Editorial

Indian traditional food is not only very popular in India but also rapidly capturing the fancy of western population. Indian tastes becoming popular because of spices and condiments that are used in our cuisines and specialties like tandoori chicken, chicken tikka masala, chhole etc. are fast rising on western popularity charts because of our Indian restaurants abroad. Even tourists coming to India love the Indian food and they want to continue enjoying it when they go home.

The curiosity of Indian cuisine is also stimulated by the research finding about the health benefits of many spices used in Indian cooking. Chillies, garlic, coriander, turmeric, and others have been found to promote health especially benefiting heart and lowering the risk of cancer. This also has helped people trying the exotic culinary experience of the orient.

Some of the global fast food companies have experimented with new range of foods with Indian accent especially with spices. So now you have spicy chicken, burger and pizza that have provided a new range zing to the taste which was earlier provided only with mustard and barbeque sauce and milder pizza sauces with tomato bases. This Indian experiment is certainly not limited to India and there are other places where not only Indians but others are demanding spicy foods.

Spice has been the essence of Indian cuisine and is not just something that adds taste but health as well. We also must see it in light of its nutrient contents. Many of the spices like cloves, asafoetida, cumin, mace, mango powder, poppy seeds, tamarind, and turmeric are rich in iron containing from 11 to 45 mg iron per 100g. Many are also quite rich in fibre e.g. cardamom, chillies, coriander, chillies, mango powder and pepper having 12 to 32g fibre per 100g. Thus they could provide a substantial amount of these and may be other nutrients to the total dietary intake as Indians consume substantial amounts of spices.

There are also negatives. The phytin content of spices is also substantially high in chillies, coriander, cumin, fenugreek seeds, pepper and turmeric ranging from about 70 to over 300mg/100g. This might somewhat negate the availability of iron. It has also been noticed that fermented foods produce phytase so some of the phytate may be degraded by fermentation and also some nutrients like folate may be produced.

Spices consumption has been estimated by various studies to be between 10g to 15g per day per person in India. This also varies according to economic conditions with lower class consuming more spices. We are also seeing some modern technology making changes in the spice products with oleoresins and supercritical fluid extracted spice oils. It is hoped that these products also retain the healthful ingredients along with the taste providing components.

Thus Indians are again showing greater preferences for spicy foods whether for taste reasons or because they are healthy. Whatever the reason, the trend is good and let us hope that you all have a very happy and spicy festivities.

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

PFNDAI Bulletin June 2011

Consumption Pattern of Processed Foods among Households in Mumbai

Prof. Shobha Udipi, Director, PG Studies & Research in Home Science,
SNDT Women's University

The incidence of non-communicable diseases (NCDs) in developing countries like, India is steadily increasing due to various factors such as urbanization, change in family structure, increasing participation of women in the work force and hectic lifestyles have led to drastic changes in the eating patterns in Mumbai city. Further, availability of 'convenience foods' has accelerated this transition in the dietary pattern. However, there is paucity of information on the consumption pattern of families at the household level. Thus, the present study was conducted with an aim to obtain information about the consumption pattern of processed foods in urban Indian households, with specific reference to Mumbai city. The work was funded by Protein Foods & Nutrition Development Association of India (PFNDAI) and was conducted by students of PG Department of Food & Nutrition, SNDT Women's University, Juhu Campus, Mumbai.

The objectives of the study were to obtain information on:

- Consumption of processed foods, foods eaten out at restaurants and from take away services.
- Intake of 'negative' ingredients such as fat, salt and sugar from the above mentioned sources.

In addition, the study attempted to determine:

- Whether income influences purchase and consumption patterns of these foods and
- Who is the primary driver within the family for purchase of various food items?

A survey was conducted on middle and upper income 2534 households from four geographical zones (eastern, western, central and northern) of Mumbai city. A structured interview schedule was constructed and pre tested on 35 households. In each household, the housewife was interviewed by trainee dietitians after obtaining the informed consent about family composition, economic status, consumption of processed foods, commodities and ready to eat foods, along with the primary consumer for the different foods included in the tool. In addition to this, details about families' pattern of 'eating out', whether any family member was suffering from any non-communicable disease and children's eating habits were also collected.

The salient features with respective to consumption pattern is summarized herein:

- Consumption of staples (cereals and pulses), fruits and vegetables decreased with the rise in income.
- Non vegetarian foods were consumed by less than 40% of the families surveyed with, egg (57%) being the only exception. Consumption of milk and fish increased with increasing income. However, the reverse was true for chicken and meat.
- Sugar and honey consumption increased with rise in income whereas, jaggery was more popular among lower income groups.
- The daily per capita intake of salt was 10 grams. This amount is almost four to seven times higher than the recommendations given by expert groups for general population and much higher than for persons with hypertension/cardiovascular disease and diabetes mellitus.
- Two-thirds of the families purchased butter, three-fourths purchased ghee and only one fourth used vanaspati. The daily per capita consumption of oil, butter, ghee and vanaspati was 35 g, 7 g, 12 g and 9 g respectively. The consumption of ghee and vanaspati increased with the rise in income. Similarly, there was a marginal rise in the intake of oil with the income.
- Bread is the most popular processed food with the consumption being greater among families with higher incomes.
- Less than one-tenth of the families purchased canned foods, frozen snacks, sausages and bacon/ham. Although the percent households consuming these foods is low, their per capita consumption is relatively higher.
- More than half the households consume chocolates and aerated beverages. Around 40% of the families consume jams. The consumption of aerated beverages and chocolates were higher among the lower income groups as compared to others. The consumption of aerated beverages, non aerated beverages, squash and jam was favored more by children below three years of age however, the consumption of toffees was influenced by elderly.
- More than two-thirds of the households consume wafers and sev/farsan with their consumption being mainly influenced by children of all the age groups.
- More than 50% of the households studied, reported that they consumed mithai, cakes, cream biscuits, chocolates and sweet biscuits. The consumption of mithai decreases with the rise in income. Also, sweet and cream biscuit intake is higher in the income groups of 1 – 5 lakhs followed by 5 – 10 lakhs and more than 20 lakhs. Adults and elderly influence the consumption of mithais. On the other hand, cakes, pastries and biscuits are more popular among children. Apart from children, elderly also influence the consumption of sweet and cream biscuits.

- Among the ready to cook (RTC) foods, instant noodles is the most commonly consumed (57%). The consumption of RTC desserts rose with the income whereas, snacks, instant soups and instant noodles, were more so consumed among families in the income group Rs 5-10 lakhs, followed by families with incomes ranging from Rs 1 lakh to Rs 5 lakhs. RTC snacks and desserts were more preferred by adults followed by children below three years of age. However, instant noodles, instant gravies and instant soups appear to be popular among children above 11 years of age and the elderly.
- More than half of the households consume milk products except milk powder. Among all, ice cream was most commonly consumed (76%). The consumption of cheese, paneer and ice cream was higher in the upper income groups than the others. Cheese and paneer consumption was influenced by children in the age groups of below three years and above 11 years respectively. All the members of the family influenced the consumption of ice cream especially, elderly and children in the age group of 6 – 10 years.
- More than 60% of the households surveyed, reported that they consumed foods like dosa, sandwich, chaat food items, pizza, vada pav, chinese noodles and fried rice, in the order listed. The consumption of chinese noodles, pav bhaji and sandwich was seen to increase with rise in the income. On the other hand, lower income families especially those earning less than Rs 1 lakh consumed more of vada pav or batata vada. Most of the fast foods and snacks studied were found to be popular among adults and children above 11years of age.
- In about two-third households, children pester for pizza, burger and Frankie, one-fourth for confectionaries, chocolates and sweets.
- The foods commonly disliked by the children were green leafy vegetables, pulses, fruits and vegetables.
- About 23% of the households had at least one family member with some disease condition. Among all, diabetes (39%) and hypertension (33%) were the most common complaints.
- The consumption of sodium rich foods, RTC foods, sugar rich foods and energy dense foods was higher in families without any disease condition than in those households with diabetes alone or diabetes and cardiovascular diseases.

Implications of the study:

Processed foods (bread, biscuits, mithai, chocolates, sev/farsan, wafers, ice cream, instant noodles) and ready to eat foods have become a part of the diet of many individuals in a city like Mumbai. In addition to this, high intake of visible fats, table salt, sugar predisposes them to the risk of obesity and a number of non communicable diseases like hypertension, cardiovascular diseases and diabetes mellitus. These NCDs are associated with a wide range complications hence, increasing the morbidity rate. Besides this, it would also bear an impact on the emotional health, professional and family life of the individuals thus deteriorating their overall quality of life.

Recommendations for further research:

Lifestyle and behaviour modification become the need of the hour to curb the occurrence of non communicable diseases. Appropriate steps are required in this direction.

- The nutritional composition of many of the commercially available products is limited. Hence, there is a need to analyse these foods for their nutrient content, specifically fat, sodium, potassium, sugar and dietary fibre.
- Health and nutrition education is essential to create awareness among people and influence their food choices.

❁❁❁

Soya Protein: Prof. Jagadish Pai

Proteins we consume are digested in our stomach and intestine into smaller peptides providing amino acids which are used up by the body to make proteins that body needs for various needs. Proteins are present in muscles, skin, hair etc. and they are components of cellular structure. They are needed for growth and maintenance of tissues. Enzymes, hormones and antibodies are protein based. Proteins are involved in transportation and blood clotting besides they can also serve as source of energy. Thus proteins are considered extremely important in diet and more so in children.

Institute of Medicine recommends that adults get minimum of 0.8 g protein for every kg body weight per day to keep from slowly breaking down their own tissues. ICMR recommends 1g protein for adults whereas children and pregnant and lactating mothers need to get more. Infants between 6 and 12 months of age are recommended the highest of 1.69g/kg body weight per day by ICMR. Beyond this basic requirement there is relatively less information on ideal amount of protein in diet.

Around the world, millions of people do not get enough protein and its deficiency leads to condition known as kwashiorkor. Protein deficiency may cause growth failure, loss of muscle mass, decreased immunity, weakening of heart and respiratory system and death.

However, not all proteins are equal as they have different composition of amino acids. Animals cannot synthesise all the amino acids in the body so some called essential amino acids need to be supplied in diet in adequate amounts. Proteins having adequate amounts of essential amino acids are called complete proteins and milk, egg and soya proteins are among complete proteins. Vegetarian sources of proteins like fruits, vegetables, grains and pulses are commonly incomplete, the exception being soya.

Market for Soya Products

Soya bean has been an important crop in eastern Asia for many centuries in China, Japan and other countries there. It was introduced in European and American regions only in 18th century and was used as food in last century. US has become the leading producer of soya beans while India ranks 4th after China. Of the total world soya beans production in 2009 i.e. of 223 million metric tonnes, the figures for some of the leading producers are given in the table 1.

Table 1: Leading Countries Producing Soya Beans
(Production in million metric tonnes)

USA	91.4
Brazil	57.3
Argentina	31.0
China	15.0
India	10.0
Paraguay	3.9
Canada	3.5
Bolivia	1.5
Ukraine	1.0
Uruguay	1.0

Source: FAO Stats

Global market for soya foods is to reach between $ 42 billion and $ 48 billion in another half a decade by different estimates. One estimate of soya protein products market is around $ 2.5 billion. The market is driven by increasing awareness among consumers about the health benefits including heart health, bone health and protection from cancer in addition to high protein and fibre content, low saturated fat without cholesterol. Improved tasting products like tofu, soya milk, and meat analogues have helped the growth.

Soya Composition & Nutrients

Soya bean is a legume so it is rich in proteins. Table 2 gives the composition of soya beans including important nutrients they contain. They are also important source of nutrients including iron, vitamin B6, vitamin K, Calcium, magnesium, potassium and zinc.

Table 2: Nutrient Composition of Soya Bean

Nutrient	Amount per 100g
Energy	446 kcal
Carbohydrates	30.16 g
Sugars	7.33 g
Dietary Fibre	9.3 g
Fat	19.94 g
Saturated	2.88 g
Monounsaturated	4.40 g
Polyunsaturated	11.26g
Protein	36.49 g
Water	8.54 g
Vitamin A	1 µg
Vitamin B6	0.38 mg
Vitamin C	6.0 mg
Vitamin K	47 µg
Iron	15.70 mg
Magnesium	280 mg
Potassium	1797 mg
Zinc	4.89 mg

From: USDA Nutrient Database

There are also certain antinutritional factors that are present in raw soya beans. Trypsin inhibitors are toxic to humans and certain animals like pigs and chickens.

Soya protein is a complete protein as it contains all the essential amino acids in adequate amounts for human nutrition and is one of the least expensive sources of dietary proteins. Hence it is very important for vegetarians. Digestibility of soya foods is quite high e.g. soy beans 65%, tofu and soya milk 93%, and soy protein isolate up to 97%. When Protein Digestibility Corrected Amino Acid Score (PDCAAS) is considered soya protein is considered to have similar equivalent in protein quality to animal proteins.

As soya bean has been consumed for centuries, many of the soya products are traditional e.g. soya milk, tofu, soya sauce, tempeh and natto etc. However, since soya bean has been acknowledged for its high value protein among various other benefits, several new products have been prepared including textured vegetable protein, simulated meats, and protein enriched food products made with either soya flour or soya protein concentrates and soya protein isolates to name a few. More recently its oil is also considered nutritious because of the presence of alpha linolenic acid.

Soya milk is an excellent source of high quality protein and B-vitamins. Soya milk is not a rich source of calcium. Tofu on the other hand is not only an excellent source of high quality protein and B-vitamins but also a rich source of calcium when calcium sulphate is used for coagulation. Following table gives the nutritional values of soya milk and tofu.

