Editorial

Salt has many positive advantages in food product besides the taste improvement. It has an effect on preservation and certainly augments the preservative action of many preservatives. It has an effect on rheology as well as it modifies texture of the food products. Besides other advantages it also has nutritional benefits especially in warm country like ours where people perspire a lot so it must be replaced as it is lost in the sweat.

In spite of all the benefits of salt, we consume too much of it especially when we consume a lot of fast foods. It is very easy to get used to salty taste and like it very much. To add to that if we consider the sodium consumption per day it is quite high when we take into account all sodium salts which are used in preservatives, anticaking agents, buffering agents, leavening agents etc. The total amount of sodium would be quite high.

Indians already have shown the propensity for hypertension, obesity and cardiovascular diseases. Under such conditions if we keep on having a high sodium diet then we will become the capital of heart disease much earlier than is predicted.

We must try to find out if we are consuming excess (and in most cases we are), and if we are then it must be reduced. Industry can help in this. Right now it is not necessary to declare sodium content of the foods. It is necessary to declare fat content and sugar content in the foods as per the labelling regulations but it is not necessary to declare either the salt or sugar content.

Some companies are already declaring the sodium contents of their product. This includes all the sodium from various sources not just from salt, because sodium creates problems with the hypertension and heart diseases whether it comes from salt or any additive.

One recent study in Australia found that high salt in the diet can affect the working of heart arteries within 30 minutes of the meal. It affected the dilation properties. There are several studies done in the past which show detrimental effects of high salt intake over a long period of time. But effects have now been shown to occur in such short span causes worry.

There are several foods that contain high salt contents. Indians love savoury snacks as well as many fast foods both western and Indian types contain fairly large amounts of salt. If no measure is taken to ensure moderation of salt intake per meal as well as over the daily food intake, it can have immediate as well as long term effects on health.

It would be helpful if sodium contents are declared on labels as these would help those who read labels and try to follow a good diet. This is especially useful for those who already have hypertension and cardiovascular diseases. Those above 50 years of age should be extra careful as they are most susceptible for such problems especially as they have less physical activity.

A word of caution to those who are reducing salt intake. If they have physically active life they may lose a lot of sodium through perspiration and their requirement would go up. Let us help people have better diet.

Season's greetings

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Water Water Everywhere: Prof. Jagadish S. Pai

World Water Day
22 March 2011

Water is vital to life. It concerns so many functions of human body not shown by any other substance. Its deficiency is immediately manifested by even 1% dehydration and with continued loss of water from body cardiovascular, respiratory and thermoregulatory systems are affected and with complete absence of water intake can lead to death within days. Such precious substance is plentiful on earth but only 3% of which is freshwater the remaining being saline water in seas. Of this meagre freshwater resource, less than 1% (i.e. 0.03% of total) is surface water in rivers, lakes etc. which is mostly used by humans and animals for their daily needs.

Water fit for human consumption is called drinking water or potable water, although unfit water may be made potable by filtration, distillation etc. The natural resources of water are becoming scarcer especially in urban areas where demand is high and growing every year and supply is restricted. To add to the problems resources are getting contaminated by pollution agricultural, industrial and domestic. Some ground water from wells and bore wells is also utilised to augment surface water supply but this needs to be adequately purified to make it potable and in some areas it is being overused so ground water level is dropping.

Per capita water availability in India was about 1820 cubic meters per year in 2001 and is expected to decline to 1140 in 2050 when our population is expected to stabilise at about 1.64 billion with water requirement of around 1450 km^3/year. It may be necessary to find innovative solutions like rain-water harvesting for getting more water or conserve water that is available.

Bottled water has become a significant industry in the last decade. The present market in India is over Rs. 1500 crores out of the total packaged beverage market of about Rs. 12,000 crores, making water almost 15% of total packaged beverage market.

Water is used not only for drinking and food preparation, but also for many other uses like washing and cleaning, bathing, recreation, gardening, agriculture, and many industrial applications.

Benefits of Drinking Water

- Prevents dehydration
- Regulates body temperature to about 98.6° F
- Reduces fluid retention
- Gives the feeling of fullness when consumed with a meal
- Carries nutrients and oxygen to the cells
- Provides moisture to skin and other tissues
- Helps prevent constipation
- Cushions joints
- Helps strengthen muscles

Needs of Water for Health & Nutrition

Water is more than just a nutrient. It helps regulate temperature of the body. Processes of digestion and muscular contraction generate large quantities of heat that must be dissipated to maintain temperature of the body. Digestion liberates 10-15% of caloric content of mixed food as heat whereas muscular contraction liberates 70-75% of energy as heat. Water absorbs heat where it is generated and dissipates through the body minimising the local overheating damage and is further transferred to skin where is dissipated to surrounding by sweat.

Water is the single largest component of the body. Water makes about 75 to 85% of body weight at birth and this proportion decreases with age. Water accounts for about 60% of adult male weight and about 50-55% of female. Blood contains 83% water, kidney 82.7%, heart 79.2%, muscle 75.6%, skin 72%, liver 68.3%, skeleton 22% and adipose tissue 10%. Total body water in lean and athletic individuals is higher as active cells of muscle contain much higher water than in adipose tissues.

Thus water is distributed throughout body but primarily in two compartments: within cells (intracellular) and between cells (extracellular). Almost 2/3 of water is present within cells, the rest being between cells including in blood serum and as some consider as the third compartment of specialised structures like joints, eyeballs, spinal cord etc. may contain about 10% of the total water.

One of the primary functions of water in body is to regulate temperature. When body temperature increases because of exercise, digestion or environmental conditions, this heat needs to be dissipated wherein water comes very handy. Heat is conveyed from tissues to surface by blood and finally sweat formation occurs which cools the body. In hot and dry weather sweat is not seen easily as it evaporates rapidly cooling the body surface. This process of maintaining body temperature causes losses of body water through sweat, causing loss of water from blood (extracellular) which in turn draws water from muscles and tissues (intracellular). If this loss is not compensated then symptoms of dehydration occur due to lower volume of blood as well as higher solute concentrations in blood as well as various cells and tissues.

