macrophages are an emergent property that results when the normal balance of MSRN proteins in microvesicles is perturbed," the researchers conclude. "We further suggest that certain dietary factors or genetic variations can disturb this network, thereby promoting vascular disease. By integrating mouse and human data, we hope to better understand the MSRN's role in foam cell formation, with the long-term goal of identifying therapeutic interventions for targeting networks rather than individual proteins."

Source: Nutrition Horizon 3 Feb 2010

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## **What You Eat After Exercise Matters**

Many of the health benefits of aerobic exercise are due to the most recent exercise session (rather than weeks, months and even years of exercise training), and the nature of these benefits can be greatly affected by the food we eat afterwards, according to a study published in the Journal of Applied Physiology (<http://jap.physiology.org>). "Differences in what you eat after exercise produce different effects on the body's metabolism," said the study's senior author, Jeffrey F. Horowitz of the University of Michigan. This study follows up on several previous studies that demonstrate that many health benefits of exercise are transient: one exercise session produces benefits to the body that taper off, generally within hours or a few days.

"Many of the improvements in metabolic health associated with exercise stem largely from the most recent session of exercise, rather than from an increase in 'fitness' per se," Dr. Horowitz said. "But exercise doesn't occur in a vacuum, and it is very important to look at both the effects of exercise and what you're eating after exercise."

Specifically, the study found that exercise enhanced insulin sensitivity, particularly when meals eaten after the exercise session contained relatively low carbohydrate content. Enhanced insulin sensitivity means that it is easier for the body to take up sugar from the blood stream into tissues like muscles, where it can be stored or used as fuel. Impaired insulin sensitivity (i.e., "insulin resistance") is a hallmark of Type II diabetes, as well as being a major risk factor for other chronic diseases, such as heart disease. Interestingly, when the research subjects in this study ate relatively low-calorie meals after exercise, this did not improve insulin sensitivity any more than when they ate enough calories to match what they expended during exercise. This suggests that you don't have to starve yourself after exercise to still reap some of the important health benefits.

The paper, "Energy deficit after exercise augments lipid mobilization but does not contribute to the exercise-induced increase in insulin sensitivity," appears in the online edition of the journal. The authors are Sean A. Newsom, Simon Schenk, Kristin M. Thomas, Matthew P. Harber, Nicolas D. Knuth, Haila Goldenberg and Dr. Horowitz. All are at the University of Michigan. The American Physiological Society (APS: [www.the-aps.org](http://www.the-aps.org)) published the research.

The study included nine healthy sedentary men, all around 28-30 years old. They spent four separate sessions in the Michigan Clinical Research Unit in the University of Michigan Hospital. Each session lasted for approximately 29 hours. They fasted overnight before attending each session, which began in the morning.

The four hospital visits differed primarily by the meals eaten after exercise. The following describes the four different visits:

1. They did not exercise and ate meals to match their daily calorie expenditure. This was the control trial.
2. They exercised for approximately 90 min at moderate intensity, and then ate meals that matched their caloric expenditure. The carbohydrate, fat, and protein content of these meals were also appropriately balanced to match their expenditure.
3. They exercised for approximately 90 min at moderate intensity and then ate meals with relatively low carbohydrate content, but they ate enough total calories to match their calorie expenditure. This reduced-carbohydrate meal contained about 200 grams of carbohydrate, less than half the carbohydrate content of the balanced meal.

4. They exercised for approximately 90 min at moderate intensity and then ate relatively low-calorie meals, that is, meals that provided less energy than was expended (about one-third fewer calories than the meals in the other two exercise trials). These meals contained a relatively high carbohydrate content to replace the carbohydrate "burned" during exercise.

The exercise was performed on a stationary bicycle and a treadmill. The order in which the participants did the trials was randomized. In the three exercise trials, there was a trend for an increase in insulin sensitivity. However, when participants ate less carbohydrate after exercise, this enhanced insulin sensitivity significantly more. Although weight loss is important for improving metabolic health in overweight and obese people, these results suggests that people can still reap some important health benefits from exercise without undereating or losing weight, Dr. Horowitz said. The study also reinforces the growing body of evidence that each exercise session can affect the body's physiology and also that differences in what you eat after exercise can produce different physiological changes.

Source: Nutrition Horizon 29 Jan 2010

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### **Antioxidants Aren't Always Beneficial to Your Health and May Impair Muscle Function, Study Claims**

Antioxidants increasingly have been praised for their benefits against disease and aging, but recent studies at Kansas State University show that they also can cause harm. Researchers in K-State's Cardiorespiratory Exercise Laboratory have been studying how to improve oxygen delivery to the skeletal muscle during physical activity by using antioxidants, which are nutrients in foods that can prevent or slow the oxidative damage to the body. Their findings show that sometimes antioxidants can impair muscle function.

"Antioxidant is one of those buzz words right now," said Steven Copp, a doctoral student in anatomy and physiology from Manhattan and a researcher in the lab. "Walking around grocery stores you see things advertised that are loaded with antioxidants. I think what a lot of people don't realize is that the antioxidant and pro-oxidant balance is really delicate. One of the things we've seen in our research is that you can't just give a larger dose of antioxidants and presume that there will be some sort of beneficial effect. In fact, you can actually make a problem worse."

David C. Poole and Timothy I. Musch, K-State professors from both the departments of kinesiology and anatomy and physiology, direct the Cardiorespiratory Exercise Laboratory, located in the College of Veterinary Medicine complex. Researchers in the lab study the physiology of physical activity in health and disease through animal models. Copp and Daniel Hirai, an anatomy and physiology doctoral student from Manhattan working in the lab, have conducted various studies associated with how muscles control blood flow and the effects of different doses and types of antioxidants. Abnormalities in the circulatory system, such as those that result from aging or a disease like chronic heart failure, can impair oxygen delivery to the skeletal muscle and increase fatigability during physical activity, Copp said. The researchers are studying the effects antioxidants could have in the process.

"If you have a person trying to recover from a heart attack and you put them in cardiac rehab, when they walk on a treadmill they might say it's difficult," Poole said. "Their muscles get sore and stiff. We try to understand why the blood cells aren't flowing properly and why they can't get oxygen to the muscles, as

happens in healthy individuals." Copp said there is a potential for antioxidants to reverse or partially reverse some of those changes that result from aging or disease. However, K-State's studies have shown that some of the oxidants in our body, such as hydrogen peroxide, are helpful to increase blood flow.

"We're now learning that if antioxidant therapy takes away hydrogen peroxide – or other naturally occurring vasodilators, which are compounds that help open blood vessels – you impair the body's ability to deliver oxygen to the muscle so that it doesn't work properly," Poole said. Poole said antioxidants are largely thought to produce better health, but their studies have shown that antioxidants can actually suppress key signaling mechanisms that are necessary for muscle to function effectively. "It's really a cautionary note that before we start recommending people get more antioxidants, we need to understand more about how they function in physiological systems and circumstances like exercise," Poole said.

Hirai said the researchers will continue to explore antioxidants and the effects of exercise training. Their studies are looking at how these can help individuals combat the decreased mobility and muscle function that comes with advancing age and diseases like heart failure. "The research we do here is very mechanistic in nature, and down the road our aim is to take our findings and make recommendations for diseased and aging populations," Copp said.

From: SoyTech eNews February 4, 2010

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### **Cooling Inflammation for Healthier Arteries**

Agricultural Research Service (ARS)-funded scientists have reported new reasons for choosing "heart-healthy" oats at the grocery store. Nutritionist Mohsen Meydani, director of the Vascular Biology Laboratory at the Jean Mayer USDA Human

Nutrition Research Center on Aging at Tufts University in Boston, Mass., led the research on the oat compounds, called avenanthramides. Meydani previously has shown that phenolic antioxidants in oats obstruct the ability of blood cells to stick to artery walls. Chronic inflammation inside the arterial wall is part of the process that eventually leads to a disorder known as atherosclerosis. Meydani and colleagues have reported findings that suggest the avenanthramides of oats decrease the expression of inflammatory molecules. The study showed that forms of avenanthramides possess potential anti-inflammatory properties through inhibiting factors that are linked with activating proinflammatory cytokines.

Cytokines are small proteins released by cells while seeking to protect and repair tissue. Some trigger inflammation, for example, while responding to infection. Inhibiting inflammation through diet, drugs, or key nutrients is considered to be of great benefit in preventing atherosclerosis. Details of this study can be found in the scientific journal *Free Radical Biology & Medicine*. The study provides additional indications of the potential health benefit of oat consumption in the prevention of coronary heart disease beyond its known effect through lowering blood cholesterol.

Science Daily (Feb. 19, 2010)

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### **Dietary Omega 3 Fatty Acids May Help Protect Against Periodontal Disease: New Japanese Study**

Periodontal disease can lead to the destruction of the supporting bone around natural teeth. Untreated, these diseases can lead to alveolar bone loss and tooth loss. A study published in the journal *Nutrition* has

investigated the link between the dietary omega ( $\omega$ -3) fatty acids, docosahexaenoic acid (DHA) and eicosapentaenoic acid (EPA), and periodontal disease in the elderly.