Table 3: Nutrients present in soya milk & tofu

Nutrient	Soya Milk 243g (1 cup)	Tofu 124g (1/2 cup)
Protein	7.9g	10g
Total fat	4.3g	5.9g
Saturated	0.5g	0.9g
Monounsaturated	1.0g	1.3g
Polyunsaturated	2.3g	3.3g
Vitamin K	7.3mcg	-
Thiamine	0.1mg	0.1mg
Riboflavin	0.2mg	0.1mg
Niacin	1.2mg	0.2mg

Vitamin B6	0.2mg	0.1mg
Folate	43.7mcg	18.6mg
Pantothenic acid	0.9mg	0.1mg
Calcium	60.7mg	434mg
Iron	1.6mg	6.6mg
Selenium	11.7mcg	11.0mcg

Source: NutritionData.Com

Health Benefits of Soya Products

At one time, losing weight by cutting out carbohydrates and eating more protein was not taken seriously by medical establishment but more recent studies have provided some evidence that high protein, low-carbohydrate diet may help lose weight more quickly than a low-fat diet although evidence is short term. High protein foods including meats and beans slow the movement of food from stomach to intestine so one feels full for longer. Protein also has gentle, steady effect on blood sugar avoiding quick, steep rise and fall in blood sugar after rapidly digested carbohydrates. Also body uses more energy digesting protein than fat and carbohydrate. However, long-term effects of high-protein diets need to be studied. Lower intake of carbs means lesser consumption of fruits, vegetables, and grains, which will reduce the intake of fibre, vitamins, minerals and phytonutrients. So it is important to see what accompanies protein. Plant based high-protein foods low in saturated fat helps heart and waistline. Soya is a prime candidate for that.

There are many claims made on health benefits of soya foods. It has been claimed that regular consumption of soy-based foods lowers cholesterol, reduces post-menopausal syndrome (PMS), prevents cancers of breast and prostate, helps weight loss, and fights osteoporosis. Some of the benefits are attributed to isoflavones, a type of phytoestrogen. Some claims were based on preliminary evidence. Studies carried out since then have tempered some of the claims. Soy protein containing foods still many health benefits.

Heart Disease: Soy protein reduces cholesterol and helps reduce the risk of heart disease although it is not to the extent that it was earlier thought. Daily consumption of more than 25g soy protein with its associated isoflavones could improve lipid profiles in hypercholesterolemic people. Soy protein without isoflavones appears to be less effective. Also isoflavones without soy proteins does not lower cholesterol.

A recent study showed that consumption of soy protein lowered LDL cholesterol and modulated some serum lipids lowering the cardiovascular disease risk in adults with type 2 diabetes.

Osteoporosis: Consumption of soy protein may protect against osteoporosis. Soy isoflavones reduces bone loss in perimenopausal women which may explain why Japanese women have lower prevalence of fractures compared to Western women although they consume less calcium but consume soy protein.

PMS: There are several studies showing that soy consumption reduces PM syndromes before, during and after menopause.

Cancer Risk: Epidemiological studies suggest that soy protein reduces risk of cancer of breast and prostate. Comparison is again made of Japanese women who eat a lot of soy protein as tofu and miso and have much lower risk of breast or prostate cancer than Western counterparts. Isoflavones (genistein, daidzein and glycitein) and phytic acid present in soy protein preparations have strong antioxidant activity and might be responsible for anticancer properties. Study with Chinese women showed that high soy intake during adolescence may reduce risk of breast cancer in later life.

Diabetes: Recent study with Japanese adults explored the relationship between soy and isoflavone intake and the risk of developing type 2 diabetes. Among overweight women, higher intake of soy products was associated with lower risk of type 2 diabetes.

Soya Bean Products:

Although currently almost 85% of soya bean is used for soya bean meal to be used as animal feed and vegetable oil a large portion of which is used for making hydrogenated vegetable oil, traditionally much of soya bean was used for making soya milk, tofu and other fermented products. Meal is prepared after oil is extracted using solvent on soya flakes.

The deoiled flakes are toasted using moist steam to remove solvent traces and the cake is pulverised by hammer mill to prepared ground meal. This soy flour containing less than 1% oil may be used in pig or poultry feed as well as pet foods. Higher quality meal from which protein concentrates or isolates are prepared may not be toasted to minimise denaturation of protein.

Refined soya oil is odourless and is rich in omega 3 fatty acid, alpha linolenic acid. The oil has a high smoking point so can be used for frying and high temperature cooking. Refining of oil gives a by-product lecithin which is used very commonly for emulsification.

Soya Nuts are prepared using whole soya beans that are soaked and then baked till brown. Conventional nuts have high fat content but soya nuts have less fat and more protein.

Soya Milk is made by soaking soya beans and grinding them with water. The liquid after straining it is called soya milk. Traditionally it has a beany taste which is acceptable to South East Asian population but less appealing to western palate. Using proper processing techniques such as heating the soaked beans to deactivate the enzymes, beany taste can be reduced or eliminated. Removal of hulls from soaked beans improves the extraction of soya milk. Soaked beans are ground with water to make fine slurry which then is sieved to separate insoluble okara from soya milk. Okara may be used for fortification or as feed ingredient. Soya milk may be flavoured and sweetened to improve taste.

Another traditional product is tofu, which has been a staple in Asia for over 2,000 years. It is also known as soya curd or soya panneer in India. It is soft cheese like food made by curdling soya milk using coagulants like calcium sulphate or magnesium chloride. Use of calcium salt adds this essential mineral. Coagulant in water is added gently with stirring to boiled soya milk which is cooled to about 70-80°C. Less salt will produce softer tofu while more will make it hard. The mixture is stirred and allowed to stand for about 20 minutes. Once curd is formed and separates from whey it may be filtered through cheese cloth or may be poured into moulds lined with cheese cloth. Gentle pressure may be applied by keeping weight on top for removal of more whey and formation of firmer curd. Tofu can be frozen for longer shelf life.

Many fortified and nutritious food products have been made with various ingredients including soya proteins in different forms including textured soya proteins like granules and chunks as well as concentrate and isolates which have much higher percentage of protein. Textured soya protein is made from defatted soya cake by extrusion into chunks or granules which has fibrous structure like meat. When soluble carbohydrates are removed from the defatted cake, concentrates are prepared. Using the proper extraction process soya isoflavones could be retained in the concentrates. Concentrate retains much of fibre and is used in baked goods, breakfast cereals and health foods.

Isolates contain highest protein content. When most of the fat and carbohydrates are removed, product with 90% protein or protein isolate is obtained. Isolates are mostly used by food industry to increase protein content of a food product. Since the isolate has bland flavour it can be added to any food. Another advantage is that it has no compounds that can cause flatulence so there is no discomfort after eating. It has been used in snacks, breakfast cereals, energy bars, weight loss ready-to-drink beverages, soups, sauces, prepared foods, baked goods, ice creams, yogurt, meat alternatives etc.

Many formulated high protein products use soya protein as it is a vegetarian source, it is a complete protein and also it is quite reasonable in cost so affordable high quality products can be prepared using soya protein. The protein is also highly functionally useful to prepare many extruded and textured products.

❁❁❁

Heart-Healthy Formulating

Heart health is important in many buying decisions today. However, consumers are learning that not all health & nutrition messages are true and are becoming more discriminating in food choices. Thus there is opportunity for manufacturers to invest in ingredients that have been clinically proven to help in heart health. Heart-heart foods may be either “minus” or “plus” products or both. Minus indicates absence or reduced amounts of ingredients having negative impact on heart health; while plus means these contain ingredients having benefits. A recent survey indicates that consumers are more apt to see foods for preventing rather than treating health problems. While shopping they look for foods and beverages that are good for their heart.

Claiming to be heart healthy

How does a food or beverage become “good for the heart”? FDA has approved several health claims both in significant scientific agreement (SSA) as well as qualified category linking consumption of specific foods or ingredients to reducing one’s risk of developing coronary heart disease, such as heart attacks and stroke. For a food to make any of these heart-health claims, nutrient content requirements given under 21 CFR 101.62 for “low-saturated-fat”, “low-cholesterol” and “low-fat” food that would qualify for SSA claim that reads: “Diets low in saturated fat, cholesterol and total fat may reduce the risk of heart disease. Heart disease is dependent upon many factors, including diet, a family history of the disease, elevated blood LDL cholesterol levels and physical inactivity.”

Another minus SSA claim indirectly associated with heart health is sodium and hypertension (high blood pressure) and a recognised risk factor for CVD. To make this claim: “Diets low in sodium may reduce the risk of high blood pressure, a disease associated with many factors”, the food must meet all the requirements for “low-sodium” food.

The Cholesterol Connection

Scientists have a better understanding of cholesterol and its function in body and this helps make appropriate claims. Cholesterol is found in blood and is an essential component of cell membranes helping in various biological functions. Cholesterol is made by body as well as obtained from diet and is present in two forms high-density lipoprotein (HDL) and low-density lipoprotein (LDL). When too much LDL is present in blood it can clog arteries increasing risk for cardio-vascular disease (CVD). HDL helps keep LDL from depositing on artery walls.

Recently, other “bad” cholesterols like very low-density (VLDL) and intermediate-density (IDL) lipoproteins have been identified. These with LDL are undesirable while HDL is considered desirable as healthy level of this is believed to protect against CVD while low level actually increases risk. Non-HDL total cholesterol is now considered to a stronger predictor of CVD and mortality risk than LDL alone as higher amount of that allows development of atherosclerotic plaques in blood vessels. Hence it is better to reduce non-HDL cholesterol than just lowering LDL and diet is one of doing so. Many food ingredients have been shown to decrease non-HDL and total cholesterol while not affecting HDL. Thus reduction of non-HDL claim would be more appealing.

Fibre’s Fame

Research and clinical trials support many heart-healthy benefits of consuming fibre, particularly soluble fibre. Fibre protects against Coronary Heart Disease (CHD) by lowering LDL cholesterol, attenuating blood triglyceride levels, decreasing hypertension and controlling post-prandial blood glucose levels. Dietary water-soluble fibre is shown to lower CHD risk. Two SSA claims are permitted by US FDA. First refers to fruits, vegetables and grain-based foods that naturally contain soluble fibre and the second refers to soluble fibre either inherently present or added to foods. The latter present an opportunity in heart-healthy formulating.

To make the claim, food product should provide oat bran, rolled oats, whole oat flour, whole grain or dry milled barley, and whole oat or barley in any combinations. Food must contain at least 0.75g soluble fibre per serving. Enzyme hydrolysed and psyllium husk products are also included. Whole grains are typically higher in fibre, vitamins and minerals and antioxidants. All of these are believed to provide cardiovascular disease benefits. Increasing daily fibre intake of whole grains, fruits and vegetables provides heart health benefits. Research has shown that eating 3 servings of whole grains per day as part of a healthy diet, may reduce the risk of CHD, diabetes and certain cancers and may help maintain weight.

Specialised grains and ingredients can increase beneficial components in foods and formulations. One proprietary high fibre whole grain has 30% fibre (3 times more than oats), 40% of which is beta-glucan, soluble fibre, making it a powerful ingredient for heart health. Due to its high fibre content only a small amount is needed to give nutritional boost. It is possible to increase fibre and other

nutrients in many popular foods like pizza crusts, tortillas, cereals, granolas, cookies, muffins, meat systems, fillings and side dishes while improving flavour, texture and appearance.

Soy Protein Shines

Soy protein is another cholesterol-lowering nutrient used by formulators. SSA claim allows "Diets low in saturated fat and cholesterol that includes 25g of soy protein a day may reduce the risk of heart disease. One serving of _____ provides ___g of soy protein." Effect of soy protein on total and LDL cholesterol remains unresolved but new study reports that soy protein lowers total and non-HDL cholesterol significantly in patients with moderately high cholesterol. As the material had low levels of isoflavones, the researchers feel that isoflavones do not play a role in cholesterol lowering.

Sterols and Stanols

The SSA about sterols and stanol esters are for food products that contain at least 0.65g plant sterol esters or at least 1.70g of plant stanol esters per serving. Two servings of such a food eaten at different times of day and with other foods have been shown to reduce the risk of CHD by lowering blood cholesterol. Last year US FDA amended SSA claim to allow sterol or stanol esters as well as non-esterified forms to a broader range of food applications to juice, milk, yogurt, bars, coffee and tea. This amendment came after numerous clinical trials reported that daily consumption of 1.5 to 3 g of phytosterols from foods could reduce total cholesterol to 8% to 17%. FDA necessitates 2g phytosterol per day in daily intake in order to make the claim.

Plant sterols are no more a novelty ingredients as there has been 65% increase in public awareness of plant sterols and effect on heart health. Many options of sterols are available including water-dispersible and fat-soluble ingredients, which are available that do not impact taste or texture and used in juice-based drinks, juice-milk beverages, breakfast cereals, nutritional bars and yogurt. Non-esterofied forms have applications in ready-to-eat breakfast cereals, pasta and noodles, baked foods and salty snacks. There is also micronized version for fine texture is critical. Esterified phytosterol products for vegetable-oil-based applications, such as vegetable-oil spreads, and dressings for salads and mayonnaise, but also in water-based systems that include protein, such as yogurt-type products and dairy analogues like soymilk, cream substitutes and frozen novelties.

Qualified Claims

Many foods and ingredients are linked to qualified heart-health claim. Many are based on their unsaturated fatty acid profile and low levels of non-HDL cholesterol and include tree nuts, omega-3 fatty acids like DHA and EPA, monounsaturated fats from olive oil and unsaturated fats from canola and corn oils. Benefits of omega-3 are due to improved ratio of HDL to non-HDL cholesterol, lower levels of plasma triglycerides and anti-platelet and/or anti-arrhythmic effects. DHA also reduces blood levels of C-reactive protein, a biomarker of inflammation.

On the Horizon

There are many other foods having heart-healthfulness such as dark chocolate, green tea and red wine, all of which can be concentrated sources of antioxidants that help protect blood vessels surrounding the heart muscle but cannot make any heart-health claims yet. Scientists are aggressively documenting clinical benefits of many antioxidant-rich foods. For example human study positively link resveratrol found in red wine to improve cardiovascular health. Several human studies are now going on with resveratrol in the areas of cardiovascular health, metabolism, cognitive and physical performance. There are other components of foods that researchers will be exploring and try to isolate heart-healthy ingredients that will provide formulators with tools to develop products to keep the heart healthy.