Water balance

Water balance of the body if disturbed substantially can have adverse consequences. Since large proportion of water are present in various parts of body, even slight water loss if not compensated can cause adverse effects. The water losses equal to 1% body weight will induce thirst, while 2% loss will cause strong thirst, vague discomfort etc., at 3% loss impaired physical performance, at 4% loss increased effort for physical work and nausea, at 5% loss difficulty in concentration, at 6% loss failure to regulate excess temperature, at 8% loss dizziness, increased weakness, at 10% loss muscle spasms, delirium and wakefulness and at 11% loss inability of decreased blood volume to circulate normally and failing renal function etc. So for an individual of 70 kg body weight, the symptoms start with loss of about 700g water (i.e. 1% body weight).

Symptoms of Dehydration

- Excessive thirst
- Fatigue
- Muscle weakness
- Headache
- Dizziness
- Dry mouth, lips and skin
- No urination or a small amount of dark yellow urine
- Light-headedness
- Increased body temperature
- Nausea
- Constipation
- Laboured breathing

For this reason, homeostatic regulation by GI tracts, kidneys and brain keeps body water fairly constant. In healthy individuals water intake is triggered by thirst. Loss in both intra and extra cellular water plays a role in stimulating thirst. Water is consumed as fluid and as part of food as many foods have substantial amount of water (see the table). Digestion of food in body also produces metabolic water as end product. Oxidation of 100 g of fat, carbohydrate or protein roughly produces 107, 55 or 41 g of water respectively with a total contribution of about 200 to 300 ml/day.

When water cannot be taken in orally or by tube feeding, it may be given intravenously as saline resembling electrolyte content of body fluids, dextrose solutions, parenteral nutrition or in blood or plasma transfusion. When water is consumed more than body's needs, excess water is excreted through urine and feces. However, body has a finite rate or ability to excrete it. Water intake in excess of body's ability to excrete water may cause water intoxication in turn increasing intracellular fluid. This causes cells particularly of brain to swell, leading to headache, nausea, blindness, vomiting, muscle twitching and convulsions. It can be fatal if left untreated.

Although it is extremely rare in healthy adults, it is possible to get toxicity due to too much water (hyperhydration). If large quantities of water are consumed in very short time, kidneys do not have enough time to excrete extra water and the electrolyte balance of body in various organs is disturbed. This may happen if a person has drinking contest or prolonged exercise during which large amount of water is consumed without adequate electrolyte supplementation. Normally it is very difficult to accidentally drink too much water.

Commonly water intake per day through fluids is about 1400 ml, through water in foods 700 ml and by food digestion 200 ml, with a total of 2300 ml. This may be adequate in a normal person in normal temperature but in hot weather loss through

perspiration can be as high as about 1.4 litre and with prolonged exercise it can go as high as 5 litres depending on the type of exercise. Thus in hot weather a normal person may require about 3300 ml or more while with a prolonged exercise such as by a sportsman or if the person does a lot of heavy manual work, may need as much as 6600 ml water intake during a day.

Water loss depends on activity level and the environmental conditions. The environment may affect the water loss through sweat, urine and respiratory routes. Main source of water intake is fluid consumption including plain water, juices, beverages etc. Water content of food also contributes greatly to water balance.

Water Contents of Common Foods

Food	**Water (%)**	**Food**	**Water (%)**
Lettuce	96	Cucumbers	95
Cabbage	92	Watermelon	92
Milk nonfat	91	Spinach	91
Green beans boiled	89	Carrots raw	88
Oranges	87	Grains cooked	85
Apples raw w/o skin	84	Grapes	81
Potatoes boiled	77	Eggs	75
Bananas	74	Fish baked	74
Chicken roasted	70	Corn boiled	65
Cheese	38	Bread	37
Cake	34	Butter	16
Almonds blanched	5	Crackers saltines	1

From: USDA Nutrient Database

A person playing soccer would be losing more of water than a person playing golf. Soccer player commonly may lose between 6 and 7 litres of water in a day of which most will be lost through skin by sweat and evaporation. Lungs would be losing significant amount through breathing while losses through urine and faeces would be small. The golf player may lose only about 2 to 3 litres of which major losses would be through urine and skin.

Kidneys and hypothalamus are jointly responsible for maintaining water balance of the body. Unfortunately, hypothalamus, the thirst centre in the brain reacts tardily and remains inactive until 1 to 2% of the body fluid has been lost. Kidney responds more rapidly to water loss indicated by drop in plasma volume and fluid osmolarity. This triggers resorption of water by kidney to reduce urine output. Finally thirst centre responds by increasing the thirst drive and thus fluid intake.

Electrolyte Concentration in Different Body Fluids

Body Fluid	Osmolarity (mosmol/L)	Electrolyte (mEq/L)			
		Na^+	Cl^-	K^+	Mg^{++}
Sweat	80-150	40-60	30-50	3-4	1-5
Plasma	290	140	101	4	1-2
Muscle	290	9	6	162	31

Factors Affecting Water Needs

Water needs are increased by:

- Exercise. Water is lost through perspiration.
- Hot and humid climates.
- High altitudes. The breathing rate is twice as fast as at sea level. At high altitudes, most water loss is due to respiration rather than perspiration.
- Prescription drugs. If adequate water is not available for proper blood flow, medication can become concentrated in the bloodstream and become less effective.
- Dieting. A reduced carbohydrate intake may have a diuretic effect because **carbohydrates** store water.
- Airplane, bus, or train travel. The re-circulated air causes water to evaporate from skin faster.
- Illness. Fever, **diarrhea** and vomiting lead to increased water losses.

Physical Activity & Exercise: Active sport and vigorous physical activity, even brisk walking makes one sweat so water is needed not just during the activity but through the day. Sweat is body's way of cooling itself on a hot day or during physical workout. Replacing the fluid loss is essential by drinking water, juice, milk or beverages before, during and after the workout to prevent dehydration and tiredness. Drinking fluids intermittently during the workout avoids cramps. Water may be adequate for most physically active people but for endurance athletes and for prolonged exercises, sports drinks containing sodium and potassium may be necessary.

Environmental Conditions: Hot weather causes greater water losses through sweating to keep the body cool so more water needs to be consumed. Higher altitude increases water requirements as people breathe faster and also the drier air causes losses from skin through evaporation rather than sweating. Air-conditioners not only increase urine output due to cold temperature but also cause air to be drier so there is more loss of body water through evaporation.