Fish oil and dietary fish are high in  $\omega$ -3 fatty acids ( $\omega$ -3 FAs) mainly as DHA and EPA. Previous studies have found that DHA has anti-inflammatory properties, which have been associated with prevention and treatment of inflammatory disease. Iwasaki et al., the authors of this current study, state that one of the mechanisms whereby EPA lowers inflammation is by reducing the amount of arachidonic acid available for metabolism. Nutrient intake and changes in food preference have been associated with tooth loss. Previous research has found that those who consumed less seafood had fewer teeth compared to those who ate more.

The study, by Japanese researchers, recruited 55 participants (26 men and 29 women) aged 74 years from a longitudinal interdisciplinary study of ageing. The participants were asked to weigh and record foods consumed over three consecutive days. Nutrient intake was recorded using Standard Food Composition Tables including total energy intake, mean dietary DHA and EPA intakes per day. At baseline, and once a year for five years, dental examination was carried out for periodontal conditions. Iwasaki et al. performed various statistical analyses including estimating the differences of height, weight, BMI and smoking and number of teeth present and DHA and EPA intake.

The average dietary daily intakes of EPA and DHA were 947 and 635 milligrams respectively. The researchers found that men consumed more total energy, DHA and EPA than women. It was also observed that the average number of dental disease events was 1.5 times higher in people with low DHA levels compared to those with the highest average levels of DHA. Those participants that had the lowest tertile of EPA intake had significantly fewer teeth than those with the highest tertile of EPA intake.

In discussion Iwasaki et al. state that as socio-behavioural factors may have influenced the result, a homogeneous group restricted to the age of 74 years was selected to exclude the influence of race and age variation in the results. These showed that there was no significant difference in general health and dental conditions between the screened population and the participants in the study. The researchers indicate that the association between periodontal disease and  $\omega$ -3 FAs was probably explained by the systemic anti-inflammatory effect of  $\omega$ -3 FAs. It seemed likely that eating fish may protect against periodontal disease in the elderly since certain fish are rich in  $\omega$ -3 FAs. The study also suggested that periodontal disease has been implicated as a risk factor for chronic diseases such as cardiovascular disease, and this may be because the condition contributes to the overall inflammatory burden of an individual.

In conclusion Iwasaki et al. reiterate the point that their study suggests there may be an inverse, independent relation of the dietary DHA intake to the progression of periodontal disease in older people.

SoyTech eNews February 4, 2010

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### **Eating Chocolate Lowers Stroke Risk**

People who eat chocolate may have a lower risk of having a stroke and a lower risk of death after suffering a stroke, according to two studies presented at the American Academy of Neurology's 62nd Annual Meeting in Toronto April 10-17, 2010. The first study found that 44,489 people who ate one serving of chocolate per week were 22 percent less likely to have a stroke than people who ate no chocolate. The second study found that 1,169 people who ate 50 grams of chocolate once a week were 46 percent less likely to die following a stroke than people who did not eat chocolate.

Food Product Design February 12, 2010

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### **Eating Oats May Reduce Arterial Inflammation: Tufts University Research**

Nutritionist Mohsen Meydani, director of the Vascular Biology Laboratory at the Jean Mayer USDA Human Nutrition Research Center on Aging at Tufts University in Boston, Mass., led the research on the oat compounds, called avenanthramides. Meydani previously has shown that phenolic antioxidants in oats obstruct the ability of blood cells to stick to artery walls.

Chronic inflammation inside the arterial wall is part of the process that eventually leads to a disorder known as atherosclerosis. Meydani and colleagues have reported findings that suggest the avenanthramides of oats decrease the expression of inflammatory molecules. The study showed that forms of avenanthramides possess potential anti-inflammatory properties through inhibiting factors that are linked with activating proinflammatory cytokines. Cytokines are small proteins released by cells while seeking to protect and repair tissue. Some trigger inflammation, for example, while responding to infection. Inhibiting inflammation through diet, drugs, or key nutrients is considered to be of great benefit in preventing atherosclerosis. Details of this study can be found in the scientific journal *Free Radical Biology & Medicine*. The study provides additional indications of the potential health benefit of oat consumption in the prevention of coronary heart disease beyond its known effect through lowering blood cholesterol.

By Rosalie Marion Bliss in SoyTech eNews February 20, 2010

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### **Oats Thwart Atherosclerosis**

WASHINGTON—Agricultural Research Service (ARS) scientists have discovered certain compounds in oats hinder the ability of blood cells to stick to artery walls, further indicating the same compounds hold promise to provide other health benefits. Researchers previously showed that phenolic antioxidants in oats actually obstruct the ability of blood cells to stick to artery walls. Compounds, called “avenanthramides,” from oats significantly suppress the adhesive molecules that glue blood cells to artery walls. Researchers now are working on determining the anti-inflammatory and other effects of oat avenanthramides and their derivatives using several animal models and colon cancer cell lines for testing purposes.

A 2006 study demonstrated for the first time that avenanthramide-c arrests smooth muscle cell (SMC) proliferation, which is known to participate in arterial lesion development. Unhealthy SMC growth contributes to the development of atherosclerosis, which can eventually lead to heart attack. Vascular endothelial cells, and to a lesser degree SMCs, also are involved in the synthesis of heart-healthy nitric oxide. The researchers found that avenanthramide-c treatment of human SMC significantly and dose-dependently increased nitric oxide production in both SMC and endothelial cells. The results suggest that the avenanthramides of oats may contribute to the relaxation of arteries and the prevention of atherosclerosis by increasing nitric oxide production and inhibiting SMC proliferation. Earlier studies conducted by the researchers also showed consumption of oats reduces blood pressure.

Another study suggested avenanthramides decrease expression of inflammatory molecules. Because chronic inflammation of the arterial wall is part of the process that eventually causes disease, inhibition of inflammation through diet, drugs or key nutrients is considered to be of great benefit in preventing

atherosclerosis. Findings from a more recent study suggest consuming oats and oat bran may reduce the risk of colon cancer, not only through high fiber content, but also through avenanthramides that slow or discourage proliferation of colon cancer cells.

Food Product Design February 16, 2010

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### **Total Fat, Trans Fat Linked to Higher Incidence of Ischemic Stroke**

Post-menopausal women who reported consuming the most daily dietary fat had a 40 percent higher incidence of clot-caused strokes compared to women who ate the least amount, according to research presented at the American Stroke Association's International Stroke Conference 2010. The incidence of ischemic stroke also increased by 30 percent in the quartile of women consuming the highest daily amount of trans fat (average intake 7 grams per day) compared to those who consumed the least (average 1 gram/day). Two common sources of trans fat are processed foods and fried foods.

Ischemic strokes are caused by blockages in blood vessels in or leading to the brain. "We found positive associations between total fat intake and ischemic stroke incidence and between trans fat intake and ischemic stroke incidence," said Sirin Yaemsiri, M.S.P.H., a doctoral student in the department of epidemiology in the Gillings School of Global Public Health at the University of North Carolina in Chapel Hill. The study is the first to examine the associations of different fats and different subtypes of ischemic stroke in post-menopausal women, who face a higher stroke risk than men of a similar age. Evidence from other studies shows that different types of fat have different effects on the incidence of coronary heart disease (CHD), with trans fat implicated in the development of CHD. However, studies of ischemic stroke and fat have been inconclusive, possibly because earlier studies had small numbers of ischemic stroke cases.

Before menopause, women have a lower risk of stroke compared to men of similar age, a situation that reverses after menopause, Yaemsiri said. The analysis included data on 87,230 post-menopausal women ages 50 to 79 who participated in the Women's Health Initiative (WHI) Observational Study, a project sponsored by the National Institutes of Health and the National Heart, Lung and Blood Institute. The women answered a food frequency questionnaire when they entered the study and were followed for an average of 7.6 years, the researchers said. During that time, 1,049 ischemic strokes occurred. Researchers looked for links between dietary fat intake and four ischemic stroke subtypes, which were characterized by their size or point of origin. However, the data on ischemic stroke subtypes fell short of statistical significance, perhaps because strokes are difficult to characterize and 43 percent (445 cases) of the ischemic strokes in the study were of unknown type, Yaemsiri said.

Researchers divided the women into quartiles based on the amount of total dietary fat and types of fat (saturated fat, monounsaturated fat, polyunsaturated fat and trans fat) they reported consuming per day. Variables included age, race, smoking status, physical activity, alcohol or aspirin use, body mass index, hormone therapy, heart disease history, diabetes, systolic blood pressure and whether the women took medication for high blood pressure or to reduce cholesterol, vitamin E supplementation, fruit/vegetable intake, total calories and dietary fiber.

Women in the top quartile for total fat intake had an average intake of 86 grams of total fat per day. Those in the lowest quartile consumed an average of 26 grams a day. "I think our findings support the American

Heart Association recommendations for keeping trans fat intake at less than 1 percent of energy," said Ka He, M.D., Sc.D., M.P.H., senior author of the study and associate professor of nutrition and epidemiology at the UNC Gillings School of Global Public Health. Trans fats can be found in many foods -- especially in fried foods like french fries and doughnuts, and baked goods including pastries, pie crusts, biscuits, pizza dough, cookies, crackers and stick margarines and shortenings.