Condensed from an article by Donna Berry in Food Product Design of January 2011

❁❁❁

Nutrition & Health News

AHA Makes Omega-3 Intake Recommendations

May 3, 2011 **Food Product Design**

DALLAS—The American Heart Association (AHA) for the fist time is recommending Americans boost their consumption of omega-3 eicosapentaenoic acid (EPA)/docosahexaenoic acid (DHA) to combat elevated triglyceride levels and increase heart health. The AHA statement was published in the journal **Circulation** and suggests optimization of nutrition-related practices can result in a marked triglyceride-lowering effect that ranges between 20 percent and 50 percent by cutting carbohydrates, eliminating trans fats, restricting fructose and increasing fiber and omega-3 fatty acids from marine sources.

AHA recommended 0.5 to 1g of omega-3 EPA and DHA for individuals with borderline fasting triglyceride levels (150 to 199mg/dL), 1 to 2g for individuals with high fasting-triglyceride levels (200 to 499mg/dL), and 2 to 4g for individuals with very high fasting-triglyceride levels (≥500mg/dL). AHA previously recommended normal healthy individuals consume a variety of fish and a daily intake of 1g of omega-3 EPA and DHA for patients with documented coronary heart disease (CHD). According to the statement, because the amount needed for significant triglyceride lowering (2 to 4 g) is difficult to attain through diet alone on a daily basis, dietary supplements may be needed.

“The recent statement issued by AHA is a very positive step for improving consumers' understanding of the role of triglycerides in CVD management," according to a statement released by Ocean Nutrition Canada Limited (ONC), Dartmouth, Nova Scotia. The company noted awareness of the health benefits of omega-3 is high among consumers, but many still do not understand the different forms of omega-3 (EPA, DHA and ALA), or the health benefits of each.

“It is important for consumers to understand that fish provides both EPA and DHA, whereas most algae sources provide only DHA," ONC added. “Furthermore, while ALA is an essential fatty acid, many of the reported health benefits associated with omega-3 have been the result of supplementation with EPA and DHA. While the body can theoretically convert ALA into EPA and DHA, the actual conversion rate is very low. In fact, many studies suggest that the conversion rate can be as low as 1 percent or less. As such, fish, fish oil supplements, and food products fortified with fish oil are the best sources of omega-3 for consumers"

❁❁❁

Dietary Calcium Builds Better Bone Health

May 2, 2011 **Food Product Design**

URBANA, Ill.—Adults who increase their dietary intake of calcium and vitamin D usually increase bone mineral density and reduce the risk for hip fracture significantly, according to a new study published in the journal Nutrients. Researchers at the University of Illinois reviewed 219 scientific articles published over the past 10 years to determine the impact of dietary, supplemental and educational interventions. They also looked at the effects of dietary protein, vitamin K, soy and sodium in their literature review.

They suggest menopausal women follow a low-sodium “portfolio diet" rich in fruits and vegetables, adequate calcium, vitamin D, protein, magnesium and potassium. The recommend women consume 1,200 milligrams of calcium a day. Three glasses of 1 percent to skim milk provide 900 milligrams and the rest can be obtained through consuming calcium-rich and calcium-fortified foods such as soy milk, orange juice, yogurt, crackers, cereal, bread, breakfast bars and pancakes.

"Following a low-sodium diet does seem to have a positive effect on bone density. Some people have the habit of adding a generous sprinkle of salt to most foods before eating, but there's more involved here than learning not to do that. You have to choose different foods," they noted. They cautioned against overconsumption of smoked or processed meats, bacon, lunch meat and processed foods that contain high levels of sodium that could sabotage bone health.

❁❁❁

Grape polyphenols show anti-diabetic potential: Study

By Stephen Daniells, NutraIngredients 22-Apr-2011

Researchers from the University of Montpellier in the South of France report that rats fed a high-fat and high-sugar diet but supplemented with grape polyphenols displayed a lower accumulation of fat in muscle tissues. Diets high in saturated fats are reported

to worsen insulin resistance, whereby cells do not respond adequately to the normal levels of insulin produced by the body – a marker of the onset of diabetes, explained the researchers in the British Journal of Nutrition.

The affect of fat on insulin sensitivity is said to occur via changes to the compositions of cell membranes, and particularly the phospholipids in the membrane. The new study sought to identify if consumption of a polyphenol-rich extract from grapes could change the composition of fat in muscle cell membranes, with a particular focus on phospholipids and triglycerides.

Study details

Lab rats were divided into three groups: The first group was fed a standard lab rat diet, whil the other two groups received a diet containing high levels of fat and sugar. One of the high-fat, high-sugar groups received an additional extract of grape polyphenols (Provinolse, Societe Francaise de Distillerie). Results showed that animals receiving the grape extract had lower triglyceride levels in the cell membranes of their muscles, compared to the high-fat, high-sugar-fed animals. In addition levels of omega-3 polyunsaturated fatty acids in the phospholipid portion of the membranes were found to increase in the grape-fed animals.

The high-fat, high-sugar diet was found to alter gene expression in muscle cells, but these changes were reversed in the animals given the grape extract, said the researchers. “In conclusion, the grape polyphenol extract modulated membrane phospholipid fatty acid composition and decreased muscle triglyceride content in high-fat, high-sugar diet-fed rats,” report the researchers. “The PPE lowered […] gene and protein expression, probably decreasing fatty acid transport and lipid accumulation within skeletal muscle,” they added. “These effects of the PPE are in favor of a better insulin sensibility.”

Diabetes facts

Diabetes affects an estimated 24 million Americans, equal to 8 percent of the population. The total costs are thought to be as much as $174 billion, with $116 billion being direct costs from medication, according to 2005-2007 American Diabetes Association figures.

❁❁❁

Low Vitamin D Linked to Anemia in Kids

May 2, 2011 **Food Product Design**

DENVER—Children with low levels of vitamin D may have an increased risk for anemia, according to new research presented May at the annual meeting of the Pediatric Academic Societies. The findings also suggest low vitamin D levels in black children may be an important contributor to anemia.

Researchers at Johns Hopkins Children's Center examined data from the blood samples of more than 9,400 children aged 2 to 18 to determine the relationship between hemoglobin and vitamin D. Children with levels below 20 nanograms per milliliter (ng/ml) of blood had a 50-percent higher risk for anemia than children with levels 20 ng/ml and higher. For each 1 ng/ml increase in vitamin D, anemia risk dropped by 3 percent. Only 1 percent of Caucasian children had anemia, compared with 9 percent of black children. On average, black children had much lower vitamin D levels than Caucasian children.

Anemia is more common in black children, but the reasons for this remain unclear, although some suspect that biologic and genetic factors are involved. The new findings suggest low vitamin D levels in black children may be an important contributor to anemia.

"The striking difference between black and white children in vitamin D levels and hemoglobin gives us an interesting clue that definitely calls for a further study," said lead investigator Meredith Atkinson, M.D., M.H.S., a pediatric nephrologist at the Johns Hopkins Children's Center.

❁❁❁

Omega-3 may increase prostate cancer risk, but benefits outweigh: Study

By Nathan Gray, NutraIngredients 26-Apr-2011

The counter intuitive findings come from a study published in American Journal of Epidemiology. The research analyzed data from a nationwide study involving more than 3,400 men. Researchers from the Fred Hutchinson Cancer Research Center found men with the highest blood percentages of docosahexaenoic acid (DHA), had 2.5 times the risk of developing aggressive, high-grade prostate cancer compared to men with the lowest DHA levels.

Cause for concern?

Researchers led by Dr Theodore Brasky said that men concerned about heart disease should not reduce their omega-3 intake in response to the cancer link. “Overall, the beneficial effects of eating fish to prevent heart disease outweigh any harm related to

prostate cancer risk," added Brasky. "What this study shows is the complexity of nutrition and its impact on disease risk, and that we should study such associations rigorously rather than make assumptions," he said.

'Stunned'

Conversely, the study found that men with the highest blood ratios of trans-fatty acids had a 50 percent reduction in the risk of prostate cancer. "Omega-3 fatty acids, considered beneficial for coronary artery disease prevention, may increase high-grade prostate cancer risk, whereas trans-fatty acids, considered harmful, may reduce high-grade prostate cancer risk," said the authors, led by Dr Theodore Brasky.

"We were stunned to see these results and we spent a lot of time making sure the analyses were correct," said Brasky. "Our findings turn what we know – or rather what we think we know – about diet, inflammation and the development of prostate cancer on its head and shine a light on the complexity of studying the association between nutrition and the risk of various chronic diseases," he added.

Cancer link

Chronic inflammation is known to increase the risk of several cancers, and has an important role the development and progression of prostate cancer. Omega-3 fatty acids found primarily in fish and fish oil supplements have anti-inflammatory effects, whilst other fats, such as the omega-6 fats in vegetable oil and trans-fats found in fast foods, are thought to promote inflammation.

The study examined the associations between these inflammation-related fatty acids and the prevalence of prostate cancer over seven years, in a nested case-control analysis of participants from the Prostate Cancer Prevention Trial.

"We wanted to test the hypothesis that the concentrations of these fats in blood would be associated with prostate cancer risk," said Brasky. "Specifically, we thought that omega-3 fatty acids would reduce and omega-6 and trans-fatty acids would increase prostate cancer risk," he explained.

Study details

The research study, which claims to be the largest ever to examine the association of dietary fats and prostate cancer risk tested fatty acid levels from the blood serum, measuring the concentrations of omega-3, omega-6, and trans-fatty acids. The researchers found that none of the fats were associated with the risk of low-grade prostate cancer risk. However, Brasky and his co-workers reported that docosahexaenoic acid (DHA) was positively associated with high-grade prostate cancer.

In contrast, they found omega-6 fatty acids were not associated with prostate cancer risk, whilst trans-fats (TFA) were seen to be inversely associated with risk of high-grade prostate cancer; showing a 50 percent reduction in risk. Brasky and his colleagues said that their findings show a significant association between inflammation-related phospholipid fatty acids and the risk of prostate cancer risk, "albeit in the directions opposite to those hypothesized."

❁❁❁

Probiotics may reduce cold/'flu symptoms for male athletes: Study

By Stephen Daniells, NutraIngredients 15-Apr-2011

Competitive male cyclists receiving the daily probiotic supplement had a decrease in symptoms of upper respiratory tract infections of 50 percent than a placebo group, according to results published in the Nutrition Journal. On the other hand, well-trained female athletes did not experience any benefits, and probiotic supplementation was actually associated with an increase in symptoms, report researchers led by Professor Allan Cripps from Griffith University.

"An increase in mild gastrointestinal symptoms most likely reflects an adaptive response of the gastrointestinal tract to alteration in the composition of the microflora," wrote Prof Cripps and his co-workers. "The increased recovery of total Lactobacillus species in faeces may have underpinned the clinical outcomes. "Collectively these studies indicate that L. fermentum (PCC) may be a useful nutritional adjunct for physically active males in both competitive and recreational settings." The Lactobacillus fermentum VRI-003 PCC product was supplied by Sydney-based company Probiomics Ltd, and the study was funded by Chr Hansen, Probiomics and the Australian Institute of Sport.

Study details

Heavy exercise is a physical stressor that has been shown to reduce key immune system components such as natural killer cells, neutrophils, T and B cells. The potential of an immune balancing ingredient for athletes is therefore evident. For the new study, Prof Cripps and his co-workers recruited 64 male and 35 female competitive cyclists with an average age of 35 and randomly assigned them to receive the probiotic supplement or placebo every day for 11 weeks.

At the end of the study, the researchers report that men displayed a 7.7-fold increase in numbers of Lactobacillus fold after 11 weeks of supplementation, while only women receiving the placebo displayed a 2.2-fold Lactobacillus increase. Men receiving the probiotic supplement reported a significant decrease in symptoms of respiratory illness, including duration and severity, but this was not repeated in women. The researchers said that the "effects on symptoms in females require further investigation".

Gender differences

“The explanation for the higher number and duration of self-reported symptoms of lower respiratory illness in females supplementing with the probiotic is unclear and difficult to reconcile with the reduced severity of symptoms,” wrote the researchers.

“Clinical and immunological differences between the sexes are well recognised. It is possible that these divergent clinical findings were an artefact of sampling variation, given the large number of analyses reported in the study. However, taking the male and female results together, the findings with the symptoms are consistent with changes in cold and flu medication usage. Further work is required to clarify this apparent discrepancy between the sexes in physiological and clinical responses to probiotic supplementation.”

Take home

“L. fermentum may be a useful nutritional adjunct for healthy exercising males,” wrote the researchers. “However, uncertainty in the effects of supplementation on URTI and on illness symptoms in females needs to be resolved.”

❁❁❁

Red Chile Pepper Reduces Hunger Pangs

April 28, 2011 **Food Product Design**

WEST LAFAYETTE, Ind.—Adding about half a teaspoon of red chile peppers to a daily meal may help curb hunger pangs and burn more calories, especially for individuals who don’t eat the spice on a regular basis, according to a new study published in the journal Physiology & Behavior. Researchers at Purdue University measured the effects of 1 gram of ordinary dried ground cayenne red pepper on appetite. Previous studies have shown that capsaicin, the active component that gives hot peppers their heat, can reduce hunger and help burn calories.

Twenty-five non-overweight people—13 who liked spicy food and 12 who did not—participated in the 6-week study. The preferred level of pepper for each group was determined in advance; those who did not like red pepper preferred 0.3 grams compared to regular spice users who preferred 1.8 grams. In general, red pepper consumption did increase core body temperature and burn more calories through natural energy expenditure. The study found those who did not consume red pepper regularly experienced a decrease of hunger, especially for fatty, salty and sweet foods. "The appetite responses were different between those who liked red pepper and those who did not, suggesting that when the stimulus is unfamiliar it has a greater effect. Once it becomes familiar to people, it loses its efficacy," the researchers said.

According to the researchers, the failure to account for individual differences in liking the burn of chile peppers may explain why previous studies varied on capsaicin's impact on appetite suppression and thermogenic response. They also suggest red pepper should be consumed in non-capsule form because the taste—the sensory experience—maximizes the digestive process. “That burn in your mouth is responsible for that effect. It turns out you get a more robust effect if you include the sensory part because the burn contributes to a rise in body temperature, energy expenditure and appetite control," they said.