Illness and Disease: Fever, vomiting and diarrhea causes extra loss of fluids that need to be replaced by water and minerals. Kidney stones problem requires increased water consumption.

Pregnant and Lactating Women: These need more water to support the growth of fetus or to replace the water lost through milk.

Tips for Drinking More Water

- Drink a glass of water as soon as you get up each day.
- Every morning, fill a 2 to 3 litre container with water for the day. When you drink all the water in the container, you have met your daily water need.
- Drink water with meals and snacks.
- Add slices of lemon, lime or orange to water for a hint of flavour.
- Start your meal with soup occasionally.
- Enjoy water breaks instead of coffee or tea breaks.
- Take water bottles with you to work and when running errands.
- Keep a cup of water on your desk to sip on as you work at the computer.
- When passing a water fountain, stop and take a drink.
- Instead of a soft drink, or soda, reach for bottled water in the convenience store, as well as from the vending machine.
- At social gatherings substitute sparkling water for alcoholic drinks, or alternate them.
- Pack bottled water in your carry-on luggage when travelling by plane. Drink 1 cup of fluid for every hour of your flight.
- Drink water before, every 15 minutes during, and after physical activity.
- Weigh before and after exercise. The difference is almost all water. Replace each 500g lost with 2 cups of water.

Beverage Choices Other Than Water

Plain water is just one of the options that could be used for supplying fluid requirements. There are other healthy choices containing vitamins and minerals including milk, soya milk, fruit and vegetable beverages and many other sports and health beverages all of which make water intake more nutritious as well as interesting and palatable.

Milk supplies calcium and protein and skim milk could supply enough water with fewer calories. Flavoured low-fat milk can be fun but may add calories if sweetened. Drinking milk with meals can provide substantial fluid.

Vegetable juices contain less sugar than fruit juices but sweetened varieties may add calories. These provide many vitamins and minerals while some provide substantial amounts of fibre. Fruit beverages and drinks contain less fruit contents than juices.

Tea and coffee contain plenty of water but also contain caffeine that has diuretic effect so their benefits are limited. Soft drinks contain plenty of water but may add calories unless they are artificially sweetened and those containing caffeine may be less effective due to diuretic effect. Diuretic effect of caffeine is, however, under debate and the recent research indicates that caffeine in moderate amounts is only mildly diuretic.

Alcohol on the other hand is known to be diuretic. Every gram of alcohol causes 10 ml urine excretion. So drinking strong alcoholic beverages may cause dehydration. In fact consuming drinks after exercise may delay rehydration especially with drinks containing over 4% alcohol.

Beverages containing glucose or carbohydrates and electrolytes benefit prolonged physical activities or endurance sports primarily due to carbohydrate content. Electrolytes seem to provide lesser benefit although carbohydrate beverages with small quantities of sodium provide faster and more complete rehydration than water alone.

How Much Water is Needed to Avoid Dehydration?

Body does not have provision to store water so any water lost must be replaced every day to maintain health and body efficiency. Lack of water can lead to dehydration, a condition when the body does not have enough water to carry on normal functions. Dehydration is a health risk, especially for the very young and the very old. A 20% loss of water is life-threatening. Mild dehydration over time has been linked with increased cancer risk, reduced salivary gland function, kidney stones, and even fatal heart attacks.

Thirst is the first symptom of dehydration. Fluids should be consumed before you feel thirsty. Individuals should not wait until they are thirsty to replenish water stores. By the time the thirst mechanism signals the brain to encourage a person to drink water, already 1–3% of the body fluids may be lost if the person is performing moderate to high level physical activity. Infants may get quickly dehydrated and older adults may have diminished thirst sensation. Also, after drinking water it takes a while for body to rehydrate as water needs to be absorbed in blood which then carried to different tissues where rehydration occurs both of intracellular and extracellular water. Thus it is better to drink water prior and during an anticipated need and before the thirst is felt.

A healthy individual of weight around 60 to 70 kg may require about 2 litres of water every day to maintain the water balance. However, additional water needs may arise due to vigorous physical activity or sports, warm and dry climatic conditions or high altitude, a women being pregnant or breastfeeding, a person having diarrhoea or vomiting, and also if a person consumes alcoholic beverages. The requirements may go up to 5 litres depending of severity of these conditions. Of this about 20% may come from the food one consumes including fruits, vegetables, porridges, soups, beverages etc. so remaining may have to come from drinking water.

Body fluids contain various electrolytes, the major ones being sodium, potassium, chloride and magnesium. Sodium and chloride are mostly present in extracellular fluids while potassium and magnesium in intracellular fluids (see the table). When large amounts of body water are lost, compensating with large amounts of pure water may cause imbalance of electrolytes so they are many times added oral rehydration solutions (ORS) as well as in sports drinks and beverages for physically active persons.

Conclusion

If you are concerned about drinking too much or too little water, let your doctor or a dietician help you determine the amount that is best for you. Normal individual can have about 2 litres which are consumed throughout the day rather than at one go or very infrequently. It is always better to drink before one gets thirsty as thirst indicates that the person is already dehydrated. Warm and dry weather or heavy physical activity like sports or long walks necessitates additional amounts. Take into account fruits, vegetables, juices, milk and other beverages that contribute to fluid intake. If more than one or two glasses are to be consumed at a time especially at very heavy physical activity, it is better to have electrolytes in it. Also it is better to drink some water before one start physical activity and if the activity is prolonged then during the activity it is better to drink intermittently.