Science Daily (Feb. 25, 2010) —

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## **Antioxidant Found in Soybeans May be Source for New Class of Brain-Protecting Drugs**

Researchers have identified a compound that mimics one of the brain's own growth factors and can protect brain cells against damage in several animal models of neurological disease. 7,8-dihydroxyflavone is a member of the flavonoid family of chemicals, which are abundant in fruits and vegetables. The compound's selective effects suggest that it could be the founder of a new class of brain-protecting drugs. The results were published online this week in the Proceedings of the National Academy of Sciences.

Investigators at Emory University School of Medicine, led by Keqiang Ye, PhD, associate professor of pathology and laboratory medicine, were searching for a way to mimic a protein found in the brain called BDNF (brain-derived neurotrophic factor). "BDNF has been studied extensively for its ability to protect neurons vulnerable to degeneration in several diseases, such as ALS, Parkinson's and Alzheimer's disease," Ye says. "The trouble with BDNF is one of delivery. It's a protein, so it can't cross the blood-brain barrier and degrades quickly."

Working with Ye, postdoctoral fellow Sung-Wuk Jang sifted through a library of chemicals to find those that could stimulate one of the proteins on the surfaces of neurons that BDNF binds to. They could show that 7,8-dihydroxyflavone sends survival signals to brain cells by pulling together two TrkB receiver-dish molecules, just like BDNF does. Moreover, it is active in the brain when injected into the body cavity, meaning that it can cross the blood-brain barrier. Ye says many experimental "neuroprotectant" drugs have been unsuccessful in clinical trials for diseases such as stroke and Parkinson's over the last decade.

"What's different is this is a new pathway, offering us new opportunities," he says. "This is the first molecule we've found that specifically triggers TrkB." 7,8-dihydroxyflavone could partially prevent the death of neurons in experimental models of three neurological diseases:

- \* Seizure: Mice treated with the stimulant kainic acid
- \* Stroke: Loss of blood flow induced in mice by blocking a cerebral artery
- \* Parkinson's disease: Mice treated with a toxin that kills the same neurons affected by Parkinson's

To show that the effects of 7,8-dihydroxyflavone depended on TrkB, the authors used mice with a modified TrkB gene, which makes their neurons vulnerable to a chemical that is not otherwise toxic. That chemical could inhibit the effects of 7,8-dihydroxyflavone. 7,8-dihydroxyflavone is a member of a family of antioxidant compounds naturally found in foods ranging from cherries to soybeans. Tests in animals indicate that the compound has low chronic toxicity, Ye says. In clinical trials, BDNF itself can have side effects such as sensory alterations, weight loss or nausea. "It is likely that many people take in small amounts of 7,8-dihydroxyflavone in their diets," Ye says. "But drinking green tea or eating apples doesn't

give you enough for a sustained effect."

In the initial screening process, several flavonoid compounds had similar properties to 7,8-dihydroxyflavone. Ye says his laboratory has already identified compounds that are several times more active. The next step is more animal studies to choose compounds likely to have the best drug profiles: stable and non-toxic.

From: SoyTech eNews January 27, 2010

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### **Food scientists develop appetite-curbing gel**

The season of peace, goodwill and over-indulgence has come and gone. In the cold dawn of January, 'tis the season to shape up and shed the pounds. Unfortunately, however, the more we eat, the more we want to eat. Many a dieter is struggling to come to terms with that paradox following an overindulgent Christmas. Scientists at Birmingham University's school of chemical engineering may, in the not-too-distant future, be able to help. They are one year into a four-year project to find an aid for those who want to cut back on the desire to snack. They have developed an aqueous solution that gels into a solid structure in the stomach, thereby helping to curb appetite. The target market is those for whom bingeing is not just for Christmas, but a habit that dogs them all year round. "But, yes, it could also be used short-term to get back on track after the festive excesses. Why not?" suggests Dr Fotis Spyropoulos, one of the project team.

The four-strong team at Birmingham is headed by Professor Ian Norton, formerly chief scientist (foods) at Unilever, and the man who oversaw the development of Flora as an alternative to butter. Unilever is among a group of big manufacturers and retailers who are indirectly financing this and other universities to develop potentially health-enhancing products through the Diet and Health Research Industry Club, otherwise known as Drinc. Other members include Coca-Cola, Cadbury, United Biscuits and Marks & Spencer.

"To me that means that one or more of these companies see potential for future commercial application," says Spyropoulos. "Two or three years from now, we'll be looking to establish collaborations to market what might be a solution that could be mixed with milk and poured over breakfast cereal to keep you feeling full until lunchtime. Alternatively, it could be taken as one of those dairy-type drinks swigged down between meals when the urge to snack comes on." He adds: "Obesity is now one of the biggest drivers of food-based scientific research. As the issue has moved further and further up the national agenda, it seems to me that consumers have decided to blame the food and drink companies for making their products taste so good." You might think these companies would shy away from investing in any product that suppresses appetite. Not so.

"They realise that they have to keep consumers happy in all sorts of ways. It comes down to offering a choice. We are involved in developing products that are healthy alternatives to foods that are high in fat, salt and sugar. But we're also looking into reinforcing healthy eating habits and changing unhealthy ones. That's what this project is about." The Birmingham scientists have developed a hydrocolloid, a substance that forms itself into a gel soon after impact with the stomach's acidic environment. They have used naturally occurring polymers that are found in a wide range of foods – starch in bread, for instance. The idea is to make you feel fuller for longer, thereby suppressing the yearning to eat between meals. "We now have to work on just how long that suppressant should last," Spyropoulos explains. "Should the effects be timed to

wear off five or six hours from breakfast, or two or three hours from being consumed as a mid-morning drink? It's important to us to understand that process so that we can offer an alternative for the consumer."

The gel needs to weaken progressively so that it can break down and pass through the digestive tract, allowing the desire to eat to return in time for lunch or dinner, he explains, before adding: "We're also looking at another key element of the formulation – how to get the gel to release energy slowly. When the stomach is full, your brain is triggered to expect a reward in terms of energy. That was a problem encountered by one of the big soft-drink manufacturers when it produced a new range of low-calorie drinks. Consumers were expecting a boost in energy, which wasn't forthcoming. So what did they do? They binged on something else."

So this project is about psychology as well as chemistry, he points out. "We've brought in two PhD psychology students to look at consumer habits. When people indulge in food such as chocolate, is it because they have a psychological need to eat something slightly unhealthy as a reward for achievement elsewhere? When you're celebrating, after all, you have a glass of wine or beer rather than a banana. If there is a psychological rather than a physical need to snack, then maybe we should be looking to offer a healthier alternative – something that looks and tastes like chocolate, but isn't chocolate."

Chocolate, strawberry or mango and passion fruit – the taste of the appetite-suppressing liquid has yet to be decided. "Flavouring is usually the last stage of any new food development," Spyropoulos confirms. "But it has to be something that consumers would enjoy. Otherwise they won't buy it." You don't need a PhD in psychology to work that one out.

From: Report by Chris Arnot in Guardian (UK) January 19, 2010

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### **Plant flavanoid may help prevent leukemia**

According to **Reuters**, a study published in **Cell Death and Disease** shows that eating foods like celery and parsley that contain the naturally occurring flavanoid apigenin may help prevent leukemia. Maikel Peppelenbosch of the University of Groningen in the Netherlands said tests showed that apigenin—a common component of fruit and vegetables—was able to halt the development of two kinds of cells in leukemia and cut their survival chances. The findings suggest apigenin could hold promise for preventing leukemia, Peppelenbosch said. But he warned that his study had also found the compound has chemotherapy resistance properties, suggesting it might interfere with standard treatments for people already diagnosed with leukemia.

“Apigenin might be a useful preventative agent for leukemia, but it should not be taken at the same time as chemotherapy for established disease as it could interfere with the positive effects of treatment,” Peppelenbosch wrote. Flavanoids are compounds with antioxidant properties that protect cells against damage by oxygen molecules. Previous studies have shown that apigenin, which is found in celery, parsley, red wine, tomato sauce, and other plant-based foods, may also be beneficial in protecting against ovarian cancer.

IFT Newsletter February 3, 2010

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### **Phytochemicals From Soy, Cruciferous Vegetables May Help Battle Colon Cancer: New Japanese Research**

"The chemopreventive effects of dietary phytochemicals on malignant tumors have been studied extensively because of a relative lack of toxicity. To achieve desirable effects, however, treatment with a single agent mostly requires high doses," researchers in Kyoto, Japan report (see also Colon Cancer).