❁❁❁

Resveratrol shows anti-diabetes potential: Study

By Stephen Daniells, NutraIngredients 21-Apr-2011

According to findings published in the British Journal of Nutrition, a daily 10 milligram dose of resveratrol was associated with reductions in insulin resistance in type-2 diabetics. “Whether resveratrol (or some of its future derivatives) becomes a useful tool in combating type 2 diabetes is difficult to tell, although the fact that recent studies (including the present study) have demonstrated that the efficacy of resveratrol at low doses might increase the possibility for its medicinal application,” report researchers from the University of Pécs. “On the other hand, the present study definitely suggests that resveratrol could become a useful tool in gaining a deeper understanding of the mechanisms underlying the development of insulin resistance and oxidative stress.”

Resveratrol’s rosy potential

Resveratrol, a powerful polyphenol and anti-fungal chemical, is often touted as the bioactive compound in grapes and red wine, and has particularly been associated with the so-called 'French Paradox'. The phrase, coined in 1992 by Dr Serge Renaud from Bordeaux University, describes the low incidence of heart disease and obesity among the French, despite their relatively high-fat diet and levels of wine consumption.

Interest in the compound exploded in 2003 when research from David Sinclair and his team from Harvard reported that resveratrol was able to increase the lifespan of yeast cells. The research, published in Nature, was greeted with international media fanfare and ignited flames of hope for an anti-ageing pill.

According to Sinclair's findings, resveratrol could activate a gene called sirtuin1 (Sirt1 – the yeast equivalent was Sir2), which is also activated during calorie restriction in various species, including monkeys. Since then studies in nematode worms, fruit flies, fish, and mice have linked resveratrol to longer lives. Other studies with only resveratrol have reported anti-cancer effects, anti-inflammatory effects, cardiovascular benefits, anti-diabetes potential, energy endurance enhancement, and protection against Alzheimer's.

❁❁❁

Sea-sourced calcium shows bone boosting health benefits: Study

By Stephen Daniells, NutraIngredients 20-Apr-2011

Findings published in the Nutrition Journal indicated that the commercially available AlgaeCal Plus and Strontium Boost supplement containing calcium derived from the South American marine algae Lithothamnion superpositum was also associated with bone density improvements in participants who only took some of the supplements, suggesting the effects may be dose-dependent.

"Notwithstanding the absence of a randomized clinical trial, these findings warrant further study in view of the unusual increases in bone mineral density in both study groups," wrote researchers, led by Gilbert Kaats, PhD, chairman and CEO of Texas-based Integrative Health Technologies (IHTI). "It is a marked departure from previous studies in which the decline in bone mineral density has been found to be slowed or, at best, maintained."

In an email to NutraIngredients-USA.com, Dr Kaats said that, although the study sponsor would be pleased with attributing the effects to the supplement, it was contained within a plan and the evidence is insufficient to support a conclusion that it was the supplement alone that improved BMD.

Market

As consumer age they are becoming increasingly aware of the threats of diseases such as osteoporosis and osteoarthritis, and this is reflected in a growing market for products claiming to offer bone and joint health benefits. Indeed, the most recent figures available value the US bone and joint health market to be worth $178 million in 2008, with a predicted increase to $246 million by 2015, according to Frost & Sullivan.

Transparency

AlgaeCal, the company marketing the supplement of the same name and sponsor of this study, is a portfolio company of Texas-based Integrative Health Technologies (IHTI). Dr Kaats explained that IHTI only owns 8 percent of the stock of AlgaeCal International, Inc.

Study details

For the new study, the researchers performed two trials: One used the original AlgaeCal supplement, and the second used the 'revised' AlgaeCal Plus and Strontium Boost supplement. It should be stressed that both plans provided the same amount of strontium. Both studies had the participants (125 in the first study, 51 in the second) on the same 'bone health plan' with the only difference being the calcium supplement.

While there were no differences in bone mineral density between the groups at the start of the supplementation periods, the researchers reported an increase in the average yearly change in bone mineral density in the 'revised' supplement group of 2.18 percent. No statistically significant improvement in the same measure was reported for the original calcium formulation.

The researchers also report that the average yearly change in bone mineral density was different between people who consumed most of the supplements (compliant) and those who were less compliant, with higher compliance associated with a greater increase in bone density.

"No attempt was made to partition the effects of the three components of The Plan, since the goal of the study was to examine the effectiveness of the plans, not the individual components in the plans," wrote the researchers. "However, the increased [average yearly change in bone mineral density] found in [the revised supplement], as compared to [the original], suggests that the modifications made to the nutritional profile of [the revised supplement], while holding all other components constant, provided additional benefits over and above the benefits provided by the other components of The Plan."

❁❁❁

Spanish initiative seeks functional food solutions

By Shane Starling, NutraIngredients 14-Apr-2011

The project, called HENUFOOD, has a €23.6m budget, half of which has been provided by the Spanish Ministry of Science and Innovation, with the rest coming from industry and academic partners. The project is investigating numerous endpoints for nutrients ranging from bacteria to antioxidant olive oil extracts. "The ultimate goal of the project is a technological breakthrough in the fields of the food industry from the perspective of health," said Dr Javier Morán, coordinator of the scientific committee of HENUFOOD.

Metabolic syndrome biomarkers

One of the companies involved is Probeltebio, from Murcia in southern Spain, which has linked with the Hospital Universitario La Paz in Madrid, and the Catalan Institute for Cardiovascular Diseases (ICCC), to research biomarkers linked with metabolic syndrome and cardiovascular protection. The company's commercial director and sales manager, Carlos Costa Cano, said two large studies were underway using the company's olive oil and pomegranate extracts.

The company's managing director, Sergio Streitenberger, added: "Working in the consortium HENUFOOD means for us to be present in a groundbreaking project in the agro-food sector in Spain. The six other food companies in the project are Gallina Blanca Star, BioCentury SLU, Carinsa, Central Lechera Asturiana and GO Fruselva. 2BBlackBio is a biotech firm while Ibermática is from the IT sector.

SENIFOOD

The project is not the first of its kind running in functional food curious Spain. Another project called SENIFOOD is set for completion at the end of next year and is investigating metabolic syndrome, bone, muscle, gastrointestinal and visual health, as well as cognitive function and neurodegenerative disorders.

It kicked into life last year after the Spanish Ministry of Science and Innovation committed to a 50 per cent investment in the €26m project with the other half coming from industry players like the four Spanish ingredients suppliers and seven food companies involved. Spain has one of the most innovative functional foods market in Europe. It is estimated one quarter of Spanish retail foods are functional and the market has shown 15% annual growth in recent years.

❁❁❁

Survey Finds Communication Gap on Early Childhood Nutrition

Nutraceuticals World April 28, 2011

New findings from the NOURISH (KNOwledge, UndeRstanding & InsightS Into CHild Nutrition) survey reveal that nearly half (47%) of healthcare professionals (HCPs) surveyed globally believe that most parents of children they see still do not fully understand the long-term impact of early nutrition.

Despite regular dialogue with parents about an optimal balance of nutrients during their child's first five years of life, HCPs reported that when it comes to feeding and nutrition, less than one-fifth (17%) of parents are "very concerned" about ensuring their child is getting the right balance of nutrients that they need. The NOURISH survey also revealed an opportunity to provide parents with additional guidance and education about healthy growth and appropriate feeding practices for infants and young children.

Globally, in 2010 around 43 million children under the age of five were overweight. Proper nutrition means getting an optimal balance of nutrients; however too much of certain nutrients—even those that are important for a child's development—can negatively affect long-term health outcomes. Over-nutrition, or the over-consumption of certain foods or food components, may contribute to such chronic diseases as heart disease, stroke, diabetes and cancer.

The NOURISH Survey, conducted by Pfizer Nutrition, identified physician beliefs and opinions about the importance of balanced nutrition and potential gaps in parental understanding. The survey also aimed to help identify the global need for professional education regarding appropriate balance of nutrition for optimal growth and development of infants and young children. The survey was conducted in 12 countries across four regions: Europe, Latin America, the Middle East and Asia-Pacific. A total of 1203 HCPs were surveyed between September and November, 2010.

"There is a strong need for increased communication, as well as further education to improve understanding about the right nutrition practices for children," said Patricia DeRusso, MD, chief medical officer, vice president, Pfizer Nutrition.

Breast milk is best for babies. Good maternal nutrition is important for preparation and maintenance of breast-feeding. Introducing partial bottle-feeding could negatively affect breast-feeding and reversing a decision not to breast-feed is difficult. Professional advice should be followed on infant feeding.

❁❁❁

The rise of anti-inflammatory nutrients

By Stephen Daniells, NutraIngredients 19-Apr-2011

'Inflammation' is slowly becoming a marketing term. As our series develops we look at what the term means for marketers and consumers. Finished products are already available claiming 'inflammation balance' and similar benefits. But let's start by going back to the science, and asking 'what is inflammation?' Chronic inflammation is brought about by an over-expression or lack of control of the normal protective mechanisms.

In a review in Nutrition, Metabolism & Cardiovascular Diseases (2004, Vol. 14, pp. 228-232), Katherine Esposito and Dario Giugliano from the Department of Geriatrics and Metabolic Diseases at the Second University of Naples in Italy noted that "obesity, insulin resistance, and diabetes are associated with a pro-inflammatory state, which in turn is associated with increased cardiovascular risk". Chronic inflammation has also been linked to a range of conditions linked to heart disease, osteoporosis, cognitive decline and Alzheimer's, type-2 diabetes, and arthritis.

Biomarkers

A list of established biomarkers for inflammation exists, with commonly touted markers including C-reactive protein (CRP), interleukin-6 (IL-6), IL-10, IL-18, monocyte chemoattractant protein-1 (MCP-1), and tumor necrosis factor-alpha (TNF-alpha). The link between inflammation and chronic disease has been strengthened by identification and acceptance of these biomarkers. Indeed, an article in the New England Journal of Medicine (2004, Vol. 351, pp. 2599-2610) evaluated the role of inflammatory markers heart disease risk in women, and concluded: "Elevated levels of inflammatory markers, particularly C-reactive protein, indicate an increased risk of coronary heart disease".

Regarding obesity, an interesting study published in Clinical Science (2004, Vol. 107, pp. 365-369) by researchers at the University of Connecticut found that overweight men who embarked on weight loss diets displayed significant reductions in levels of inflammatory biomarkers, IL-6, CRP, and TNF-alpha. The UConn researchers noted that fat tissue is known to produce TNF-alpha and IL-6, and that "obesity itself promotes and potentiates [artery furring or hardening]".

Anti-inflammatory nutrients

Reducing the levels of these biomarkers has been a target for a number of nutrition studies. One of the best studied is the omega-3 fatty acids. A study by Professor Manohar Garg from the University of Newcastle in New South Wales found that increased blood levels of the omega-3s DHA (docosahexaenoic acid) and EPA (eicosapentaenoic acid) were associated with reduced levels of CRP (European Journal of Clinical Nutrition, 2009, Vol. 63, pp.1154-1156).

The mechanism of omega-3 anti-inflammatory effects is reportedly linked to its ability to inhibit arachidonic acid (AA) metabolism to inflammatory compounds. DHA and EPA are also reported to produce compounds that are less inflammatory than those produced from AA or that are anti-inflammatory.

Other nutrients with potential anti-inflammatory potential include Pycnogenol, an extract from French maritime pine bark. In a 2006 study , German and Slovak scientists reported that a 200 mg dose of the pine bark extract for five days was associated with a 25 percent reduction in matrix metalloproteinase 9 (MMP-9) levels (Journal of Inflammation, 2006, **3**:1).

Other ingredients will potential anti-inflammatory potential include astaxanthin, vitamins C and D , folic acid, CoQ10 , resveratrol, chromium, and L-carnitine.

The potential anti-inflammatory power of the so-called super fruits is also being reported in the scientific literature. Both açai (Journal of Agricultural and Food Chemistry, doi: 10.1021/jf8016157) and pomegranate (Journal of Inflammation, 2008, **5**:9 & 2009, **6**:1) have studies to support their anti-inflammatory effects.

Nutrigenomics

Scientists from TNO Quality of Life in the Netherlands recently formulated a test supplement containing nutrients selected for their anti-inflammatory action to produce metabolic changes in overweight people.

A combination of fish oil, green tea extract, resveratrol, vitamins C and E, and a lycopene-rich tomato extract produced changes to genes associated with inflammation, blood vessel health, and oxidation of fat in the liver, according to findings published in the American Journal of Clinical Nutrition (doi: 10.3945/ajcn.2009.28822).

The researchers noted that the compounds were chosen in order to reproduce real life situations, and that levels were determined by data for their individual anti-inflammatory action. "A more optimal combination may exist," they noted.

❁❁❁

Vitamin D Unlocks Racial Differences in Blood Pressure

Source: Nutrition Horizon 4/27/2011 ---

Lower vitamin D levels may explain part of the disparity in hypertension that exists between Black and White people in the US. High blood pressure is more common in Blacks than in Whites and persons with darker skin generally produce less vitamin D. This is particularly true at higher latitudes where UV radiation is less intense and the climates are colder leading to less skin exposure. Dr. Kevin Fiscella, from the University of Rochester School of Medicine in the US, and colleagues identify vitamin D status as one piece of the complex puzzle of race and blood pressure. Their work appears online in the Journal of General Internal Medicine.

Emerging data suggest that low vitamin D levels may contribute to elevated blood pressure. At a population level, seemingly modest Black-White differences in blood pressure represent thousands of excess Black deaths annually from heart disease and stroke. Interventions that reduce this gap could therefore have a significant impact on disparities.

The authors analyzed data from the National Health and Nutrition Examination Survey 2001-2006 for 1984 Black and 5156 White participants aged 20 years or over. They specifically compared the average systolic blood pressure and blood levels of vitamin D of Black and White subjects.

The researchers found that, overall, Blacks had significantly lower levels of vitamin D in their blood than Whites and blood levels of vitamin D were linked to systolic blood pressure. Differences in vitamin D levels between Blacks and Whites accounted for a quarter of the difference in blood pressure readings between the two groups. When the researchers excluded participants on blood pressure medication, the effect of vitamin D explained 40 percent of the difference in blood pressure.