DFS (Double Fortification of Salt) – A Simple Solution for a Complex Problem

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The prevalence of iron deficiency anemia in our country is in alarming proportions and is one of the major micronutrient deficiencies. About 70% of pregnant and lactating women and almost 50% of children under 5 years of age and ~ 40% of adult men have haemoglobin levels less than the desired cut off value and well below 11g /dL. Anemia results in many public health problems which include maternal mortality, birth of low birth weight babies which in turn contribute to infant mortality, decreased physical activity, decreased mental and cognitive function, decreased work capacity etc. which finally reflects in greater disease burden and decreased economic growth. The reason why this problem exists in our country is primarily due to predominantly vegetarian diet with its relatively lower amount of bioavailable iron compared to non vegetarian sources and secondarily due to several inhibitors of iron absorbers in our diets which are due to high dietary fiber and phytate content. Apart from the above two reasons the fact that a significant population has macro and other micronutrient intakes well below the recommended dietary allowance further reduces the intake of iron. For the formation of hemoglobin iron alone may not be adequate to reach the optimum level. Other micronutrients like folic acid, B12, riboflavin as well as protein intake are also important. Even among the population with normal BMI and other parameters of nutritional status being normal, anemia still exists due to the low bioavailability of iron. One of the interventions currently being practiced is the supplementation of iron and folic acid in tablet form during critical periods of life cycles like in pregnant and lactating and children under five. This approach is short term and therefore a need for long term solution for the entire country.

Scientists at the National Institute of Nutrition have taken the cue from the iodised salt program and conducted research in developing iron fortified salt which was relatively a easy goal to achieve. Since iodisation of salt is essential one cannot have two different kinds of salt for the same population and therefore further research was done to fortify iodised salt with iron as a double fortified salt. The biggest challenge here was to ensure that the part of iron which is highly reactive element does not displace the iodine from the salt, which would defeat the purpose of iodine fortification. Therefore several years of research resulted in a formulation of DFS along with an approved stabilizer Sodium Hexa Meta Phosphate (SHMP) and Ferrous Sulphate, Potassium iodate which ensure that the iodine content remains stable. Studies on the effect of this salt was carried out in laboratory animals even though every ingredient in this salt has a history of safe use for many many years. There were no adverse effects observed in these laboratory animals which re-confirmed that the DFS was safe for human consumption. The quality of the salt was also critical and it had to be ~ 98.5 – 99% of sodium level so that other impurities do not interfere with the availability of iodine in the salt. This was followed by a series of efficacy studies initially in laboratory animals including both normal as well as anemic animals, as well as studies in humans for a period of upto two years. All the studies from laboratory to community proved beyond doubt that long term use of DFS results in a significant improvement in iron stores and relatively higher levels of hemoglobin compared to those who were given plain iodised salt. This salt provides 1 RDA of iodine and ~ 50% RDA of iron (based on the new RDA levels). Bioavailability studies demonstrated that iron and iodine are well absorbed and utilized by the body under prevalent dietary conditions. Effect of storage under diverse conditions, transportation losses etc. were all studied and it was seen that both iron and iodine are present in the required amounts even at the end of one year of storage. In our country, most of the salt gets consumed within ~3 months after it reaches the shelves of the retailers. This salt is produced by simple dry mixing technique and large scale production was also demonstrated in the factories before the tests were undertaken. Currently ~ 7 salt manufacturers have the capacity to produce this salt, the technology has been transferred free of cost, to any one who is willing to manufacture the salt as per the standards laid down by the PFA/FSSAI. The salt testing kit has also been developed which can be utilized by anyone, even at home level to test the required availability of iron and iodine in salt sample at any time. The field studies have also showed that even in a population which is living in an area endemic to malaria where the disease itself contributes to anemia, consumption of DFS helped the population to maintain hemoglobin levels significantly higher than what it was at the start of the intervention.

Since iron is stored in the body over a period of time, when the population regularly consumes this DFS, the stored iron levels will continuously improve which in turn will result in a gradual increase in hemoglobin levels. There is data to indicate that even 1g increase in the hemoglobin would make a significant difference. The extent of improvement will be among those whose iron stores are poor than those who have a relatively better iron stores. There will be no question of excessive iron intake because the iron absorption is so well regulated in the intestine that the body will not absorb more iron once iron stores are sufficient. Several acceptability studies and organoleptic studies were done by making a variety of culinary preparations using DFS and comparing with iodised salt and it was found that they were acceptable and there was no difference in the organoleptic characteristics of the foods and therefore would be comfortably used by the community. The studies parallelly looked at the impact of iron on iodine status in tribal areas and it was found that there was a significant reduction in the prevalence of total goiter from an initial 28% which came down to 14% . Urinary iodine levels also increased significantly with DFS intervention (from 116 ug/L to 155 ug/dL in the DFS group and from 59 to 116 ug/L in the iodised salt

group) thereby proving that the DFS was as effective in controlling iodine deficiency disorders in the tribal population. In a two years period overall prevalence of anemia was 58% in the DFS group. Another study with a group of residential school children was done to assess the impact of DFS on the hemoglobin status. A randomized double blind study was carried out for two years among children of four residential schools. The children readily accepted DFS as cooking salt and the compliance was 100%. No undesirable effect was observed. The median urinary iodine excretion levels increased significantly from 68 to 108 ug/L in DFS group and from 70 to 450 ug/L in iodised salt group. Studies also demonstrated that the magnitude of impact depends on the initial hemoglobin level. Covariate analysis showed that the mean increments of haemoglobin at the end of the study, after adjusting for the differences in initial haemoglobin were significantly high in DFS group as compared to iodised salt group. The proportion of anemic children before and after the DFS was 41.8% and 29.5% respectively where as iodised salt group the proportion of anemic children before supplementation was 53.7% and after substitution 47.4%. We therefore concluded that DFS offers a simple acceptable solution to the problem of iron deficiency anemia. It needs to be remembered that the purpose of the salt is to provide a part of the daily requirements of iron and iodine. All the relevant studies were conducted to ensure that iodine availability does not get compromised and therefore one need not be apprehensive about disturbance to the existing iodine supplementation .

NIN-DFS formulation of iodine and DFS has undergone rigourous safety and large-scale feasibility trials and have answered all issues relating to safety, bioavailability and efficacy and practicabililty. Newer forms of DFS could also come in over a period of time and iron salts like iron sodium EDTA may have an edge over the ferrous sulphate iron salt since their absorption is not interfered by the phytates and dietary fiber. Irrespective of what is the kind of salt which is going to be used, salt as a vehicle is to be a base to deliver iron to the population along with iodine. It may take atleast five years of sustainable use of DFS before we actually see significant rise in the hemoglobin levels of the entire population of the country. Parallelly other programs relating to food and nutritional security should improve the nutritional status of the people which in turn would help reduce the large burden of anaemic population in this country.