"Therefore, studies on effective combinations of phytochemicals at relatively low concentrations might contribute to chemopreventive strategies. Here we found for the first time that co-treatment with I3C and genistein, derived from cruciferous vegetables and soy, respectively, synergistically suppressed the viability of human colon cancer HT-29 cells at concentrations at which each agent alone was ineffective. The suppression of cell viability was due to the induction of a caspase-dependent apoptosis. Moreover, the combination effectively inhibited phosphorylation of Akt followed by dephosphorylation of caspase-9 or down-regulation of XIAP and survivin, which contribute to the induction of apoptosis. In addition, the co-treatment also enhanced the induction of autophagy mediated by the dephosphorylation of mTOR, one of the downstream targets of Akt, whereas the maturation of autophagosomes was inhibited. These results give rise to the possibility that co-treatment with I3C and genistein induces apoptosis through the simultaneous inhibition of Akt activity and progression of the autophagic process. This possibility was examined using inhibitors of Akt combined with inhibitors of autophagy. The combination effectively induced apoptosis, whereas the Akt inhibitor alone did not," wrote Y. Nakamura and colleagues, Kyoto Prefectural University.

The researchers concluded: "Although in vivo study is further required to evaluate physiological efficacies and toxicity of the combination treatment, our findings might provide a new insight into the development of novel combination therapies/chemoprevention against malignant tumors using dietary phytochemicals."

From: SoyTech eNews January 29, 2010

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### **Trans Fatty Acids in the Diet Stimulate Atherosclerosis: New Research**

"Epidemiological evidence has associated dietary trans-fatty acids (TFAs) with coronary heart disease. It is assumed that TFAs stimulate atherosclerosis, but this has not been proven," researchers in Winnipeg, Canada report (see also Atherosclerosis).

"The purpose of this study was to determine the effects of consuming 2 concentrations of TFAs obtained from commercially hydrogenated vegetable shortening on atherosclerotic development in the presence or absence of elevated dietary cholesterol. Low-density lipoprotein receptor-deficient mice were fed 1 of 7 experimental diets for 14 weeks: low regular fat (LR), low trans-fat (LT), regular high fat, high trans-fat (HT), or a diet containing 2% cholesterol with low regular fat (C + LR), low trans-fat (C + LT), or high trans-fat (C + HT). The extent of lesion development was quantified by en face examination of the dissected aortae. Dietary cholesterol supplementation significantly elevated serum cholesterol levels. Surprisingly, this rise was partially attenuated by the addition of TFAs (C + LT and C + HT) in the diet. Serum triglyceride levels were elevated with the higher-fat diets and with the combination of trans-fat and cholesterol. Animals consuming TFAs in the absence of dietary cholesterol developed a significantly greater

extent of aortic atherosclerotic lesions as compared with control animals (LT > LR and HT > regular high fat). Atherosclerotic lesions were more extensive after cholesterol feeding, but the addition of TFAs to this atherogenic diet did not advance atherosclerotic development further," wrote C.M.C. Bassett and colleagues, St. Boniface General Hospital.

The researchers concluded: "In summary, TFAs are atherogenic on their own; but they do not stimulate further effects beyond the strongly atherogenic effects of dietary cholesterol."

From: SoyTech eNews January 26, 2010

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### **Treatment With Yeast Strain Protects Commodities Against Aflatoxin Contamination: ARS Research**

Pistachios, almonds and other popular tree nuts might someday be routinely sprayed with a yeast called *Pichia anomala*. Laboratory and field studies by Agricultural Research Service (ARS) plant physiologist Sui-Sheng (Sylvia) Hua have shown that the yeast competes successfully for nutrients--and space to grow--that might otherwise be used by an unwanted mold, *Aspergillus flavus*. *A. flavus* and some other *Aspergillus* species can produce troublesome toxins known collectively as aflatoxins. Hua has received a patent for use of the yeast as an eco-friendly way to protect tree nuts, as well as corn, from becoming contaminated with aflatoxins. Standards set by the U.S. Food and Drug Administration help prevent sale of aflatoxin-contaminated food and feed.

In tests conducted in a California pistachio orchard, Hua and colleagues found that spraying the trees with the yeast inhibited incidence of *A. flavus* in pistachios by up to 97 percent, compared to unsprayed trees. The yeast can also be sprayed on the harvested or stored crop instead of on trees before the harvest, according to Hua, based at the ARS Western Regional Research Center in Albany, Calif. Besides inhibiting the *A. flavus* fungus, the versatile yeast may also be effective in protecting other crops against any of at least half a dozen other species of microbes that can ruin a food's taste, texture, yield, safety or other attributes. Those microbes include, for example, *Botrytis cinerea*, which causes gray mold of table grapes.

From: SoyTech eNews January 29, 2010

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## Health & Nutrition News

### **Avoiding Dairy Due to Lactose Intolerance is Unnecessary in Most Cases**

People may avoid milk and other dairy products due to concerns about lactose intolerance, but eliminating these nutrient-rich foods may not only be unnecessary to manage the condition – it could impact diet and health, concludes a panel of experts assembled by the National Institutes of Health (NIH). The NIH Consensus Development Conference on Lactose Intolerance and Health was convened to examine the latest research on lactose intolerance, strategies to manage the condition and the health outcomes of diets that exclude dairy foods. Lactose is the natural sugar in milk and some people lack sufficient amounts of an enzyme that is needed to comfortably digest lactose.

After a thorough review of the scientific evidence, the Consensus Development Conference panel completed a draft consensus statement that is intended to correct some of the common misperceptions about lactose intolerance, including the belief that dairy foods need to be excluded from the diet. Without lowfat and fat free milk and milk products in the diet, it's hard to meet nutrient needs, and available research suggests people with lactose intolerance can tolerate at least 12 grams of lactose (the amount in about one cup of milk) with no or minor symptoms. Plus, gradually re-introducing dairy into the diet can help manage symptoms and help those diagnosed benefit from dairy's unique nutrient package, including calcium, vitamin D, protein, potassium and other nutrients that are critical for bone health and beyond.

Experts also suggest drinking lowfat or fat free milk (regular or flavored) with meals or a snack instead of an empty stomach, trying small, frequent portions or buying lactose-free or lactose-reduced milk – which contain all the same nutrients as regular milk. Yogurt and hard cheeses (the panel suggests cheddar, provolone and mozzarella) may also be more easily digested.

Conducted by the National Institutes of Health since 1977, the Consensus Development Program is an unbiased, independent, evidence-based assessment of complex medical issues. The purpose is to evaluate the available scientific evidence on a medical topic and develop a statement that will advance the understanding of the issue and help guide the advice given by health professionals and directed to the public. Lactose intolerance is a topic that is frequently misunderstood, according to Dr. Robert P. Heaney, a prominent researcher at Creighton University who presented findings to the panel on the health outcomes of dairy exclusion diets.

"With modern diets, eliminating dairy from the diet – for any reason whatsoever – will result in poor nutrition with long-term consequences for health," said Heaney. Heaney said people need a steady supply of calcium, vitamin D and other bone-building nutrients in milk early in life to lay a sturdy foundation. Depriving the body of these nutrients has the potential to impact bone health throughout the lifecycle. Additionally, lowfat and fat free milk is the top food source of vitamin D, which has been linked to a growing range of health benefits.

African Americans have been found to have lower intakes of vitamin D, which is likely linked, in part, to their concerns about lactose intolerance. Yet, even if you have lactose intolerance – and fewer people likely have symptoms of this condition than previously believed – it's still important to find ways to incorporate milk and milk products into the diet.

This is the same conclusion made by the National Medical Association (NMA), the nation's largest group of African American physicians. Dr. Wilma Wooten, president of the San Diego chapter of the National Medical Association, presented research on the ethnic prevalence of lactose intolerance to the panel. She said the NMA released its own policy statement that alerted African-Americans that they may be at risk for nutrient deficits as a result of under-consumption of dairy foods. "Individuals with lactose intolerance should not avoid dairy products," Wooten said. "This message should be reinforced to prevent the missed opportunity provided by the nutrient-rich package of low- and non-fat milk, hard cheese and yogurt with live active cultures."

While the panel concluded that there's insufficient evidence to determine a true prevalence of the condition, one new study presented at the conference suggested the age-adjusted, self-reported prevalence may be as little as 12 percent of the U.S. population, on average. This recent data from a national sample of three ethnic groups indicated that 7.7 percent of European Americans, 10.1 percent of Hispanic Americans and 19.5 percent of African Americans currently consider themselves lactose intolerant. These self-reported prevalence rates are in contrast with previous higher estimates based on lactose maldigestion studies that over-estimated by wide margins the proportion of people who experience symptoms after consuming usual amounts of dairy foods.

Beyond the recommendations of the NIH panel, several major health authorities agree that it is critical for people with lactose intolerance to consume dairy products every day to benefit from the unique nutrient profile of these foods. The Dietary Guidelines for Americans encourage people with lactose intolerance to try lower-lactose dairy options (such as lactose-free milk, yogurt and hard cheeses) to ensure they get the important nutrients found in dairy. The American Academy of Pediatrics recommends children with lactose intolerance still consume dairy foods to help meet calcium, vitamin D, protein and other nutrient needs that are essential for bone health and overall growth. The group cautions that lactose intolerance usually does not require avoidance of dairy foods. Additionally, the Special Supplemental Nutrition Program for Women, Infants and Children (WIC) supports lactose-reduced or lactose-free milk as a first choice before non-dairy options for those with lactose intolerance.