"Our study adds to the growing body of evidence showing that low levels of vitamin D among Blacks contribute to cardiovascular disparities. We also know that blood pressure is highest among Blacks living in the US, where UV exposure is low. Taken together, these findings point towards vitamin D deficiency as a potential contributor to higher rates of vascular dysfunction - here hypertension - among Blacks living in the US. Further work is required to determine whether vitamin D supplementation could reduce these racial disparities."

❋ ❋ ❋

High Omega-3 Levels Double Prostate Cancer Risk

April 25, 2011 **Food Product Design**

SEATTLE—Men who have high blood percentages of omega-3 fatty acids may have more than double the risk of developing prostate cancer compared to men with the lowest levels of docosahexaenoic acid (DHA), according to a new study published in the **American Journal of Epidemiology**.

Researchers at Fred Hutchinson Cancer Research Center conducted a nationwide study of 3,400 men to investigate the association of dietary fats and prostate cancer risk. They found with the highest blood percentages of DHA have 2.5 times the risk of developing aggressive, high-grade prostate cancer compared to men with the lowest DHA levels.

The study also found men with the highest blood ratios of trans fatty acids had a 50-percent reduction in the risk of high-grade prostate cancer. Neither of the fats was associated with the risk of low-grade prostate cancer risk. Omega-6 fatty acids were not associated with prostate cancer risk, and none of the fats were associated with the risk of low-grade prostate cancer.

"Our findings turn what we know—or rather what we think we know—about diet, inflammation and the development of prostate cancer on its head and shine a light on the complexity of studying the association between nutrition and the risk of various chronic diseases," they said. "Overall, the beneficial effects of eating fish to prevent heart disease outweigh any harm related to prostate cancer risk. What this study shows is the complexity of nutrition and its impact on disease risk, and that we should study such associations rigorously rather than make assumptions."

The researchers said the mechanisms behind the impact of omega-3s on risk of high-grade prostate cancer are unknown. In addition to inflammation, omega-3 fats affect other biologic processes that may play a greater role in the development of certain prostate cancers.

❋ ❋ ❋

Beta-glucan could reduce salt in high pressure processed chicken: Study

By Caroline Scott-Thomas, Food Navigator 11-May-2011

Beta-glucan is a dietary fiber most often extracted from oats or barley. The study's authors, from the University of Alberta's Department of Agricultural, Food and Nutritional Science, said that increasing interest in minimally processed and additive free foods is spurring development of novel processing technologies that can improve textural properties and taste. They tested oat beta-glucan in temperature assisted high pressure processing of reduced sodium ground chicken breast meat.

"Temperature assisted high pressure processing of foods is a method to prepare gel type products with the desired gel texture," the researchers wrote. "Further, such processing helps to inactivate microorganisms and hence extends the shelf-life of the product."

Sodium chloride – NaCl, or common table salt – is a common additive in the meat industry for making protein soluble, thereby improving protein's functional properties, the authors said. However, excessive sodium consumption has been linked to increased risk of hypertension. To reduce the amount of sodium in meats, phosphates are often added to the mix, but in this latest study, researchers aimed to get a similar textural effect through processing with oat beta-glucan, to allow manufacturers to cut salt and eliminate phosphates.

They found the optimum conditions for taste and texture of the finished product to be 400/600 MPa pressure, and 40°C, in a formulation including 1 per cent salt and 0.3 per cent beta-glucan. Addition of salt favours gelation, an important factor for the texture of processed meats.

The authors wrote: "The solubility of all the samples decreased drastically at a processing temperature of 60°C compared to that at 20°C and 40°C, indicating that temperature assists formation of a gel network resulting in decreased total protein solubility…At higher pressure level (600 MPa) and temperatures (20°C and 60°), total protein solubility of NaCl and BG [beta-glucan] samples were statistically similar, indicating that BG can be used as a partial replacement for NaCl in temperature assisted high pressure processed products." In addition to its potential for reducing salt and phosphates in meat, the authors noted that the US Food and Drug Administration has approved a claim for oat beta-glucan on product labels, meaning that food manufacturers are authorized to say that the ingredient can have a beneficial effect on cholesterol levels at consumption levels of 3g or more per day.

❋ ❋ ❋

Iron-fortified orange juice may ease anemia for women

By Stephen Daniells, Nutra Ingredients 03-May-2011

The iron status of women with low iron levels was corrected after 16 weeks of consuming a daily glass of orange juice fortified with microencapsulated iron pyrophosphate, according to scientists from Spain's Institute of Food Science and Technology and Nutrition (ICTAN). "The present study clearly shows that it is feasible to increase iron status in an at-risk population by daily consumption of a microencapsulated iron pyrophosphate-fortified fruit juice and that the effects are

detected in a short period of time (4 weeks),” wrote the researchers in the British Journal of Nutrition. “This quantity of iron is within the range of supplemental minerals added in European commercial foods (20 percent of the RDA per 100 ml),” they added.

Deficiency

Iron deficiency affects about a third of the global population, with two billion people anemic around the world. It is the leading nutrient deficiency in both developed as well as developing countries. Two main avenues are open to redress the balance in favor of iron: supplementation and fortification. Fortification has been touted as the best way because it is less expensive and can reach a bigger population. Fortification also avoids the gastrointestinal discomfort experienced when supplements containing over 100 mg/d of iron are consumed.

“However, iron is the most challenging micronutrient to add to foods,” said the researchers, “because the Fe compounds that have the best bioavailability tend to be those that interact most strongly with food constituents producing undesirable organoleptic changes. Among iron fortificants, ferric pyrophosphate allows appropriate food processing, and it is easily and effectively absorbed while producing negligible color and palatability changes,” they added.

Study details

The Madrid-based researchers recruited 122 women to participate in their randomized, double-blind, placebo-controlled study. Women were randomly assigned to receive either iron fortified orange juice or a placebo fruit juice for 16 weeks. The iron-fortified juice contained iron in the form of microencapsulated iron pyrophosphate coated with lecithin, and formulated to provide the equivalent of 100 percent of the RDA – or 18 milligrams of iron per 500 mL carton.

Results showed that levels of a protein that stores iron called ferritin were 80 percent higher in women consuming the iron-fortified juice after 16 weeks, compared with women consuming the placebo juice. The researchers also noted improvements in other measures of iron status in the women consuming the fortified juice.

“Iron-fortified juice consumption should be recommended to individuals with predisposition to iron-deficiency anemia but not to those at risk of excessive Fe intake who do not need to increase their iron supply, such as patients with iron overload,” wrote the researchers. “Therefore, consumption of an iron-fortified fruit juice may be considered as a supplement to prevent iron-deficient anemia in population risk groups, such as women of child-bearing age, pregnant women or children. These groups have a high acceptance of fruit juices, and the concept of functional foods also has high acceptance in developed countries. The present study can have repercussions on public health as prevention of one of the most widespread diseases will have important economic impact, decreasing the need to use public health services and pharmaceutical Fe supplements,” they added. The researchers noted that further research should focus on testing the palatability and acceptability of the fortified juice.

❄❄❄

Nutraceutical combination shows bone health benefits

By Nathan Gray, Nutra Ingredients 04-May-2011

The study, published in Nutrition Research, suggested that supplementation with the nutraceutical resulted in significantly lower serum osteocalcin concentrations (a biomarker for bone formation) and a higher blood levels of vitamin D. “Treatment with rho iso-alpha acids, berberine, vitamin D3, and vitamin K1 produced a more favourable bone biomarker profile indicative of healthy bone metabolism in postmenopausal women with metabolic syndrome,” said the authors, led by Joseph Lamb, from MetaProteomics, LLC, a subsidiary of Metagenics, Inc, USA.

MetS

Metabolic syndrome (MetS) is a collection of metabolic conditions including abdominal obesity, raised blood pressure, high triglyceride concentration, low HDL cholesterol, or high glucose. Lamb and colleagues noted that in postmenopausal women, the prevalence of metabolic syndrome is between 40 and 50 per cent.

Reductions in oestrogen levels during menopause have been associated with increased production of pro-inflammatory, which stimulate the activity of osteoclasts and increase bone resorption leading to profound bone loss, explained the authors. They noted that as such metabolic syndrome poses additional risks for postmenopausal women who are already at risk for osteoporosis, and as such maintenance of bone health should be a priority.

“Nutrition undoubtedly plays an important role in the prevention and amelioration of both osteoporosis and metabolic syndrome. For example, vitamin D, vitamin K, calcium, and other nutrients are essential for bone health,” explained Lamb. Hop (Humulus lupulus) rho iso-alpha acids (RIAAs), are known for their anti-inflammatory properties, whilst berberine sulfate trihydrate has been highlighted for its beneficial effect on bone metabolism.

Previous research has suggested that a phytonutrient-rich nutrition program including such ingredients may have a positive effect on biomarkers of bone turnover, including serum osteocalcin. The new study, a 12-week nutraceutical intervention, tested the effects on bone health and bone turnover of a nutraceutical supplementation with a mixture of vitamins D3 and K1, with RIAAs, and berberine sulfate trihydrate.

Study details

“We hypothesized that a nutritional supplement containing anti-inflammatory phytochemicals and essential bone nutrients would produce a favourable bone biomarker profile in postmenopausal women with metabolic syndrome,” said Lamb and colleagues. In the 14-week, randomized trial, 51 women were instructed to consume a modified Mediterranean-style, low-glycemic-load diet and to engage in aerobic exercise, explained Lamb.

Those in the intervention arm (25 people) additionally received 200 mg hop rho iso-alpha acids, 100 mg berberine sulfate trihydrate, 500 IU vitamin D3, and 500 µg vitamin K1 twice daily. Compared with baseline, the intervention group were reported to have a 25 per cent decrease in serum osteocalcin (indicative of bone turnover) – whereas the placebo arm exhibited a 21 per cent increase. "The between-arm differences for osteocalcin and 25-hydroxyvitamin D were statistically significant … [In addition] serum insulin-like growth factor I was statistically increased in both arms," noted Lamb and his co-workers.

❋❋❋

Eating chocolate may help eyesight

A study published in Physiology and Behavior shows that cocoa flavanols may improve aspects of eye and brain function. The researchers employed a randomized, single-blinded, order counterbalanced, crossover design in which 30 healthy adults consumed both dark chocolate containing 720 mg of cocoa flavanols and a matched quantity of white chocolate, with a one week interval between testing sessions. Visual contrast sensitivity was assessed by reading numbers that became progressively more similar in luminance to their background. Motion sensitivity was assessed firstly by measuring the threshold proportion of coherently moving signal dots that could be detected against a background of random motion, and secondly by determining the minimum time required to detect motion direction in a display containing a high proportion of coherent motion. Cognitive performance was assessed using a visual spatial working memory for location task and a choice reaction time task designed to engage processes of sustained attention and inhibition.

The researchers found that relative to the control condition, cocoa flavanols improved visual contrast sensitivity and reduced the time required to detect motion direction, but had no statistically reliable effect on the minimum proportion of coherent motion that could be detected. In terms of cognitive performance, cocoa flavanols improved spatial memory and performance on some aspects of the choice reaction time task.

As well as extending the range of cognitive tasks that are known to be influenced by cocoa flavanol consumption, this is the first report of acute effects of cocoa flavanols on the efficiency of visual function. These acute effects can be explained by increased cerebral blood flow caused by cocoa flavanols, although in the case of contrast sensitivity there may be an additional contribution from cocoa flavanol induced retinal blood flow changes.

The researchers stated that as this initial investigation was only focused on the potential influence of cocoa flavanols on visual function in young adults, they are conducting a follow up study on their findings with older adults.

From: IFT Newsletter May11, 2011

❋❋❋

Dairy consumption may lower incidence of metabolic syndrome

A study published in Diabetes Care shows that consumption of dairy products may be associated with decreased incidence of metabolic syndrome and associated risk factors for cardiovascular disease. Metabolic syndrome is a condition characterized by the presence of at least three metabolic abnormalities, including central obesity, high blood pressure, and impaired glucose and lipid metabolism, that are risk factors for cardiovascular disease.

The study examined data from the Epidemiological Study on the Insulin Resistance Syndrome (DESIR), a nine-year prospective study that surveyed 3,435 individuals in France using a food frequency questionnaire at baseline and after three years. The authors examined dietary intake of three categories: dairy products excluding cheese, cheese specifically, and overall calcium density of the diet. The results were adjusted to exclude confounding variables, including body mass index (BMI).

The authors found:

- Consumption of dairy products, including cheese alone, and the calcium density of the diet were associated with lower incidence of metabolic syndrome, a lower nine-year diastolic blood pressure and lower BMI gain over time.
- The consumption of dairy products other than cheese and the calcium density of the diet were associated with reduced incidence of type 2 diabetes or impaired fasting glucose.
- Higher cheese intake and the calcium density of the diet were associated with lower triglyceride levels and a lower nine-year increase in waist circumference.

Understanding the benefits of dairy products on metabolic syndrome, type 2 diabetes, and other risk factors for cardiovascular disease may provide an opportunity to help reduce the health-related and economic burdens associated with these conditions.

From: IFT Newsletter May11, 2011

❋❋❋

Vitamin K may benefit both elderly men and women: Study

By Stephen Daniells, 29-Mar-2011 from Nutra Ingredients Science & Nutrition Research

The bone benefits of a diet rich in vitamin K may extend to both elderly men and women, according to findings from a new study from Spain.

Data from 200 elderly people showed that high dietary intakes of vitamin K were associated with higher measures of bone mineral density (BMD), and higher scores in an ultrasound test, say findings published in Bone.

"The results of the present study showed, for the first time, a direct association between dietary vitamin K intake and calcaneous quantitative ultrasound measurements, suggesting that vitamin K has a direct role in qualitative bone features along with bone mineral density, in a cohort of elderly Caucasian subjects with healthy dietary habits," wrote the researchers, led by Monica Bullo from the Human Nutrition Unit at the Universitat Rovira i Virgili in Reus, Spain.

Market implications

The study adds to the ever-growing body of potential health benefits of vitamin K intakes. Despite the positive impacts, vitamin K deficiency may be more common than previously thought, according to findings from a Dutch study in 2007 (Thrombosis and Haemostasis, Vol. 98, pp. 120-125).