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HEALTH & NUTRITION NEWS

Omega 3 Deficiency May Promote Depression: French Research

Press Release -- January 30, 2011 -- How maternal essential fatty acid deficiency impact on its progeny is poorly understood. Dietary insufficiency in omega-3 fatty acid has been implicated in many disorders. Researchers from Inserm and INRA and their collaborators in Spain collaboration, have studied mice fed on a diet low in omega-3 fatty acid. They discovered that reduced levels of omega-3 had deleterious consequences on synaptic functions and emotional behaviours. Details of this work are available in the online version of the journal Nature neuroscience.

In industrialized nations, diets have been impoverished in essential fatty acids since the beginning of the 20th century. The dietary ratio between omega-6 polyunsaturated fatty acid and omega-3 polyunsaturated fatty acid omega-3 increased continuously over the course of the 20th century. These fatty acids are "essential" lipids because the body cannot synthesize them from new. They must therefore be provided through food and their dietary balance is essential to maintain optimal brain functions.

Olivier Manzoni (Head of Research Inserm Unit 862, "Neurocentre Magendie", in Bordeaux and Unit 901 "Institut de Neurobiologie de la Méditerranée" in Marseille), and Sophie Layé (Head of Research at INRA Unit 1286, "Nutrition et Neurobiologie Intégrative" in Bordeaux) and their co-workers hypothesized that chronic malnutrition during intra-uterine development, may later influence synaptic activity involved in emotional behaviour (e.g. depression, anxiety) in adulthood.

To verify their hypotheses, the researchers studied mice fed a life-long diet imbalanced in omega-3 and omega-6 fatty acids. They found that omega-3 deficiency disturbed neuronal communication specifically. The researchers observed that only the cannabinoid receptors, which play a strategic role in neurotransmission, suffer a complete loss of function. This neuronal dysfunction was accompanied by depressive behaviours among the malnourished mice.

Among omega-3 deficient mice, the usual effects produced by cannabinoid receptor activation, on both the synaptic and behavioural levels, no longer appear. Thus, the CB1R receptors lose their synaptic activity and the antioxidant effect of the cannabinoids disappears.

Consequently, the researchers discovered that among mice subjected to an omega-3 deficient dietary regime, synaptic plasticity, which is dependent on the CB1R cannabinoid receptors, is disturbed in at least two structures involved with reward, motivation and emotional regulation: the prefrontal cortex and the nucleus accumbens. These parts of the brain contain a large number of CB1R cannabinoid receptors and have important functional connections with each other.

"Our results can now corroborate clinical and epidemiological studies which have revealed associations between an omega-3/omega-6 imbalance and mood disorders", explain Olivier Manzoni and Sophie Layé. "To determine if the omega-3 deficiency is responsible for these neuropsychiatric disorders additional studies are, of course, required".

In conclusion, the authors estimate that their results provide the first biological components of an explanation for the observed correlation between omega-3 poor diets, which are very widespread in the industrialized world, and mood disorders such as depression.
SoyaTech eNews January 31, 2011

Calcium-Rich Breakfast Increases Fat Loss

February 1, 2011 **Food Product Design**

PERTH, Australia—Individuals who start their day with a breakfast rich in calcium and vitamin D increase fat oxidation rates and energy burning throughout the day while reducing cravings for spontaneous eating, according to a new study published in the journal of ***Clinical Nutrition***.

According to researchers at the Curtin University of Technology, a morning meal containing more than 500 milligrams of calcium and 8.7 micrograms of vitamin D was associated with significantly increased fat and energy burning over 24 hours, compared to a breakfast containing 250 milligrams of calcium and 0.3 micrograms of vitamin D.

Eleven overweight subjects, aged 54 (± 1.2 years) and with a body mass index (BMI) of 31 (± 2.4), participated in a randomized within-subject, sequential meal study comparing a low-calcium breakfast to a high-calcium breakfast. Diet-induced thermogenesis, fat oxidation rates, serum leptin and subjective feelings of hunger/satiety were measured at fasting and hourly over eight hours. Subjects were allowed to eat lunch at liberty.

Researchers Wendy Chan She Ping-Delfos and Mario Soaresa, both from the Curtin University of Technology, Perth, observed those who ate the higher calcium breakfast showed higher fat oxidation rates (P=0.02) and a significantly greater thermogenesis (P=0.01). Further, those with more calcium were able to wait longer to eat dinner after the buffet (P=0. 083) and ate significantly fewer calories (P=0.017) in the following 24-hour period. Serum leptin changes following the higher calcium meal, but not lower calcium meal, was negatively related to 24-hour fat intake (P=0.016).

High-Salt Meals Impair Heart Health

February 8, 2011 **Food Product Design**

ADELAIDE, Australia—Individuals who eat a high-salt meal may experience impairment of their heart arteries within 30 minutes, according to a new study published in the ***American Journal of Clinical Nutrition***.

Australian researchers used flow-mediated dilatation (FMD) and peripheral arterial pressure measurements to investigate the postprandial effect of dietary salt on endothelial function. Sixteen healthy subjects with normal blood pressure received a high-salt meal (with 65 mmol of salt added), and at a separate time, they received a low-salt meal (with 5 mmol of salt added). Endothelial function was measured while fasting and postprandially at 30, 60, 90 and 120 minutes by using FMD and reactive hyperemia peripheral arterial tonometry. Blood pressure also was measured.

Baseline FMD, reactive hyperemia index (RHI) and blood pressure values were similar across interventions. Overall FMD was reduced two hours after the meal, but the measure showed artery dilation was significantly more impaired after the high-salt meal than after the low-salt meal after 30 minutes [high-salt meal (mean ± SD): 3.39 ± 2.44 percent; low-salt meal: 6.05 ± 3.21 percent; P<0.01] and after 60 minutes (high-salt meal: 2.20 ± 2.77 percent; low-salt meal: 4.64 ± 2.48 percent; P<0.01). They did not observe significant differences in blood pressure or RHI between meals.

The recently released 2010 Dietary Guidelines for Americans highlight the issue of too much salt in American diets and how that reflects poorly on heart health. The guidelines recommended reducing daily sodium intake to less than 2,300 milligrams (mg) and further reducing intake to 1,500 mg among persons who are 51 and older and those of any age who are black or have hypertension, diabetes or chronic kidney disease. The 1,500 mg recommendation applies to about half of the U.S. population, including children, and the majority of adults.