Source: Nutrition Horizon 26 Feb 2010

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### **Nutrition Survey Points to Growing Market for Protein-Fortified Foods**

A UK national survey conducted last month shows that over 20% of the nation recognises that adults aged over 50 need more protein in their diet compared with those in their prime. The top four roles cited for protein in the diet of the over 50s were correctly identified as: supporting the immune system (selected by 51%), guarding against osteoporosis and bone fractures (47%), helping prevent muscle wastage (46%) and protecting lean tissues and muscles (46%).

Sponsored by Volac, suppliers of nutritional whey protein to the food and beverage industry, the survey of 2000 adults conducted by the independent researcher ICM sought to discover people's attitudes towards protein in the diet and protein-fortified foods, particularly in relation to the over 50s market segment. ICM interviewed a random sample of adults aged 18+ in GB from its online panel between 8th-10th Jan 2010. Surveys were conducted across the country and the results have been weighted to the profile of all adults.

43% of the sample were aged 50 or above. Mark Neville, Head of Lifestyle Ingredients for Volac said: “The survey indicates some interesting market niches that are beginning to emerge for protein-fortified foods, including the senior nutrition segment. With their high absorption rate, easy digestibility, versatility and palatability, Volactive nutritional whey proteins are well positioned to meet this demand.”

The survey revealed some wider food trends relating to all demographic groups. Britain remains largely a carnivorous nation, yet a change in habits has already begun for some. In the last five years, 12% of respondents said they had changed their diet to include more non-meat sources of protein than they previously consumed. These ‘flexitarians’ are in addition to the estimated three million committed vegetarians in the population - approximately 5% of the nation. The main reason given for making the change to include more vegetarian sources of protein was cited as weight management, closely followed by cost concerns. However, around a third of those currently changing their diet cited environmental or climate change concerns and / or vegetarian principles as their main motive. Women were found to be almost twice as likely as men to seek meat-free forms of protein (16% versus 9%). Young adults aged between 25 and 34 were among the most active adopters of vegetarian meals (17%), followed by the 45-54 year old age segment (15%). People who were more likely to look for meat alternatives had different reasons for doing so. For instance, the majority of the younger age group of 18-24 year olds (51%) were more likely to espouse vegetarian ethics, whilst the majority of an older age group of 35-44 year olds (53%) was primarily concerned with shedding excess weight.

The survey also highlighted a significant younger group of nutritionally-aware adults in their 20s and 30s who are concerned with body composition and protecting lean tissues and muscles through increasing their consumption of high quality vegetarian proteins. When it comes to the types of manufactured food offering the best alternative protein sources to meat, protein-fortified vegetarian meals scored highest, followed by cereals and cereal bars, with soups in third place. However, a staggering 36% of respondents could not think of a suitable alternative to meat as a protein source in the diet, suggesting the need for education into the various available alternatives.

Neville concludes: “Overall, the findings of our survey suggest that there is a growing opportunity for food manufacturers to educate certain consumer groups, including the over 50s, about the benefits of consuming high quality, low fat and highly digestible proteins. It has highlighted some important lifestyle issues which food and beverage manufacturers should be addressing now with their new product development programmes. Volactive nutritional whey proteins are ideal for this market as they are easy to incorporate into familiar healthy snacks such as cereal bars, and they also provide a versatile high quality protein source for developing exciting new food and drink concepts with a strong nutritional profile.”

Source: Nutrition Horizon 16 Feb 2010

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### **Consumers want food safety assurance on labels**

A study being conducted by Michigan State University (MSU) on behalf of DNV finds that U.S. consumers are highly aware of food safety issues and they have high recognition of third party certification as an effective signal of food safety assurance. The consumers strongly prefer to see products labeled as safety certified. “Consumers are not only aware of food safety issues they are actually changing their shopping

habits due to food safety concerns,” said Chris Peterson, Director of the Product Center at MSU. “Nearly half of the consumers we surveyed indicated a change in shopping patterns.”

These and other findings are the results of over 400 consumers surveyed across the United States representing a wide variety of demographics, education, and income levels. Under the guidance of the MSU team, the surveys were conducted online by an independent research firm.

“We are conducting a two-phase study with MSU,” said Kathy Wybourn, Director of Food Safety Solutions for DNV. “This first phase reflects consumer perceptions of food safety and third party food safety certification. We are moving into phase two where we’ll be interviewing various food industry professionals to get their pulse on the business processes and various auditing schemes that relate to food safety.” Phase two of the food safety and safety certification research study is expected to be completed in mid April with findings available shortly thereafter. In addition to indicating a high sensitivity to food safety issues, U.S. consumers say they want to see evidence on product labels that the food they are buying has passed some kind of independent safety certification process. Moreover, slightly more than one third of consumers indicate a willingness to pay a premium, upwards of 30% more.

IFT Newsletter February 24, 2010

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### **Nielsen Launches Healthy Eating Index**

To better predict healthy eating patterns among consumers, The Nielsen Company has created a Healthy Eating Index. Although the company has in the past reported on healthy eating trends, most insights have been focused on individual characteristics or product claims like “organic” or “fat free.” The missing piece of the puzzle, according to Nielsen, has been a single measure that includes a combination of several key healthy eating indicators across multiple categories. The Nielsen Healthy Eating Index, the company claims, can track healthy eating choices over time and monitor the impact of industry health and wellness initiatives. The index is calculated by adding supermarket sales for products with health claims on their label, like “natural” or “reduced calorie.” Sales are also added from some inherently healthy categories like fresh produce.

Importantly, Nielsen makes adjustments to give more weight to key healthy eating indicators with relatively low sales like omega and antioxidant claims. Other health claims with strong sales like “reduced fat” and “natural” are given less weight to avoid having fluctuations in commodity prices adding volatility to the Index. According to the Nielsen Healthy Eating Index, the U.S. is making progress on the healthy eating front, scoring 402 in 2009 vs. 389 in 2008. The Nielsen Healthy Eating Index is a subjective approach to measuring healthy eating trends including better-for-you alternatives. It will allow both retailers and manufacturers to measure their efforts to promote healthier food choices.

Nutraceuticals World Published February 10, 2010

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### **Online Programs Improve Fruit and Vegetable Consumption**

Online programs that provide information and tips about fruits and vegetables may be the key to getting more Americans to eat healthier, say researchers at Henry Ford Hospital. Researchers found that when given access to an online program about fruits and vegetables, participants increased their daily fruit and vegetable intake by more than two servings. Many of the participants continued using the program after the study concluded, and even reported their family members became involved in the program.

"People already know the health benefits of fruits and vegetables, but they often don't know how to incorporate them into their diet," says study senior author Christine Cole Johnson, Ph.D., M.P.H., chair of Henry Ford's Department of Biostatistics and Research Epidemiology. "That's why our study worked. Using online programs, we were able to offer study participants practical and easy tips to increase their daily fruit and vegetable intake."

Results are published in this month's issue of the *American Journal of Public Health*. According to the Center for Disease Control and Prevention, fewer than 25 percent of adults in the United States eat five servings of fruit and vegetables per day. Those who eat more fruits and vegetables are likely to have reduced risk of chronic diseases, including stroke and certain cancers. The 12-month-long Henry Ford study recruited members of Health Alliance Plan and four other HMOs in Seattle, Denver, Minneapolis and Atlanta, ages 21 to 65.

Study participants were placed in one of these three groups:

- A control online program that provided general information for the participants about improving their fruit and vegetable intake.
- A program that was similar but personalized to the individual's needs
- A program that incorporated the other two components and was also supplemented with motivational interviewing counseling via e-mail.

The program was divided into four sessions. Each session included four to five pages of core content, illustrations and optional links to more detailed information and special features designed to supplement session content. For example, special features illustrated serving sizes and nutritional similarities of fresh versus frozen versus canned foods. Another optional feature presented 300 fruit and vegetable-based recipes. Short video and audio files were offered to reinforce text on behavioral strategies. Once available, all program components were accessible throughout the 12-month study period.

An optional feature offered menus individually tailored by nutrition experts and were generated on the basis of participants' fruit and vegetable preferences and dietary restrictions. At the end of the study, researchers found that there was improvement across all study groups, but the most significant changes were with the group that had motivational interviewing and counseling.

"We found that giving participants gentle reminders that refocused them on their goals greatly improved progress," says study co-author, Gwen Alexander, PhD, assistant research scientist. "They were being held accountable for their progress, which became a key motivator." Up next: Drs. Johnson and Alexander are now working on creating a similar study focused on people ages 21 to 30, to find new strategies to help them incorporate more fruits and vegetables into their diet, while catering to their lifestyle.

Science Daily (Feb. 4, 2010) —

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## **Getting Teens & Young Adults to Eat More Whole Grains**

National survey data published in this month's issue of the **Journal of the American Dietetic Association** indicate few adolescents or young adults consume whole grains in the amount recommended to prevent chronic disease and maintain a healthful weight. In order to address the gap in consumption, researchers conducted a study to find out which factors influence whole-grain intake among adolescents and young adults.