There are two main forms of vitamin K: phylloquinone, also known as phytonadione, (vitamin K1) which is found in green leafy vegetables such as lettuce, broccoli and spinach, and makes up about 90 per cent of the vitamin K in a typical Western diet; and menaquinones (vitamins K2), which make up about 10 per cent of Western vitamin K consumption and can be synthesised in the gut by microflora.

Menaquinones (MK-n: with the n determined by the number of prenyl side chains) can also be found in the diet; MK-4 can be found in animal meat, MK-7, MK-8, and MK-9 are found in fermented food products like cheese, and natto is a rich source of MK-7.

Concerns over deficiency, coupled with increased consumer awareness of the potential benefits, have led to an upsurge in vitamin K formulations as supplements and functional foods. According to Francis Foley from Xsto , the US distributor of Kappa's K2Vital Vitamin K Product Line, the current K market in the US is valued at $10 million in raw material sales (vs finished product sales). "What is really impressive is the growth in vitamin K supplementation, estimated to be (my personal estimate) over 15 percent year. We feel the K2 market can double to $20 million in less than five years," he said.

Study details

The new Spanish study did not differentiate between the various forms of vitamin K, but looked at overall vitamin K intakes from dietary sources, including greens, dairy, and meat.

A cross-sectional analysis was performed with 200 elderly people with an average age of 67 who completed a 137-item food frequency questionnaire (FFQ) and followed for two years. The researchers used the USDA's database to estimate vitamin K intakes, and the average intake was calculated to be 334 micrograms per day for men, and 300 micrograms per day for women.

Various measures of bone health, including bone mineral density (BMD), were performed using quantitative ultrasound assessment (QUS) in 125 subjects.

When compared with vitamin K intakes, the researchers report that every 100 microgram increase in vitamin K intake was associated with 0.008 g/m2 increase in BMD, but no other associations were recorded for other bone health markers, added the researchers.

High dietary vitamin K intake was associated with superior bone properties. Moreover, an increase in dietary vitamin K was significantly related to lower losses of bone mineral density and smaller increases in the porosity and elasticity attributed to aging, which helps to explain the previously described protective effect of vitamin K intake against osteoporotic fractures.

"The subjects in our study generally consumed a healthy diet means that the effect of an increase in dietary vitamin K intake may be masked and that in populations with lower consumptions of vitamin K or poor nutrition an increase would be much more beneficial," added the researchers.

There is biological plausibility for the potential bone health benefits of vitamin K. Osteocalcin is a vitamin K-dependent protein and is essential for the body to utilise calcium in bone tissue. Without adequate vitamin K, the osteocalcin remains inactive, and thus not effective.

❋ ❋ ❋

Food Science & Technology News

'Liquid shortening' may reduce sat fats and improve cake quality, suggests study

By Nathan Gray, Food Navigator 22-Apr-2011

The study, published in LWT - Food Science and Technology, found that cakes made from liquid shortening containing a zero trans-fats, and generally a healthier fat profile, showed more uniform grain, finer texture, higher volume, and better shelf-life then cakes made from plastic shortening. The authors explained that as industry moves away from the use of trans-fats in its formulations, it is important to look at the properties of replacement ingredients, in order to achieve the most effective yet healthy profile.

"Many companies began to use the relatively inexpensive palm oil instead of hydrogenated soybean oil to make zero-trans fat shortenings. Ironically, the high levels of saturated fatty acids in palm oil result in the same cardiovascular problems as do trans-fats," said the authors, led by Dr Chuck Walker from the department of grain science & industry at Kansas State University, USA. "For baking companies, a liquid oil plus an emulsifier combination blend would be easy to handle and they could combine different emulsifiers as their requirements change," they added. However, the authors conceded that investment in equipment, and a skilled staff to prepare such shortenings would be required.

Shortening

Shortening is generally a semisolid fat for use in food preparations, especially of baked goods; so called because it promotes a 'short' or crumbly texture. Walker his and colleagues explained that shortening is a major ingredient in high-ratio layer cakes; cakes in which there is as much or more sugar than flour in the formula.

Shortening performs three basic functions in such cake products: it traps air during the creaming process, coats protein and starch particles, and emulsifies large amounts of liquid. Solid 'plastic' shortenings are the most commonly used type of shortening in the baking industry. However they often contain a high proportion of hydrogenated fats, including trans-fats.

Research has highlighted that trans-fats in the diet may increase the risk of coronary heart disease, by raising the levels of LDL cholesterol and lowering the levels of HDL cholesterol. Walker and his co-workers explained that 'liquid' cake shortenings function much like solid shortenings in baking systems, but they offer the user certain advantages, including having a healthier fat profile. However, the authors noted that "few publications have assessed the performance of liquid shortenings in cake baking systems."

Study details

Four groups of layer cakes were baked using: plastic shortening, liquid shortening, liquid oil, or liquid oil plus emulsifier combinations. Cake performance and firming over-time were then evaluated. The authors reported that liquid shortening provided the best fresh cake characteristics, whilst liquid oil provided the worst fresh cake characteristics.

Cake firmness was found to change slowly during storage for cakes made with liquid shortening, but for cakes made with liquid oil, firmness increased rapidly. The characteristics and changes in firmness for plastic shortening were said to be "intermediate."

The authors said that liquid oil alone "is not suitable for use in cake making", but added that use of a blend oil and emulsifiers was found to produce high quality cakes. "Liquid oil with a combination of added emulsifiers performed very similarly in terms of firmness to the liquid shortening …This indicated that emulsifiers played an important role on the improvement of cake firmness shelf-life," reported Walker and his colleagues.

❁❁❁

Enriched pasta boosts nutritional quality without reducing sensory attributes: Study

By Nathan Gray, 14-Apr-2011 Food Navigator

The study, published in LWT - Food Science and Technology, evaluated the impact of incorporating resistant starch type II, resistant starch type IV and oat hull bran on the sensory attributes of pasta, finding that both types of resistant starch evaluated did alter the sensory acceptance of the enriched pasta. "Resistant starch type II and resistant starch type IV addition into pasta recipes did not modify overall acceptability of these products by consumers," said the authors, led by Alberto Edel León from Universidad Nacional de Córdoba-CONICET, Argentina. "On the other hand, oat hull bran addition generates important changes in sensory attributes," they added.

Functional and tasty?

The authors explained that the interest in developing functional foods is thriving, driven largely by the market potential for foods that can improve the health and wellbeing of consumers. They noted that health authorities worldwide recommend a decrease in the consumption of animal fats and proteins and an increase of cereal intake, which is an important source of dietary fibre. "Although pasta is traditionally manufactured using only durum wheat flour, it is possible to use non-durum wheat flour and other ingredients to produce specifically-labelled blended pasta," said the authors.

They explained that it is also feasible to incorporate dietary fibre ingredients into pasta, which may increase its nutritional value compared to conventional pasta. However they noted that the development of enriched pasta with higher dietary fibre content must be structurally and sensorially acceptable

In fibre-enriched pasta, much research has been done in order to understand how different types of fibres affect the arrangement of components in pasta structure. "The study of how different types of fibre affect some nutritional attributes of pasta is as important as the need to determine if the addition of fibre alters the sensory properties of pasta significantly," said the authors.

Study details

The authors reported no significant differences between resistant starch type II and resistant starch type IV samples in any parameter. They observed that control samples presented the highest values for firmness, chewiness and elasticity, and the lowest values for surface stickiness, whilst oat hull bran showed the lowest values in firmness, chewiness and elasticity and the highest values in surface stickiness.

"Overall acceptability showed a high score for control sample and the lowest score for oat hull bran sample; no differences were observed between RSII and RSIV samples," said Edel León and colleagues.

The authors concluded that by using insoluble fibre it is possible to enhance the nutritional quality of pasta, without affecting its sensory properties negatively. They noted that resistant starch is odourless, and does not considerably alter the organoleptic properties of the original product. They noted that resistant starch enriched pasta also presented "an important improvement in nutritional quality" with a significant reduction of the estimated glycemic index and a slow release of maltose.

❁❁❁

Indian Trader Files Patent for 2 Paraboiled Rice Techniques

Karnal-based rice exporter Vijay Sethia yesterday said he has filed patent in the country for two innovative techniques in paraboiled rice making that would help India to reduce broken rice by upto 10 per cent and save energy and water to the tune of Rs 7,000 crore annually. About 35-40 million tonnes of paraboiled rice is produced in India, the world's second largest rice producer. Paraboiled rice is a rice that is boiled in husk and is rich in nutrition.

Sethia, who is also President of the All India Rice Exporters Association (IREA), said, "The first technique which I applied for patent reduces broken grains up to 10 per cent in the process of paraboiling and improves quality of cooking, taste and aroma." The demand for paraboiled rice both in the domestic and global market has not been picking up because the current process of paraboiling was making the quality of the grain poor for cooking with unpleasant aroma. "The new technique will be a boon to the consumers and enhanced quality will encourage exporters," Sethia told reporters, here. He further said, "The second technique will help reduce the country's annual water and energy consumption in the process of paraboiling paddy by upto Rs 7,000 crore."

Parboiling means pre-cooking of rice within the husk. Paddy is first hydrated, then heated to cook the rice and finally dried. "With the new technology, paraboiling is completed with just 25 per cent of water. Also, 75 per cent of energy is saved in heating water, emission to environment is reduced by 60 per cent and fuel consumption of steam boiler comes down to 40 per cent," Sethia said.

Sethia has graduated in arts and has been in the rice industry for more than 30 years. He pursued research in paraboiled rice with the assistance from retired Indian Agriculture Research Institute (IARI) scientist B S Modi. He developed these two techniques with his guidance.

SoyTech eNews April 30, 2011

❁❁❁

Industry and academia must shift towards open innovation: Review

By Nathan Gray, Food Navigator 27-Apr-2011

The review published in Journal of Food Engineering outlines recommendations for a paradigm shift in both the food industry and academia; calling for “real, measurable, meaningful actions.” Such recommendations “constitute what is envisioned as a blueprint for jump-starting the process that is required to meet the innovation challenges facing academia and the food industry,” said Sam Saguy, of The Hebrew University of Jerusalem, Israel, author of the review.

“Open innovation utilization by the food industry and academia could become viable by adopting innovation partnerships and a new mindset,” said Saguy. “Academia and the food industry need a mutual vision and thrust that includes paradigm shifts toward reforming the 'old' systems of teaching, learning, student involvement, industry's role, and increased social responsibility,” he added.

Innovation

According to official EU figures (from 2009) the food and drink industry is the largest manufacturing sector in Europe; the industry employs 4.4 million people and has an annual turnover of €965 billion – representing 13 per cent of the manufacturing sector's turnover. “Europe's competitiveness, its capacity to create millions of new jobs to replace those lost in the current economic crisis and, overall, its future standard of living depend on its ability to drive innovation in products, services, business and social processes and models,” said Saguy

He explained that innovation is a multi-aspect process, “in which science, technology, marketing and organization, as well as other key aspects such as partnership, risk and social responsibility, play a role.”

“Open innovation is founded on the reality that, in a world of vastly distributed knowledge and accelerated development, companies can no longer afford to rely on their own research, and consequently must utilize outside sources and buy or license processes, technologies, inventions and solutions,” said Saguy.

Paradigm shift

Through his review Saguy explains that academia and the food industry “need a mutual vision” to shift the paradigm of learning and innovation. He identified four key paradigm shifts, which “are specifically recommended”:

- Breaking down the walls between academia and industry
- A revised intellectual properties (IP) model
- Integrated management to drive the innovation process
- Enhancing social responsibility

Breaking down walls

By increasing the importance of applied research the review suggests that academia can bring about significant improvements in teaching quality. By bringing the focus to relevant topics, Saguy explained that students will be able to interact directly with industry, working on topics of commercial importance.

In addition, he said that the new model must also call for industrial involvement in academia – specifically of its experts. He suggests that industry experts should "transform their role into becoming proactive in teaching graduate courses, mentoring research […] and contributing to the strategic thinking of the universities." Saguy explained this partnership "calls for a proactive role and participation of both academia and industry in each step of the innovation … It calls for a new and different mindset on both sides."

Revising IP

The review highlights IP as "a 'Gordian knot' that needs resolving," adding that in many instances focusing on IP rights "has become an impassable and sometimes even crippling barrier for innovation success. To avoid stagnant situations, the complex IP issue requires special attention and new business models for co-sharing," said Saguy.

"In considering IP rights, we should also include the topic of adequate funding, especially that defined as 'unrestricted grants' and 'blue sky' research … Industry needs to take a more proactive role in developing this area," he added.

Management's role

Open innovation and innovation partnerships have always relied heavily on the support of senior management throughout the process; however a new integrated framework is needed to manage the innovation process, according to Saguy. "To thrive, management should institutionalize alliances/partnerships to enhance cross-fertilization and synergy," he said.

However, aligning university and industry development of innovation is not straightforward and requires considerable planning and management. "It will require truly new thinking at both academia and industry levels … Management's foremost role is to recognize that they are the 'gatekeepers' of the flow and must promote the required organizational changes in industry," said Saguy. "At the level of academia, management should develop a strategy that promotes collaborations and elevate the academic importance of applied R&D," he added.

Social responsibility

For a business to create value over the long term, it must also bring value to society. The review noted that Corporate Social Responsibility (CSR) "has moved from ideology to reality, and represents an important dimension in contemporary business practices."

Saguy highlighted that CSR must be addressed at each step of the innovation process, in order to promote innovations with true societal value. "A genuine concern for society in all actions and decisions should become the norm and an integral part of the innovation process … the whole innovation process should therefore take into consideration the social contribution," he said.

❁❁❁

Lighting Affects Nutrient Levels in Produce

May 3, 2011 **Food Product Design**

BELTSVILLE, Md.—Fresh produce that receive continuous light exposure during storage in the retail case have higher concentrations of carotenoids and vitamins and longer shelf life than greens buried in the back of the display, according to a new study published in the Journal of Agricultural and Food Chemistry.