Sources: **American Journal of Clinical Nutrition**

Dairy Calcium Helps Maintain Good Cholesterol

February 8, 2011 **Food Product Design**

ROSEMONT, Ill.—The combination of calcium and milkfat in dairy products may reduce fat absorption and maintain good cholesterol (HDL) while minimizing any increase in bad cholesterol (LDL), according to a new study published in the ***British Journal of Nutrition***.

Researchers from the University of Copenhagen conducted a randomized clinical trial that included participants completing four separate diets over a period of 10 days, with each diet differing in the amount of calcium and fat content. Blood variables were measured before and after each diet period, and feces and urine were collected at the end of each diet period. A two-way ANOVA was used to examine the effect of calcium and fat intake. The researchers observed that dairy calcium seems to partly counteract the raising effect of dairy fat on total and LDL-cholesterol, without reducing HDL-cholesterol.

Commenting on the study, Gregory Miller, Ph.D., president of the Dairy Research Institute™ and executive vice president of the National Dairy Council®, said: "We know there are many adults today concerned about their fat intake, cholesterol levels and heart disease risk. We believe this study underscores the importance of dairy as a good daily source of calcium, protein and

other nutrients while mitigating the impact on cholesterol. The study reinforces findings published in the Dietary Guidelines Advisory Committee report in 2010 that suggests 'bioactive components that alter serum lipid levels may be contained in milk fat,' or the effect of milkfat on blood lipids is different than what might be predicted. This is valuable information for the industry and for the consumer. It is an area of research the Dairy Research Institute continues to focus on."

Sources: **British Journal of Nutrition:**

Caffeine Boosts Women's Brain Function

February 7, 2011 **Food Product Design**

BRISTOL, England—Women who drink caffeinated coffee may have better cognitive performance than men in stressful situations, according to a study published in the December 2010 issue of the ***Journal of Applied Social Psychology***. The findings suggest men become less confident and take longer to complete tasks once they have consumed several cups of coffee.

Researchers at Bristol University examined how increased caffeine consumption affects the body when it is under high stress. They divided 64 coffee-drinking volunteers into pairs of the same-sex and similar ages. Half of the pairs were given decaffeinated coffee and half given caffeinated drinks. Next, they gave the participants memory tests, puzzles and negotiating tasks to complete, and told them they would be making a public presentation on their results.

The researchers measured individual cognitive appraisals, emotional feelings, bodily symptoms, coping, and performance evaluations, together with dyad memory, psychomotor performance, and negotiation skills under higher or lower stressful conditions. They found women performed better than men on collaborative tasks under stress, provided caffeine had been consumed.

Sources: **Journal of Applied Social Psychology:**

Do weight loss supplements work? No, says researcher

By Shane Starling, 10-Feb-2011 Nutra Ingredients.Com

Slimming supplements are an ineffective weight loss method, a researcher has found after scanning the literature in the area.

Writing in the December 2010 issue of *Nutrition Bulletin,* Helena Gibson-Moore's mini meta analysis concluded there was insufficient evidence backing the efficacy of weight loss supplements, and therefore should not be recommended by health professionals to the overweight and obese.

She concluded lifestyle, dietary and pharmaceutical interventions were more likely to yield positive results.

"Considering the wealth of evidenced-based advice and guidance available to treat overweight and obesity, dietary supplements for weight loss are unlikely to be used in the clinical setting in the near future," she wrote, noting, *"a lack of robust evidence"* supporting their efficacy.

"Health professionals need to be aware of the potential safety concerns associated with their use and also advise individuals that most supplements are costly and may result in frustration and disappointment when expectations are not successfully met in the long-term.

"People who use weight-loss supplements may be highly motivated to lose weight and therefore health-care professionals should try and utilise this motivation to encourage evidence-based weight-loss approaches and the use of proven, safe, and effective treatments when embarking on weight-loss attempts."

Nutrition Bulletin is funded by the British Nutrition Foundation, a group which counts large food manufacturers, pharma players, ingredient suppliers and retailers among its membership, including GlaxoSmithKline, Marks & Spencer, Waitrose, McDonald's, Heinz, Yakult and Danisco.

Let the NHCR be the judge of that (slimming claims)

Responding to the findings, supplements group the UK Council for Responsible Nutrition (CRN), pointed to the EU nutrition and health claims regulation (NHCR), under which a series of weight management claims are under adjudication and due for publication at the end of the year.

"CRN agrees that lifestyle and behavioural interventions are the main approaches for successful, long term weight maintenance and weight loss," said chairman Ric Hobby, noting the research was focused on calorie input and expenditure.

"All functional health claims, including those related to beneficial effects on body weight, sense of hunger or satiety are currently being assessed scientifically by the European Food Safety Authority (EFSA).

"A list of authorised claims will form the basis of all permitted health claims on foods and food supplement products in Europe. CRN support all regulatory developments which protect consumers' health and interests, including the removal of false and misleading claims, and which ensure the safety and efficacy of food supplements."

Some study details

Gibson-Moore referenced an as yet unpublished study, a summary of which was presented last summer at the 11th International Congress on Obesity in Stockholm, Sweden, which found no statistical difference in weight loss between a range of weight loss supplements and placebo among 179 overweight or obese people.

The supplements included L-carnitine, guarana seed powder, bean extract, konjac extract, polyglucosamine, cabbage powder, fibre pills, sodium alginate formulations and selected plant extracts. All were purchased at German pharmacies, with subjects receiving one of them or placebo for eight weeks.

Those on the supplements recorded weight loss of between 1-2 kilograms, while the placebo group averaged 1.2kg weight loss.

Gibson-Moore noted that when the report was publicised in the summer, the British press had responded with headlines such as 'Weight loss supplements do not work, say experts' (*MailOnline*); 'Food supplements "make no difference for slimmers" (*The Daily Telegraph* 2010) and 'Diet pills "do a fat lot of good"' (*The Sun* 2010).

EFSA recently published a positive opinion linking konjac mannan (glucomannan)'s ability to support weight loss, *"in the context of an energy-restricted diet"*.