Data for this cross-sectional analysis were drawn from Project EAT (Eating Among Teens)-II, the second wave of a population-based study in Minnesota. Mailed surveys and food frequency questionnaires were completed by male (45%) and female (55%) participants in 2003-2004, including 792 adolescents (mean age=17.2 years) and 1686 young adults (mean age=20.5 years).

Researchers found that the daily intake of whole grains was lower than recommended among adolescents and young adults. They also discovered what's holding them back in terms of consumption: availability of whole-grain bread, self-efficacy to consume  $\geq 3$  daily servings of whole grains, and preference for the taste of whole-grain bread. At the same time, researchers found that fast-food intake was associated with lower intake of whole grains among adolescents and young adults of both sexes. The factors examined in this study explained 28% to 34% of variance in whole-grain intake across sex and the two age groups.

These findings, researchers believe, suggest nutrition interventions should address the availability of whole-grain foods in homes and restaurants. Further, they said young people should be provided with opportunities to taste a variety of whole-grain foods to enhance taste preferences and self-efficacy to consume whole-grain products.

From: Nutraceuticals World February 4, 2010

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## **Retailers, manufacturers join to drive change in packaging**

In an ongoing effort to drive global change in packaging, leaders from many of the world's largest consumer goods companies and major retailers have approved a suggested set of common definitions and principles for packaging in the framework of sustainability. This common language will support a global discourse on packaging in the context of environmental, economic, and social impacts. An assembly of The Consumer Goods Forum's (The Forum) Global Packaging Project (GPP) met in Toronto, Canada on Jan. 19-20, to establish a common industry language for packaging and sustainability and to outline final terms for the launch of pilot projects. "Sustainability is a shared responsibility," said Roger Zellner, GPP Co-Chair and Director, Sustainability, Research, Development & Quality, Kraft Foods. "By creating a common language and identifying shared global industry metrics, this initiative will enable manufacturers and retailers to work together to develop packaging solutions to help achieve agreed sustainability goals."

Collectively, there was recognition that inconsistent measures between different players in the packaged goods supply chain intended to improve packaging's contribution to sustainable development risked leading to unnecessary complexity, added cost, and suboptimal environmental, economic, and social results. The next phase of the project is to validate the output of the project, the principles for packaging and sustainability, and a set of agreed indicators and metrics, within real business situations. Pilots will take

place over a six-month testing stage. The Forum is targeting approval of the final report and deliverables in November 2010.

The definitions and principles adopted by the GPP reflect the guidelines on packaging and sustainability produced by ECR Europe and EUROOPEN, the European Organization for Packaging and the Environment. The metrics to be tested are adapted from those developed and recently released by the U.S. Sustainable Packaging Coalition (SPC). The Global Packaging Project of the Consumer Goods Forum is jointly chaired by Roger Zellner, Kraft Foods and Sonia Raja, Tesco. Participating companies include a wide range of retailers and consumer goods manufacturers. The GPP is supported by packaging manufacturers, industry, and trade associations from Europe and North America and a number of academic institutions.

From: IFT Newsletter February 3, 2010

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### **Lack of visibility + product recall = perfect disaster**

The rising number of large-scale food recalls in recent years is not going unnoticed. Incidents such as the recent Italian sausage recall from Daniele International and the January 2009 peanut butter **Salmonella** outbreak are all stacking up, adding to the lack of consumer confidence, growing scrutiny from regulators, unprecedented demand for food from emerging nations, and increased demands for brand-protection assurance. In the latest ePerspective post, Jack Payne, Director of Solutions Consulting, CDC Software, explains how important it is for food processors to do their parts in protecting food by leveraging enterprise software to automate and integrate traceability across all steps in their supply chains. Considering the ever-growing regulatory pressures worldwide, greater consumer awareness, and the increased safety risks inherent in the extended global supply chain, having the right technology in place is no longer a luxury. It's a strategic differentiator that is imperative for surviving and thriving today and in the years ahead.

From: IFT Newsletter February 3, 2010

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## Regulatory News

### **FTC Warns Marketers of Children's Omega-3 Fatty Acid Supplements that Claims About Brain and Vision Benefits May Be Deceptive**

The Federal Trade Commission has sent letters to 11 companies that promote various Omega-3 fatty acid supplements, telling them they should review their product packaging and labeling to make sure they do not violate federal law by making baseless claims about how the supplements benefit children's brain and vision function and development. The FTC sent letters to the companies last month, cautioning that their product packaging and advertising might be in violation of the FTC Act unless they have scientific evidence to support claims that their products boost, improve, enhance, or support brain and vision function and development in children. Also included are claims relating to intelligence, cognitive function, learning ability, focus, mood, memory, attention, concentration, visual acuity, and eye health.

In the warning letters, the FTC gave the companies two weeks to respond and explain the steps they have taken, or intend to take, to ensure they are complying with the law. The agency warned that it may take law enforcement action if they make health-related claims for products without scientific proof. In its letters, the FTC described a recent investigation it conducted into similar claims made by Northwest Natural Products, Inc., the marketer of L'il Critters Omega-3 Gummy Fish, a children's Omega-3 gummy vitamin. The FTC stated that in response to its inquiry, NNP quickly modified all marketing materials for Gummy Fish, including product packaging and labeling, to ensure compliance with the FTC Act.

Source: Nutrition Horizon 18 Feb 2010

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### **Omega 3 Group Seeks Clarification on FTC Children's Health Claim Concerns**

The Global Organization for EPA and DHA Omega-3 Fatty Acids (GOED), sought further clarification from the Federal Trade Commission in response to its February 16, 2010 press release concerning omega-3 claims about brain and vision benefits in children.

Harry B. Rice, Ph.D., GOED's Director of Regulatory and Scientific Affairs, contacted the FTC for clarification on several points. It was not clear if FTC was concerned about claims on products containing short-chain omega-3 fatty acid, Alpha-linolenic Acid (ALA), compared to the long-chain omega-3 fatty acids, EPA and DHA. According to the FTC, the investigation did not target one or the other, but rather claims related to Omega-3 fatty acids, in general, that were not substantiated. Second, when asked about product and population-specific trials, Rice was told that the FTC does not require product-specific trials, rather claims about an effect (e.g. brain development) need to be substantiated by science on that effect (e.g. brain development). Third, with respect to population-specific trials, the scientific evidence in support of a claim needs to be based on research conducted in the age specified in the claim. That is, if the claim is specific to toddlers two years and above, the research substantiating the claim cannot have been conducted in one year olds.

According to the FTC, 11 companies, promoting various Omega-3 fatty acid supplements, have been

notified that they should review their product packaging and labeling to confirm that they are not in violation of federal law by making baseless claims about the benefits of their supplements to children's brain and visual function and development. Furthermore, the packaging and advertising of the companies in question may be in violation of the FTC Act unless there exists scientific evidence to support the claims. The claims in question relate to boosting, improving, enhancing or supporting brain and visual function and development. Also included are claims relating to intelligence, cognitive function, learning ability, focus, mood, memory, attention, concentration, visual acuity, and eye health.

While there is a large body of scientific evidence in support of claims related to EPA and DHA Omega-3 fatty acids and the positive benefits related to brain health, given that the specific claims and dosages in question have not been publicly communicated, GOED is unable to comment at the present time on FTC's specific grievances. Should GOED learn that FTC's opinions are in conflict with its opinion of the available scientific evidence, it will make every effort to share its opinion(s) on the totality of the scientific evidence. According to Adam Ismail, Executive Director of GOED, "We applaud the FTC's efforts to enforce claims in this area. The market for EPA and DHA omega-3s has grown as a result of investing in sound science, communicating the benefits in an ethical manner, and establishing a deep level of trust with consumers. FTC's efforts can only help ensure continued growth."

Source: Nutrition Horizon 22 Feb 2010

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### **China Establishes Food Safety Commission**

BEIJING—Building on its promise to strengthen food-safety efforts in the wake of its 2008 melamine scandal, China established the Food Safety Commission (FSC) that will analyze the food-safety situation, guide and coordinate food-safety work, make food-safety policies, and urge relevant departments to fulfill their responsibilities in food supervision. As reported by Reuters, FSC Director Li Keqiang ordered inspectors to trace and destroy all milk products tainted with melamine that killed at least six children in 2008 and nearly destroyed China's dairy industry. Keqiang also said all levels of government should be responsible and carry out the food safety-law and implementation. He said a campaign will be carried out across the country in 2010 on food safety focusing on food additives, consumable agricultural products, food processing, food distribution and import and export, the processing of poultry, food consumption and healthcare food.

From: Food Product Design February 12, 2010

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### **EU Passes Omega 3 Nutrition Claims**

The EU has passed nutrition claims for omega 3s that will allow food products to claim they are either a "source of omega 3 fatty acids" or that they contain "high omega 3 fatty acids." In order to make a source claim, products must contain either 40 mg of EPA+DHA per 100 g and kCal or 300 mg of ALA, according to the Global Organization for EPA and DHA Omega 3s (GOED). Alternatively, to make a "high" content claim, a product must contain 80 mg EPA+DHA per 100 g and kCal or 600 mg ALA.