Researchers at Agricultural Research Service exposed spinach leaves to light similar to the 24-hour artificial fluorescent light received by spinach in packages located at the front of the display case. A second group was enclosed in two-layer-thick brown grocery-bag paper to represent the "dark treatment." Both groups were housed in market-type, light-transmissible polymer tubs with snap-tight lids and were kept in walk-in storage chambers at 4˚C—the same temperature at which markets currently display packaged spinach. The light reaction of photosynthesis is not temperature dependent and can occur at 4˚C in the right type of light.

They found continuous light affected the leaves' photosynthetic system, which resulted in a significant increase in levels of carotenoids and vitamins C, E, K and B9.

While the simulated retail light conditions actually helped the stored leaves gain in content of several human-healthy vitamins, some wilting occurred after three days of storage in flat-leaf but not crinkled-leaf types.

They concluded continuous light exposure during retail display combined with specific cultivar selection (crinkled-leaf types) and leaf maturity (baby-leaf size) appears to be the strategy for preserving and enhancing the concentration of spinach-derived human-health bioactive compounds.

❁❁❁

Natural sugar ester shows potential as food-grade surfactant: Study

By Nathan Gray, Food Navigator 18-Apr-2011

The study, published in Food Hydrocolloids, provides an insight into the properties of the non-toxic sugar ester sucrose monopalmitate as a food grade surfactant for use in the production of colloidal dispersions (such as micro- and- nano- emulsions) with natural flavour oils. The researchers from the department of food science at the University of Massachusetts noted growing interest within the food and beverage industries "in the utilization of colloidal delivery systems to encapsulate functional agents, such as flavours, colours, antimicrobials, micronutrients, and nutraceuticals."

"The focus of our study was to establish the factors that influence the formation and stability of micro-emulsions, nano-emulsions and emulsions fabricated using sucrose monopalmitate (SMP) as a surfactant and lemon oil as an oil phase," said the authors, led by Professor Julian McClements. They said the results of the study provide important information for optimizing the application of natural sucrose monoesters to form colloidal dispersions in food and beverage products.

Emulsions

The authors noted that micro-emulsions, nano-emulsions and emulsions "are of particular interest as colloidal delivery systems because they can easily be fabricated from food-grade ingredients using relatively simple processing operations."

McClements and his co-workers said that one of the most important applications of micro- and nano- emulsions is to incorporate fat soluble (lipophilic) ingredients into water-based foods or beverages that need to remain transparent – for example fortified waters, soft drinks, sauces, and dips. However, they noted that the widespread application of nano- and micro- emulsions in food and beverage products is currently limited – partly due to the limited number of food-grade surfactants currently available.

"Many of these are synthetic surfactants that are not permissible for application in all countries, or that can only be used at low levels due to regulatory, economic, or sensory issues," wrote the authors. In addition, they noted that it is difficult to prepare micro- or nano-emulsions from commonly used edible oils, such as fish, corn, or soybean oil.

"There has been increasing interest in the utilization of sugar esters as surfactants within the food and pharmaceutical industries, which can be attributed to their good taste and aroma profile, low toxicity, and high biodegradability compared to petrochemical-based surfactants," noted McClements and his team. "In addition, sugar esters can be produced from natural products, such as sucrose and vegetable oil, and therefore are perceived as being more environmentally friendly than many other synthetic surfactants," they added.

Study details

The research investigated the formulation of lemon oil micro-emulsions, nano-emulsions, and emulsions using the sugar ester sucrose monopalmitate (SMP) as a food-grade surfactant. McClements and his colleagues reported that emulsions or nano-emulsions could be formed at relatively low surfactant-to-oil ratios (ratios less than 1), whereas micro-emulsions could be formed at higher values (ratios above 1).

They added that relatively stable nano-emulsions could be formed at pH 6 and 7, and stable micro-emulsions were formed best at pH 5 and 6. The authors also found micro-emulsions to be relatively stable to salt addition, however nano-emulsion droplets were reported to aggregate and grow after the addition of relatively low levels of salt.

Oil composition

McClements and colleagues added that it is important to note that the compositions of commercial lemon oils may vary appreciably: "Differences in the chemical composition of lemon oils may impact the type, stability and properties of colloidal dispersions formed," wrote the researchers. They added that preliminary experiments have shown that two different commercial lemon oils had different abilities to form dispersions, explaining that "at the same surfactant and oil concentration one formed a micro-emulsion but the other formed a nano-emulsion."

❁❁❁

Maltodextrins may reduce fat levels by 50 per cent: Study

By Nathan Gray, Food Navigator 28-Apr-2011

The study, published in Journal of Texture Studies, tested the investigated the capability of hydrated maltodextrin gel particles to replace fat as part of a vegetable oil ingredient. The research team, from the University of Novi Sad in Serbia, found that replacing 50 per cent vegetable oil with maize maltodextrin had no significant effects on the rheological characteristics of the fat in its solid state.

The authors explained that the reduced fat oil/maltodextrin blend may offer an opportunity to create lower fat products without affecting product quality. “These findings indicate that used maltodextrins can be applied as a suitable fat replacers in smaller content, while for the replacement of a greater amount of fat the combinations of different maltodextrins, or maltodextrins with some other fat mimetics or emulsifiers have to be made,” said the researchers, led by Miroslav Hadnadev.

The researchers added that for some high-fat, high-calorie foods, including confectionary which typically contains fat levels of 30 to 35 per cent, the development of reduced fat product with desirable taste and texture “is a very challenging task.”

Fat reduction
As a food component, fats possess a highest caloric value when compared to protein and carbohydrate. In addition, Hadnadev and colleagues noted the links between consumption of food with high fat content and health disorders, adding that there is “an increasing demand for fat reduction in all fields of food processing industry.”

“However, numerous and usually very important characteristics of food product such as texture, mouthfeel and flavour delivery are strongly dependent on the content of fat used in the product formulation,” said the researchers. They explained that the texture of a food product is strongly influenced by fat hardness – especially in foods with high fat content. “The reduction of fat content in food formulations is a very demanding task due to its potential negative consequence for mechanical and sensory properties of a product,” said Hadnadev and co-workers.

Much attention has been dedicated to fat reduction in foods through fat replacers. Such fat replacers are often made from starch and starch derivates (known as mimetics) due to their favourable physicochemical properties. Maltodextrins are starch break down products. Hadnadev and his team explained that the conditions of the hydrolysis process (starch breakdown) affect the composition of starch products such as maltodextrins, as well as their final physicochemical properties.

The new study investigated the rheological and textural properties of vegetable fats partially substituted with one of two types of maltodextrin fat mimetics. The researchers said that the study aimed to test the capability of hydrated maltodextrin gel particles to replace amounts of fat in different foods, such as confectionary fat fillings.

Study details
Vegetable fat was replaced by aqueous maltodextrin gels of at levels of 16.7, 33.3 and 50 per cent – vegetable fat without the addition of fat mimetics was used as a control sample. The researchers used potato maltodextrin gel, or a waxy maize maltodextrin gel. They reported that the rheological behaviour of blends in which the part of the vegetable fat is replaced with maltodextrin gel is mainly governed by the properties of maltodextrin phase. Hadnadev and his colleagues observed that in a solid state (as 20oC), the maize maltodextrin allowed fat replacement up to a level of 50 per cent, expressing only a minor decrease in firmness value. In contrast, the potato maltodextrin was found to cause significant decreases in firmness.

❁❁❁

Reclosability ensures flexibles punch above their weight

By Jane Byrne, Food Production Daily 21-Apr-2011

The reclosability benefits of flexibles along with reduction in packaging weight, and the good product quantity to packaging ratio are the main drivers for makers of dry foods such as snacks, nuts and coffee opting for pouch and bag type formats, commented Esther Palevsky, an analyst with Freedonia market research group.

Citing expected growth figures in the US of 2.1 per cent for flexible packaging to 2015 compared to the 1 per cent predicted for rigid pack types, Palevsky predicts that bags and pouches will have a 74 per cent share of the US snack food market in 2015.

Benjamin Punchard, head of packaging research at Euromonitor International, echoes Palevsky’s remarks on the reclosability functionality of flexibles being their stand-out quality for dry food manufacturers. “Whilst this aspect [reclosability] has been addressed in the past through sticky tabs that enable the consumer to stick down the open end of a flexible pack, increasingly brand owners are offering zip-loc closures on flexible plastic packaging and on stand up pouches. This is more prevalent in higher margin categories such as dairy products. However, consumer recognition of this closure type is now growing and so the closure will be seen more and more on cheaper products,” he said.

Palevsky also points out that international retailer giant Walmart’s scorecard has been an additional factor in the growth of flexibles in dry foods, due to the sustainability card's emphasis on source reduction in packaging tonnage. The lightweight nature of flexible laminates and multi-layer substrates compared to rigid packaging including metal, rigid PET and glass containers has ensured

increased demand by dry food producers, observed Palevsky. The analyst notes, though, that while glass, metal and carton board have a well established recycling infrastructure, end-of-life options for multilayer flexible packaging are limited.

Coffee
A big pack type switch from rigid to flexible, continued Punchard, has been seen in the move from glass to pouches with instant coffee. First tried by Kenco in 2009 and strongly positioned as an environmentally better pack (with '97 per cent less packaging weight' clearly printed on the first pouches) the success of this format lead to Nescafé following suit with its own instant coffee refill pouch almost exactly a year later in November of 2010. 'When it comes to coffee beans and ground coffee, flexible aluminium/plastic remains the most widely used pack type in 2010," claimed Euromonitor analyst Karine Dussimon in a blog on the topic. But with the price of aluminium laminates and technological progress in the barrier properties of flexible plastic, she questions the future of aluminium in this category.

Breakfast cereals
In terms of breakfast cereals, though, branded varieties, in the main, "have stuck with the box," despite issues of contamination through use of recycled board material having recently hit the news, commented Punchard. "These main brands recognise the importance of the convenience provided by the box and the branding and on-shelf impact it provides," remarked the packaging specialist. And Freedonia's Palevsky argues that as the breakfast cereal market is relatively mature, manufacturers are unwilling to invest in new machinery to allow a switch to flexible packs.

Punchard does note UK retail chain Sainsbury's decision to remove their 100 per cent recyclable box for their economy range of own brand cereals in 2009, with the store saying the move to bag only had sound environmental credentials as it would reduce packaging in its basics range by more than 165 tonnes a year.

Kellogg argued that such a move would result in more waste as its tests had shown that putting cereal in a bag damaged the product and would result in more food waste due to breakages in the flakes in transit, on shelf and in the home. "A box and a thin bag are fully recyclable – bags only use more plastic and is much thicker and harder to recycle. You also need a lot more packaging in transit to limit damage," a spokesperson for Kellogg told BrandRepublic.com last year.
❁❁❁

Regulatory & Safety News

'Really outrageous' claims on the wane in print/TV, says CRN

By Elaine Watson, NutraIngredients 26-Apr-2011

CRN chief executive Steve Mister was speaking to NutraIngredients-USA.com five years after the CRN started funding an attorney specifically to tackle false claims about dietary supplements at the National Advertising Division of the Council of Better Business Bureaus (NAD). NAD - an industry-backed self-regulatory forum scrutinising national ad campaigns - has reviewed 100 dietary supplements cases since the CRN initiative began in 2006 and remained the cheapest and quickest way to tackle dubious claims in the trade, argued Mister.

"If you go to NAD, you can get an issue resolved in 90 days. If you went to the FTC (Federal Trade Commission) or sued a company for false advertising, you wouldn't even get the pleadings done in 90 days. Some of the cases the FTC has looked at have taken years to resolve."

Co-operate with NAD or things will get much worse...

He added: "There is always a small number of people, especially those making claims online, that don't agree to co-operate with NAD, or will just dissolve their business and start again, but most companies realise that NAD is a far better option than the alternative. They also know that if they don't respond, the next phone call they might get could be from an attorney at the FTC."

As to the extent of false or misleading advertising about dietary supplements, anecdotally, things seemed to be getting better, claimed Mister. "I think the situation has improved over the last five years. The fact that the FTC has become more aggressive has also helped. There are still lots of fly by night companies on the internet making false claims but I think consumers are becoming more wary of this kind of thing. Five years ago you would get these outrageous claims on network TV and major newspapers, but you definitely don't see as much of that now. Some of the cases do involve multinationals but a lot also involve smaller companies that don't understand the law."

As to the extent the NAD initiative had made a difference, it was hard to say, although the CRN had heard anecdotal evidence to this effect, he said. "We've tried to find metrics to measure the effectiveness of the NAD process, but it doesn't operate in a vacuum."

What happens after 2014?

It was also too early to say whether the CRN would continue to fund an attorney at NAD after the latest grant (amounting to around $192,000/year) expired in 2014, said Mister. However, there was no doubting the value of the scheme. “Initially, the program was only supposed to last three years but it has been so successful that we extended it for another five.”

He added: “We need a program able to do more than the FDA (Food and Drug Administration) or the FTC is able to do. They are constrained by a lack of resources and will prioritize cases where public health is at stake, rather than where claims are untrue or misrepresent the science. Here’s it’s not an issue of public safety but confidence in the dietary supplements industry as a whole.”

30 dietary supplement probes in 2010 at NAD

In 2010, NAD handled nearly 30 dietary supplements cases out of a total of 145 cases, said a NAD spokeswoman. The NAD review process is voluntary, but if a company declines to participate, or declines to abide by the terms of a decision, federal agencies were typically contacted, she added. “We forward the advertising at issue to the most appropriate federal agency for further review. Nine times out of 10, we refer the advertising at issue to the FTC, although we also refer cases to the FDA. Compliance runs at about 95 percent.”

❁❁❁

Sweden signals intent to banish bisphenol A in can linings

By Rory Harrington, Food Production Daily 15-Apr-2011

Under new proposals put forward today by two official agencies, Swedish food processors and packaging companies would have to submit plans by the end of the year on how they intend to substitute current epoxy linings in cans with BPA-free alternatives – or get such a roadmap from their suppliers.

Importers and manufacturers would also be obliged to outline when such alternatives could come to market and be available to the food industry. They would also be required to deliver an assessment on the likely impact of the move on food production and manufacturing.