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Study Reveals Omega 3 Works in Preventing Several Forms of Blindness

Nutrition Horizon 2/10/2011 ---

Omega-3 fatty acids, fats commonly found in fish oil were shown several years ago to prevent retinopathy, a major form of blindness, in a mouse model of the disease. A follow-up study, from the same research team at Children's Hospital Boston, now reveals exactly how omega-3's provide protection, and provides reassurance that widely used COX-inhibiting drugs like aspirin and NSAIDs don't negate their benefit. The findings, published in the February 9th issue of Science Translational Medicine, also suggest that omega-3's may be beneficial in diabetes.

Retinopathy – an eye disease caused by the proliferation of tortuous, leaky blood vessels in the retina is a leading cause of blindness, affecting 4.1 million Americans with diabetes (a number expected to double over the next 15 years) and many premature infants. Another 7 million-plus Americans have age-related macular degeneration (AMD); this too will increase as the population ages. The most common "wet" form of AMD is also caused by abnormal blood vessel growth.

The ability to prevent these "neovascular" eye diseases with omega-3 fatty acids could provide tremendous cost savings, says Children's ophthalmologist Lois Smith, MD, PhD, senior investigator on the study. "The cost of omega-3 supplementation is about $10 a month, versus up to $4,000 a month for anti-VEGF therapy," she says, referring to drugs such as Macugen and Lucentis used in AMD and diabetic retinopathy. "Our new findings give us new information on how omega-3s work that makes them an even more promising option."

Omega-3 fatty acids, highly concentrated in the retina, are often lacking in Western diets, which tend to be higher in, mice fed diets rich in omega-3 fatty acids by Smith's team had nearly 50 percent less pathologic vessel growth in the retina than mice fed omega-6-rich diets. Smith and colleagues further showed that the omega-3 diet decreased inflammatory messaging in the eye.

In the new study, they document another protective mechanism: a direct effect on blood vessel growth (angiogenesis) that selectively promotes the growth of healthy blood vessels and inhibits the growth of abnormal vessels.

In addition, Smith and colleagues isolated the specific compound from omega-3 fatty acids that has these beneficial effects in mice (a metabolite of the omega-3 fatty acid DHA, known as 4-HDHA), and the enzyme that produces it (5-lipoxygenase, or 5-LOX). They showed that COX enzymes are not involved in omega-3 breakdown, suggesting that aspirin and NSAIDs – taken

by millions of Americans -- will not interfere with omega-3 benefits.

"This is important for people with diabetes, who often take aspirin to prevent heart disease, and also for elderly people with AMD who have a propensity for heart disease," says Smith. (One drug used for asthma, zileuton, does interfere with 5-LOX, however.)

Finally, the study demonstrated that 5-LOX acts by activating the PPAR-gamma receptor, the same receptor targeted by "glitazone" drugs such as Avandia, taken by patients with type 2 diabetes to increase their sensitivity to insulin. Since these drugs also increase the risk for heart disease, boosting omega-3 intake through diet or supplements might be a safer way to improve insulin sensitivity in patients with diabetes or pre-diabetes. "There needs to be a good clinical study in diabetes," Smith says.

Smith works closely with principal investigators at the National Eye Institute who are conducting an ongoing multicenter trial of omega-3 supplements in patients with AMD, known as AREDS2. The trial will continue until 2013. An earlier retrospective study, AREDS1, found higher self-reported intake of fish to be associated with a lower likelihood of AMD.

In addition, Smith is collaborating with a group in Sweden that is conducting a clinical trial of omega-3 fatty acids in premature infants, who are often deficient in omega-3. That study will measure infants' blood levels of omega-3 products and follow the infants to see if they develop retinopathy. If results are promising Smith will seek FDA approval to conduct a clinical trial in premature infants at Children's.

Meanwhile, in her lab work, Smith plans to continue seeking beneficial lipid pathways, while looking for the most harmful omega 6 metabolites. "We found the good guys, now we'll look for the bad ones," says Smith. "If we find the pathways, maybe we can selectively block the bad metabolites. We would hope to start with drugs that are already available."

Eating Berries May Lower Risk of Parkinson's Disease

Nutrition Horizon 2/14/2011 ---

New research shows men and women who regularly eat berries may have a lower risk of developing Parkinson's disease, while men may also further lower their risk by regularly eating apples, oranges and other sources rich in dietary components called flavonoids. The study was released and will be presented at the American Academy of Neurology's 63rd Annual Meeting in Honolulu April 9 to April 16, 2011.

Flavonoids are found in plants and fruits and are also known collectively as vitamin P and citrin. They can also be found in berry fruits, chocolate, and citrus fruits such as grapefruit.

The study involved 49,281 men and 80,336 women. Researchers gave participants questionnaires and used a database to calculate intake amount of flavonoids. They then analyzed the association between flavonoid intakes and risk of developing Parkinson's disease. They also analyzed consumption of five major sources of foods rich in flavonoids: tea, berries, apples, red wine and oranges or orange juice. The participants were followed for 20 to 22 years.

During that time, 805 people developed Parkinson's disease. In men, the top 20 percent who consumed the most flavonoids were about 40 percent less likely to develop Parkinson's disease than the bottom 20 percent of male participants who consumed the least amount of flavonoids. In women, there was no relationship between overall flavonoid consumption and developing Parkinson's disease. However, when sub-classes of flavonoids were examined, regular consumption of anthocyanins, which are mainly obtained from berries, were found to be associated with a lower risk of Parkinson's disease in both men and women.

"This is the first study in humans to examine the association between flavonoids and risk of developing Parkinson's disease," said study author Xiang Gao, MD, PhD, with the Harvard School of Public Health in Boston. "Our findings suggest that flavonoids, specifically a group called anthocyanins, may have neuroprotective effects. If confirmed, flavonoids may be a natural and healthy way to reduce your risk of developing Parkinson's disease."

New Research Explains What Makes Fructose Fattening

New research at Oregon Health and Science University demonstrates that the brain - which serves as a master control for body weight - reacts differently to fructose compared with another common sweetener, glucose.

The dietary concerns of too much fructose is well documented. High-fructose corn syrup has become the sweetener most

commonly added to processed foods. Many dietary experts believe this increase directly correlates to the nation's growing obesity epidemic.