“Overall this is a positive development for the omega 3 market because it will continue to grow both consumer awareness and usage across Europe...even in countries where consumers already understand the value of omega 3s,” said Adam Ismail, executive director, GOED. The levels for EPA+DHA usage were based on an EFSA opinion that 250 mg of intake per day will reduce the risk of cardiovascular disease in the general population. “We are also aware that many companies in the industry would disagree with the inclusion of an ALA claim in the regulation, or at least on the basis of the science EFSA used to justify the levels,” said Mr. Ismail. “As we have explained in the past, we will continue to work with European officials to ensure that the claims reflect the most accurate science.”

Nutraceuticals World Breaking News February 12, 2010

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## **Food Industry Faulted**

In recent years, the food and beverage industries have weathered harsh criticisms from parents and children’s health advocacy groups regarding not only the quality of food they market to children, but also their marketing methods. The industries yielded, offering healthier choices—kid’s meals with apple slices instead of fries, whole grain cereals, snacks in pre-portioned calorie packs, and bottled water that paired cool packaging with commercials encouraging kids to drink more water and less soda. To most parents, it would seem as if the food and beverage industries have made great strides in self-regulating the types of foods they market to kids. Not so, according to Washington, DC-based Children Now, a nonpartisan research and advocacy organization that works to favorably impact national policy agenda as it pertains to children’s well-being. The group recently released a report detailing the failings of the industries’ “Better-For-You” initiatives.

In 2007, the U.S. Council of Better Business Bureaus spearheaded an effort to encourage a voluntary, self-regulatory program involving a commitment from food and beverage companies to improve the nutritional content of the foods they formulated for kids, as well as the ways they marketed them. Major food companies such as Kellogg’s, General Mills, ConAgra and PepsiCo banded together and pledged to stop advertising unhealthy foods to children and promised improvements in the nutritional quality of foods advertised to children. In an effort to hold the industry accountable to its promise, “*The Impact of Industry Self-Regulation on the Nutritional Quality of Foods Advertised on Television to Children*” report examined the current state and future viability of industry self-regulation and raised doubt about its ability to thwart the growing epidemic of childhood obesity.

Despite a major effort at self-regulation, the organization said, nearly three out of four (72.5%) of the foods advertised on television to children are for products in the poorest nutritional category. Known as “Whoa” foods, these products should be consumed only on “special occasions, such as your birthday,” according to the U.S. Department of Health and Human Services. Advertising for truly healthy foods, such as vegetables and fruits, known as “Go” products, is virtually invisible. Commercials for such foods account for only 1% of all food advertising to children.

“We cannot win the battle against childhood obesity as long as we continue to allow the industry to bombard children with ads for foods that they really shouldn’t eat very often,” said Dr. Dale Kunkel of the University of Arizona, who conducted the study for Children Now. “Other countries have already put a stop

to this type of commercial exploitation, and it's time for the U.S. to act more responsibly to protect the health of the nation's children.”

The study also criticized the use of licensed characters, noting that food of the poorest nutritional quality was often paired with a character that would appeal to kids. According to the study, nearly half of all food ads with popular children's characters (49%), such as SpongeBob SquarePants, are for so-called “Whoa” products that pose the greatest risk for obesity.

“Using licensed characters to sell unhealthy foods to children is an unfair practice, and has to be stopped,” warned Ted Lempert, president of Children Now.

The study pointed to what it termed “a strong body of existing research,” including a 2006 research review by the Institute of Medicine of the National Academies, and concluded that children's exposure to television advertising for non-nutritious food products is a significant risk factor contributing to childhood obesity. “Amidst the resulting increase in public concern, the food and beverage industry pledged to voluntarily reduce the advertising of unhealthy foods to children through the Children's Food and Beverage Advertising Initiative,” it said.

Sixteen of the nation's top food companies—Kellogg's, Kraft Foods, Coca-Cola, Cadbury Adams, Campbell's Soup, McDonald's, ConAgra Foods, Dannon, General Mills, Burger King, Hershey, Mars, Post, PepsiCo, Nestle and Unilever—participate in the initiative.

The study concluded with two salient points: that the industry has done everything it promised in terms of fulfilling the details of its self-regulatory pledges, and that effort has been “completely ineffective in shifting the landscape of food marketing to children away from its overwhelming emphasis on non-nutritious products that place children at risk of becoming obese.” With self-regulation fully implemented, nearly three-quarters (72.5%) of all food advertising to children continues to promote low-nutrient, high-density products that are classified in the poorest nutritional category by governmental standards.

“We have given the industry time and opportunity to address this issue,” said Jeff McIntyre, director of national policy for Children Now. “Unfortunately, the research indicates that their pledges have failed our children. We cannot afford to wait, since advertising has been identified as a key factor contributing to childhood obesity. We need strong regulation to address this quickly and aggressively.”

In addition to releasing the study on their website, Children Now also presented its research at a December Federal Trade Commission hearing on the issue of advertising to children and childhood obesity.

“Reversing the dramatic increase in childhood obesity requires an ‘all hands on deck’ approach across all sectors, including the food and beverage industry,” said Robert Ross, MD, president and chief executive officer of The California Endowment, the group that funded the study. “This and other research have made the case clear: we must act now and spare our children from a lifetime of poor health, chronic disease and high medical costs.”

By Joanna Cosgrove in *Nutraceuticals World* February 18, 2010

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## **FDA proposed rule for sponsor reporting concerning labeling claims**

The U.S. Food and Drug Administration (FDA) has issued a proposed rule that would require research sponsors to report affirmatively to the Agency any “information indicating that any person has or may have engaged in the falsification of data” in connection with FDA-regulated human or animal studies conducted by or for the sponsor “in support of applications and petitions for FDA product approvals and authorization of certain labeling claims.” Comments regarding the proposed rule must be submitted by May 20, 2010.

Specifically, the proposed rule would require sponsors to report to FDA information that a “person has, or may have, engaged in the falsification of data in the course of reporting study results, or in the course of proposing, designing, performing, recording, supervising, or reviewing studies that involve human subjects or animal subjects conducted by or on behalf of a sponsor.” The following definitions would apply:

- “Sponsor” would include petitioners submitting food additive petitions, color additive petitions, nutrient content claim petitions, and health claim petitions; persons submitting food contact substance notifications; manufacturers or distributors submitting new dietary ingredient notifications; as well as sponsors of studies conducted on humans or animals for drugs and devices.
- “Falsification of data” would mean “creating, altering, recording, or omitting data in such a way that the data do not represent what actually occurred.” Unintentional errors such as typos or transposed characters would be excluded from this definition.
- “Data” would include, but be not limited to, “individual facts, tests, specimens, samples, results, statistics, items of information, or statements made by individuals.”

The proposed rule is far-reaching insofar as it targets both clinical investigations and nonclinical laboratory studies and would apply to all FDA-regulated products requiring such data. The sponsor would be required to report to the appropriate FDA Center no later than 45 calendar days after becoming aware of the information. The sponsor’s reporting obligation would be ongoing, applying to all aspects and phases of the FDA-regulated research and continuing after completion of the research. In those cases where a product or labeling claim receives FDA approval, the sponsor’s obligation would continue indefinitely thereafter. Importantly, the proposed rule would require reporting of “possible” falsification of data. In the preamble to the proposed rule, FDA emphasizes that sponsors should not wait to determine conclusively that falsification of data has occurred. The FDA contends that the proposed rule is necessary in the light of ambiguity in the current reporting scheme that causes confusion among sponsors. The agency states that the proposed reporting requirement would: (1) help ensure the validity of data that FDA receives in support of petitions and applications for approvals of products and labeling claims; and (2) protect research subjects.

IFT Newsletter February 24, 2010

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## **McCain bill threatens access to vitamins and supplements**

(NaturalNews) Senator John McCain (R-Arizona) has introduced a new bill called The Dietary Supplement Safety Act (DSSA) of 2010 (S. 3002), that, if enacted, would severely curtail free access to dietary supplements. Cosponsored by Senator Byron Dorgan (D-North Dakota), the bill would essentially give the FDA full control over the supplement industry.

Most of the industrialized world has incredibly restrictive laws governing supplements. People worldwide often purchase supplements from the U.S. because they are freely available at low costs.

All of this could change, however, if DSSA passes. DSSA would change key sections of the Federal Food, Drug, and Cosmetic Act (FD&C), undoing protections in the Dietary Supplement Health and Education Act (DSHEA) of 1994, effectively eliminating free access to supplements.

### **The importance of DSHEA**

The passage of DSHEA resulted from millions of Americans who worked hard to reinforce their freedom to buy and sell supplements. At the time, the Food and Drug Administration (FDA) was alleging that nutrients like CoQ10 and selenium were dangerous and should be pulled from the market.

Though weak in some areas, DSHEA established a foundation upon which free access to dietary supplements would be protected from attacks by drug companies and the FDA.

### **What prompted DSSA?**

McCain's DSSA bill emerged in response to illegal steroid use among Major League Baseball players. Likely instigated by pharmaceutical interests, the bill is being posited as necessary to prevent supplement adulteration.