Domino effect

The report by Swedish Chemical Agency (KEMI) and the National Food Administration (SLV) said exposure to BPA was widespread but that sources of overall exposure were not well-known. However, it added: “Migration of BPA has been shown primarily for materials coming into contact with food (polycarbonate plastic and the inside surface of epoxy resins in metal packaging for canned food and beverages).”

The proposal appears to support fears voiced recently by plastics and metal packaging trade groups that the EU ban on BPA in baby bottles could trigger a domino effect leading to wider prohibition of the chemical in food packing. In a comment that was typical of industry concern, the UK Metal Packaging Manufacturing Association said: “Any prohibition, however focussed, will likely lead to an escalation of action into other packaging areas, such as epoxy-based coatings for metal packaging.”

Scientific uncertainty

The can lining recommendations outlined today form part of a wide-ranging joint report aimed at slashing human exposure to BPA. Last August, the Swedish Government commissioned the work to investigate the need for a national ban on the chemical in certain products. The food and chemical agencies acknowledged that the European Union ban on BPA in polycarbonate baby bottles last November had changed the immediate focus of the assignment and said that exposure to the chemical among children was “estimated to be much less than a year ago”.

Under EU rules, a country can take unilateral action where no harmonised regulations exist to introduce a national ban on the grounds of a serious need to protect human health. KEMI and SLV said the “current state of knowledge does not establish any serious risk”, which is why it had not advocated a wholesale ban. But it said “problems with BPA remain” because of continuous low-level exposure to the substance among the general population. Scientific uncertainty, particularly over the effect of the chemical on foetuses and young babies, justified a precautionary approach, it said.

Thermal paper and pipes

Other measures in the report include continuous monitoring of the phasing out of BPA in polycarbonate plastics and pushing for a switch to non-BPA thermal paper of the kind used in shop receipts. The effect of BPA migration from renovated plastic water pipes, plastic toys and the labelling of medical equipment to protect premature babies from exposure to the chemical should also be considered, urged the report.

❁❁❁

U.S. Government Proposes Guidelines for Marketing Food to Children

Nutraceuticals World April 29, 2011

In an effort to combat childhood obesity—the most serious health crisis facing today's youth—a working group of four federal agencies are seeking public comment on a set of proposed voluntary principles that can be used by industry as a guide for marketing food to children.

Led by former Sen. Sam Brownback and Sen. Tom Harkin, Congress directed the Federal Trade Commission, together with the Food and Drug Administration, the Centers for Disease Control and Prevention and the U.S. Department of Agriculture, to establish an Interagency Working Group of federal nutrition, health and marketing experts to develop recommendations for the nutritional quality of food marketed to children and adolescents, ages 2 to 17.

The working group seeks public comment on the proposed voluntary nutrition and marketing principles it has developed. After public comment, the working group will make final recommendations in a report to Congress. This is not a proposed government regulation.

The proposed voluntary principles are designed to encourage stronger and more meaningful self-regulation by the food industry and to support parents' efforts to get their kids to eat healthier foods. While the goals they would set for food marketers are ambitious and would take time to put into place, the public health stakes could not be higher. One in three children is overweight or obese, and the rates are even higher among some racial and ethnic groups.

The working group proposal sets out two basic nutrition principles for foods marketed to children. Advertising and marketing should encourage children to choose foods that make meaningful contributions to a healthful diet from food groups including vegetables, fruit, whole grains, fat-free or low-fat milk products, fish, extra lean meat and poultry, eggs, nuts or seeds, and beans. In addition, the saturated fat, trans fat, added sugars and sodium in foods marketed to children should be limited to minimize the negative impact on children's health and weight. The working group proposes that industry strive to market foods by the year 2016 that meet the proposed nutritional principles and marketing criteria. For sodium, the proposal includes interim targets for 2016 and final targets for 2021.

The proposed principles are voluntary and do not call for government regulation of food marketing. They are an opportunity for food and beverage manufacturers, public health advocates, the entertainment industry, academics and other stakeholders to provide comments that will inform the working group's final recommendations to Congress.

"Children are strongly influenced by the foods they see advertised on television and elsewhere. Creating a food marketing environment that supports, rather than undermines, the efforts of parents to encourage healthy eating among children will have a significant impact on reducing the nation's childhood obesity epidemic," said Health and Human Services Secretary Kathleen Sebelius. "These new principles will help food and beverage companies use their creativity and resources to strengthen parents' efforts to encourage their children to make healthy choices."

"As a parent and grandparent, I know the power advertising and marketing can have on kids, and my hope is that the food industry will embrace these voluntary principles and apply them so parents can make informed decisions about the foods they feed their children," said Agriculture Secretary Tom Vilsack.

"To their credit, some of the leading companies are already reformulating products and rethinking marketing strategies to promote healthier foods to kids. But we all have more work to do before we can tip the scales to a healthier generation of children," said FTC Chairman Jon Leibowitz. "This proposal encourages all food marketers to expand voluntary efforts to reduce kids' waistlines."

The FTC has posted a request for comments on the proposed principles to its website. Interested parties will have 45 days to comment, during which time the working group will hold a half-day forum to provide stakeholders with a chance to comment in person. The forum will take place on Tuesday, May 24 in Washington, D.C. Additional details about the forum will be provided soon. Public comments will be considered by the agencies before the final report is submitted to Congress.

❁❁❁

China Cracks Down on Food Safety

April 26, 2011 **Food Product Design**

BEIJING—China's Ministry of Health vowed to intensify food safety efforts by cracking down on the illegal use of non-edible materials in food, reported the state-run Xinhua news agency.

The move comes after a recent series of food-safety scandals that include clenbuterol-tainted pork, dyed steamed buns and bean sprouts tainted with banned food additives being sold to consumers.

The Ministry of Health on April 25 released a statement that demanded greater efforts from local health administration agencies in investigating and handling of cases that involve the adding of non-edible materials to food. It also called for health authorities to create a system for reporting food-safety incidents and organizing investigations, as well as improve their emergency response system for food safety accidents and include experts in their investigation teams.

China blacklisted 151 materials forbidden in food or which have been improperly used in food for human consumption and livestock feed over the past nine years. The materials include 47 inedible materials that may be added illegally to food for human consumption, 22 food additives that are easily abused and 82 substances forbidden in feed and drinking water for animals.

Health officials said the blacklisted non-edible materials and additives should become the key targets during food-safety supervision of health administration authorities at various levels.

❋ ❋ ❋

EFSA: Limited Success in Acrylamide Reduction Efforts

April 22, 2011 **Food Product Design**

PARMA, Italy—Voluntary industry measures to reduce acrylamide levels in foods have had limited success, according to a new European Food Safety Authority (EFSA) report. The findings reveal lower acrylamide levels in only three of the 22 food groups that were sampled.

The report is based on more than 3,200 results provided by member states between 2007 and 2009. Lower acrylamide levels were found in crackers, infant biscuits and gingerbread. Over the 3-year monitoring period, acrylamide levels increased in crisp bread and instant coffee. There was no change in potato crisps, oven fried potatoes, breakfast cereals, jarred baby foods, processed cereal-based baby foods and "bread not specified." The highest average levels of acrylamide were detected in potato crisps and substitute coffee, which includes coffee-like drinks derived from chicory or cereals such as barley.

Acrylamide is a chemical compound that typically forms in starchy food products during high-temperature cooking, including frying, baking and roasting. A 2005 EFSA statement noted there may be a potential health concern with acrylamide which is known to be carcinogenic and genotoxic. Following a recommendation by the European Commission in 2007, member states are requested to perform yearly monitoring of acrylamide levels and submit the data to EFSA for assessment and compilation in an annual report.

The report also included an assessment estimating acrylamide exposure in different age groups in Europe. Fried potatoes (including french fries), roasted coffee and soft bread were identified as the major contributors to acrylamide exposure in adults; fried potatoes, potato crisps, biscuits and soft bread were identified as the major contributors to exposure in adolescents and children.

❋ ❋ ❋

Mister: Daily values rule change is bad news for consumers (and for us)

By Elaine Watson, New Jersey, Nutra Ingredients 05-May-2011

Speaking to NutraIngredients-USA.com at the SupplySide East show in New Jersey, CRN president Steven Mister said he expected an FDA proposal on this issue to be tabled this year: “This was first raised in an ANPR [advanced notice of proposed rulemaking] from the FDA [Food and Drug Administration] and we strongly urged them not to do it. “But we understand they have gone ahead and ignored us, so at some point this year we are expecting them to come back with a formal proposal. And our strong suspicion is that they will come up with something we don’t want.”

Why bother with supplements?

If percent daily values for key nutrients are based on EARs (Estimated Average Requirements) instead of RDAs (recommended dietary allowances) – as the FDA is expected to recommend – the dosage needed to get 100% of your daily value would drop considerably, as EARs were much lower than RDAs, said Mister. As a result, some consumers could mistakenly believe they were getting all the nutrients they needed from their foods and might no longer deem it necessary to buy dietary supplements, he predicted.

“We believe the only logical basis for the daily value (DV) is the highest Recommended Dietary Allowance (RDA) or Adequate Intake (AI) established by the Institute of Medicine. “Changing the basis of the DV from the RDA to the EAR would lower the DV for many important nutrients, in some cases dramatically, by establishing target intake values that are at the lower bound of acceptable intakes and would meet the needs of only 50 percent of the population.

“RDAs and AIs represent targets for individuals’ nutrient intake, whereas the EAR represents the average requirement for the population. And as individuals, not populations, read nutrition labels, it follows that the DV should be based on an appropriate target value for individuals, i.e. the RDA. “Going by the EAR would push down all of the numbers so less healthy foods would seem more healthy. EARs are based on population averages, so while the amounts might be sufficient for half of the population, they won’t be enough for the other half. Using RDAs ensures that 90 percent of the US population gets what they need if they hit them.”

‘Over-nutrified’ or ‘under-nutrified’?

As to why the FDA was considering changing the rules in the first place, Mister blamed a powerful lobby that believed the US population was becoming ‘over-nutrified’, although there was little evidence to support this contention, he claimed. “In fact the reality is the opposite: Americans eat way too many calories but don’t get enough nutrition. The NHANES (National Health and Nutrition Examination Survey) data consistently show that on average, many Americans fail to achieve the recommended intakes for many nutrients.”

❋❋❋

Sodium vs. Salt: Let's agree to disagree

By Caroline Scott-Thomas, Nutra Ingredients 02-May-2011

The United States delegation to next week's Codex Committee on Food Labeling meeting has said it will push for sodium, rather than salt, to become the international labeling standard. But this is an unnecessary debate; if consumers understand a particular term in one country but not another, homogenized terms will only dilute existing public health messages. Internationally standardized sodium labels may be useful for multinational food manufacturers, but that's not who they are intended to serve.

Part of the dispute centers on the fact that the nutrient is sodium, not salt, and sodium is also present in other food ingredients, including common leavening agents such as bicarbonate of soda and baking powder. Although this is true, the vast majority of the sodium we consume comes from salt. Sodium may be well understood by American consumers, but if food makers switched to labeling sodium rather than salt in the EU, even the most health-conscious Europeans would be unable to name their recommended maximum daily intake, and that is surely counterproductive.

The UK's 'eat no more than 6g a day' (about 2,400mg sodium) salt campaign, along with action from food manufacturers, has seen great success – average daily salt consumption there is 8.6g, down from 9.5g a decade ago. For those aiming to reduce their salt intake, European governments could spend time and money reeducating the public that, actually, the nutrient is sodium, but this seems a huge waste of resources to simply assuage a taste for pedantry.

Even within the United States, standardized sodium recommendations have proved elusive. The Dietary Guidelines for Americans recommend a daily maximum of 2,300mg of sodium for those without hypertension risk factors (1,500mg for those at risk), while food label daily values are based on a 2,400mg maximum. Meanwhile, the American Heart Association recommends that everyone should aim for less than 1,500mg.

The European Union, perhaps more accustomed to the inherent difficulties of finding a single solution to every labeling issue, has taken a more conciliatory approach to the upcoming Codex meeting. In a letter detailing its position on nutrition labeling, the EU's Codex delegation said it supports the declaration of sodium expressed as salt on nutrition labels, but added that if no consensus can be reached, the decision should be left to individual countries. "The EU believes that it is important for the terminology in nutrition labeling to be coherent with the public health messages in the country or region concerned," the document said.

Currently, the EU allows for labeling of sodium in a (voluntary) nutrition information panel, while front-of-pack labeling tends to focus on salt content as a proportion of daily intake. This is an area of ongoing debate in the region. Let's allow the debate to run its course and hope that clarity for consumers remains top of mind. The Codex Committee on Food Labeling should be applauded for finding international common ground on many issues – but when it comes to salt vs. sodium, if it works, don't break it.

❋ ❋ ❋

Massachusetts attempt to ban melatonin brownies

According to Reuters, two Massachusetts towns are moving to ban sales of a “relaxation” brownie named Lazy Cakes, laced with melatonin and sold in food markets, after children who ate them required hospitalization.

The chocolate treats, which sell for $3–5 at food stores and some night clubs, are legal but contain nearly 8 mg of the supplemental sleep aid, which is about 25 times the usual amount prescribed for adults. Melatonin is a hormone produced naturally by the body. Standard doses in the Unites States, where it is available over the counter, and in Europe, where a prescription is typically required, range from 0.3–3 mg. Considered a dietary supplement rather than a drug, melatonin is not regulated by the Food and Drug Administration.

Reports have emerged of children who sampled Lazy Cakes and were rushed to hospital emergency rooms, where it was extremely difficult to wake them up. In Arizona, a two-year-old boy given a few bites of a relative’s treat was hospitalized after becoming withdrawn and falling deeply asleep.

In the Massachusetts cities of New Bedford and nearby Fall River, efforts are underway to ban their sales, largely because of their appeal to children. Purple packaging features Lazy Larry, a cartoonish brownie with a big grin on its face.

Baked World/HBB, the Memphis, Tenn.-based maker of Lazy Cakes, says it clearly labels each brownie to show it advises consumption by adults only.

From: IFT Newsletter May18, 2011

❋ ❋ ❋