The FDA already has the power to pull supplements from the market that are contaminated but it has not been doing its job. DSSA is not only unnecessary, but it would actually reward the FDA for its failures. DSSA would also strip DSHEA and give full control of the supplement industry to the FDA.

### **Registration requirements**

DSSA would mandate that all supplement companies register with the Secretary of Health and Human Services (HHS), which oversees the FDA. Any company that refuses to register and comply with HHS would be subject to hefty fines, the classification of its products as "adulterated", and their removal from the market. The new system would burden manufacturers with significant new costs that would cause supplement prices to increase. A new taxpayer-funded bureaucracy would also be created to conduct inspections and oversee compliance.

### **Reporting requirements**

DSSA would require all "non-serious adverse events" received by supplement companies to be reported to the government, regardless of whether or not the events are related to the supplements for which they are submitted. Pharmaceutical companies would have access to these reports which they could use to petition the FDA to have supplements removed from the market. The FDA could also arbitrarily pull supplements from the market if it believes it has "reasonable probability" that there *may* be a problem.

### **FDA would decide which supplements are legal**

Perhaps the most chilling aspect of DSSA is that it would allow the HHS Secretary to establish a list of permitted supplements. Reversing common law, which assumes all is legal unless restricted, DSSA would allow only what is permitted to be legal.

In a nutshell, DSSA would increase supplement costs for consumers, grant incredible new power over the supplement industry to the FDA, and drastically limit the availability of supplements. Drug companies could

also use the bill to remove supplements from the market, patent them, and sell them as drugs!

It is absolutely critical to contact your Congressmen and oppose this bill. Please visit the *LifeExtension* Magazine [Legislative Action Center](#) and click on the "take action" button to express opposition.

The Alliance for Natural Health also has a convenient [Contact Tool](#) with which you can urge your Congressmen not to sponsor the bill.

Natural News dot Com February 26, 2010 by: Ethan Huff, citizen journalist

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### **FDA Issues ‘Import Alert’ for Labeling Violations: Many Non-U.S. Firms Affected According to FDAImports.com, LLC**

On March 09, 2010, U.S. Food & Drug Administration (FDA) issued Import Alert #99-20, “Detention Without Physical Examination of Imported Food Products Due to Nutritional Labeling Education Act (NLEA) Violations”. (IA 99-20). FDA enforces all laws and regulations related to “Front of Package” labeling and Nutritional Facts Panels. This applies to both imported and domestic products. According to Benjamin L. England, of FDAImports.com, LLC, despite NLEA being issued in 1994, “...the new Import Alert makes it clear FDA is substantially increasing its enforcement of food manufacturers and importers, under this statute. FDA will stop importers from selling products with illegal claims on their labels.”

Many manufacturers have already been placed on Import Alert #99-20, being charged with the simplest violation that the FDA can target; labeling violations. In order for a product or manufacturer to be placed on IA 99-20—which automatically detains the product at the Customs Port of Entry even without physically examining the product—the product need only “appear” to violate NLEA. According to the alert, when FDA first discovers a product or manufacturer has violated NLEA, FDA may issue a Release “with comment” which instructs the importer that the violation must be remedied on future shipments. “In our experience,” stated Mr. England, “FDA often just refuses the product” resulting in expensive delays and shipping charges for the importer. IA 99-20 indicates that if the importer violates NLEA after the first offense, then FDA will place the importer on the import alert, which will cause the importer’s products to be Detained Without Physical Examination and ultimately refused entry into the United States.

Manufacturers under Import Alert #99-20 have been charged pursuant to Section 801(a)(3) of the Federal Food, Drug, and Cosmetic Act: “[the product] appears to be misbranded within the meaning of Section 403 in that the label or labeling fails to bear the required nutritional information,” “bears an unauthorized nutrient content/health claim,” and/or “fails to bear required information [e.g. juice percentage, names of each ingredient and names of color additives].”

Under the 2009 Fiscal Year budget, FDA’s appropriation increased 20%, with a significant portion of that budget being devoted to food safety, including domestic enforcement and enforcement upon importers at the ports of entry. Although the products put on DWPE under IA 99-20 may be perfectly up to standard according to the FDA regulations, FDA may never know it. When the FDA finds a labeling violation, further examination of the product is not necessary.

On March 3, 2010, Margaret Hamburg, Food and Drugs Commissioner, issued a Press Release notifying manufacturers of the need to review their labeling in order that they may be in compliance with FDA

regulations. Hamburg emphasized 17 major food manufacturers that have been issued Warning Letters for the sole reason of violating the labeling provisions issued in the NLEA (1994). Some of these major food manufacturers include Dreyers Grand Ice Cream, Inc., Schwan's Consumer Brands, Sunsweet Growers, and Nestle, Inc. Although these 17 major food manufacturers have only been issued Warning Letters, the manufacturers under IA 99-20 have not been so fortunate. Instead, they are currently spending excessive amounts of money on storing their products at the boarder while they search desperately for solutions to the appearance of a labeling violation.

If you have been placed on IA 99-20, currently have entries subject to detention for alleged labeling violations, or are concerned about your firm's labeling compliance, let FDAImports.com, LLC show you 'the way through.' FDAImports.com, LLC is a consulting firm that can help you avoid Warning Letters from the FDA, as well as advise and correct violations that have caused you to be placed on Import Alert #99-20 and get your products back on the market. Don't let a Warning Letter or a Release with Comment turn into your firm Red Listed on Import Alert #99-20. FDAImports.com urges manufacturers who are in one of the above mentioned situations, or who desire to avoid such expensive business problems, to contact them promptly for advice tailored to your situation.

From: FDA Alert March 9, 2010

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### **FDA Wants \$4 Billion for Food Safety**

WASHINGTON—The U.S. Food and Drug Administration (FDA) is requesting \$4.03 billion to transform food-safety practices, improve medical product safety, protect patients and modernize FDA regulatory science to advance public health. The request is part of President Obama's fiscal year 2011 budget—a 23-percent increase over the agency's current \$3.28 billion budget. The proposed budget includes \$318.3 million in support for the Transforming Food Safety Initiative that reflects President Obama's vision of a new food-safety system to protect the American public. FDA will set standards for safety, expand laboratory capacity, pilot track and trace technology, strengthen its import safety program, improve data collection and risk analysis and begin to establish an integrated national food-safety system with strengthened inspection and response capacity. "The FY 2011 resources will strengthen our ability to act as a strong and smart regulator, protecting Americans through every stage of life, many times each day," said FDA Commissioner Margaret A. Hamburg, MD. "This budget supports the ability for patients and families to realize the benefits of science that are yielding revolutionary advances in the life and biomedical sciences."

From: Food Product Design February 2, 2010

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### **Canadians' food supply unsafe, CMAJ report says**

According to **The Globe and Mail**, an analysis published in the **Canadian Medical Association Journal** warns that Canada's food-safety system is broken, despite a massive independent investigation launched by the federal government in the wake of a deadly listeriosis outbreak. The federal government launched an independent investigation after a major outbreak of listeriosis linked to a Maple Leaf Foods plant in 2008 killed 22 Canadians and caused many illnesses. It wrapped up last summer with dozens of recommendations

that the government has pledged to adopt, such as requiring manufacturers to inform authorities of potential health threats and beefing up emergency preparedness. Various government departments have also issued reports on the listeriosis outbreak, and a Parliamentary committee has studied the issue and issued two reports.

However according to lead researcher Rick Holley, Professor of Food Safety and Food Microbiology in the Department of Food Science at the University of Manitoba, the problem is the investigations asked the wrong questions. Officials looked only at the systems in place and how they could be improved, instead of examining the foundation of Canada's food safety system and asking whether it works. One of the biggest weaknesses Holley identified is Canada's inadequate surveillance of foodborne illness. Although the government tracks reported cases of food- and waterborne illnesses, the data is basically collected in a large file folder—it's there, but it's difficult to make much sense of it, Holley said. It's a key problem because the lack of surveillance means health officials are always in the position of reacting to an outbreak, rather than identifying potential problems in advance by monitoring cases that pop up across the country, Holley said. The problem is compounded by the fact that each province is in charge of food surveillance, which has created a fragmented system.

"I think we've gone down a really dangerous route," said Michael McBane, National Coordinator of the Canadian Health Coalition. "We've replaced a culture of safety with a culture of risk. We've replaced proactive regulation with industrial self-regulation. We've replaced active inspections with paper inspections."

Holley said that countries that have invested in advanced surveillance systems, such as Denmark, are able to track cases of foodborne illness and the foods they're associated with, allowing them to approach manufacturers to make improvements before a full-blown outbreak occurs. But food surveillance is a complicated science that would require a significant amount of field work to collect samples from peoples' homes as well as an expensive new computer system, Holley said. The government has to be willing to make the investment needed in order for any real improvements to be made, he said. "I don't want them to spend another penny on food safety in Canada until we figure out what it is that's making us sick so they can manage it properly," Holley said. "Otherwise, it's a big waste of money and we can't afford that."

From: IFT Newsletter February 3, 2010