"We know from animal models that the brain responds uniquely to different nutrients and that these responses can determine how much they eat," said Jonathan Purnell, an associate professor of medicine (endocrinology, diabetes and clinical nutrition) in the OHSU School of Medicine.

"With newer technologies such as functional MRI, we can examine how brain activity in humans reacts when exposed to, say, carbohydrates or fats. What we've found in this case is that the brain's response to fructose is very different to the response to glucose, which is less likely to promote weight gain."

Functional MRI allows researchers to watch brain activity in real time. To conduct the research, nine normal-weight human study subjects were imaged as they received an infusion of fructose, glucose or a saline solution. When the resulting brain scans from these three groups were compared, the scientists observed distinct differences.

Brain activity in the hypothalamus, one brain area involved in regulating food intake, was not affected by either fructose or glucose. However, activity in the cortical brain control areas showed the opposite response during infusions of the sugars. Activity in these areas was inhibited when fructose was given but activated during glucose infusion.

This is an important finding because these control brain areas included sites that are thought to be important in determining how we respond to food taste, smells, and pictures, which the American public is bombarded with daily.

"This study provides evidence in humans that fructose and glucose elicits opposite responses in the brain. It supports the animal research that shows similar findings and links fructose with obesity," added Purnell.

"For consumers, our findings support current recommendations that people be conscious of sweeteners added to their drinks and meals and not overindulge on high-fructose, processed foods."

The research is published in the online edition of the journal Diabetes, Obesity and Metabolism and will appear in the March print edition. (ANI)
SoyTech eNews from Thursday, February 10, 2011

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Vitamin D Deficiency Associated with Reduced Lung Function

Nutrition Horizon 2/1/2011 ---

New research shows that vitamin D deficiency is prevalent among patients with interstitial lung disease (ILD), with the largest prevalence seen in patients with concurrent connective tissue disease (CTD). Researchers from the University of Cincinnati College of Medicine evaluated vitamin D levels in 67 patients with CTD-ILD and 51 patients with other forms of ILD. Results showed the overall prevalence of vitamin D deficiency and insufficiency was 38 percent and 59 percent, respectively. Those with CTD-ILD were more likely to have vitamin D deficiency (52 percent vs 20 percent) and insufficiency (79 percent vs 31 percent) than other forms of ILD. Among patients with CTD-ILD, reduced vitamin D levels were strongly associated with reduced lung function. Researchers conclude that vitamin D may have a role in the pathogenesis of CTD-ILD. This article is published in the February issue of Chest, the peer-reviewed journal of the American College of Chest Physicians: Chest 2011; 139(2):353-360.

Influenza A (H1N1) mortality not increased by obesity

New research suggests that obesity may not influence mortality rates among patients with influenza A(H1N1); however obese patients with the virus may have longer ICU and hospital stays. Researchers from Spain compared mortality rates and hospital/ICU resource consumption between 150 obese patients with influenza A(H1N1) and 266 patients with influenza A(H1N1) who were not obese. Results showed that obese patients were supported by mechanical ventilation longer and had longer ICU and hospital lengths of stay than patients who were not obese. However, after adjusting for severity and potential confounding variables, obesity was not associated with ICU mortality. The article is published in the February issue of Chest, the peer-reviewed journal of the American College of Chest Physicians: Chest 2011; 139(2):382-386.

Cysteine a potential biomarker for sleep apnea

A new study indicates that the amino acid cysteine may be a biomarker for the development of obstructive sleep apnea (OSA) in obese and nonobese patients. Brazilian researchers compared plasma levels of cysteine in 75 patients with OSA with 75 control subjects. Results showed that cysteine plasma levels were higher in patients with OSA compared with the control subjects. A subgroup of lean patients (BMI < 25) with OSA also had higher cysteine levels than the control subjects. Furthermore, patients with OSA who received continuous positive airway pressure showed a decrease in plasma levels of cysteine after 6 months. Researchers conclude that cysteine is a potential biomarker for OSA and that obesity does not influence its function as a biomarker. The article is published in the February issue of Chest, the peer-reviewed journal of the American College of Chest Physicians: Chest 2011; 139(2):246-252.

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USDA and HHS Release New Dietary Guidelines

Nutraceuticals World Breaking News January 31, 2011
Agriculture Secretary Tom Vilsack and Secretary of the Department of Health and Human Services (HHS) Kathleen Sebelius released the 2010 Dietary Guidelines for Americans, the federal government's evidence-based nutritional guidance to promote health, reduce the risk of chronic diseases and reduce the prevalence of overweight and obesity through improved nutrition and physical activity.

Because more than one-third of children and more than two-thirds of adults in the U.S. are overweight or obese, the 7th edition of Dietary Guidelines for Americans places stronger emphasis on reducing calorie consumption and increasing physical activity.

“The 2010 Dietary Guidelines are being released at a time when the majority of adults and one in three children is overweight or obese and this is a crisis that we can no longer ignore,” said Secretary Vilsack. “These new and improved dietary recommendations give individuals the information to make thoughtful choices of healthier foods in the right portions and to complement those choices with physical activity. The bottom line is that most Americans need to trim our waistlines to reduce the risk of developing diet-related chronic disease. Improving our eating habits is not only good for every individual and family, but also for our country.”

The new 2010 Dietary Guidelines for Americans focus on balancing calories with physical activity, and encourage Americans to consume more healthy foods like vegetables, fruits, whole grains, fat-free and low-fat dairy products and seafood, and to consume less sodium, saturated and trans fats, added sugars and refined grains.

“Helping Americans incorporate these guidelines into their everyday lives is important to improving the overall health of the American people,” said HHS Secretary Sebelius. “The new Dietary Guidelines provide concrete action steps to help people live healthier, more physically active and longer lives.”

The 2010 Dietary Guidelines for Americans include 23 Key Recommendations for the general population and six additional Key Recommendations for specific population groups, such as women who are pregnant. Key Recommendations are the most important messages within the Guidelines in terms of their implications for improving public health. The recommendations are intended as an integrated set of advice to achieve an overall healthy eating pattern. To get the full benefit, all Americans should carry out the Dietary Guidelines recommendations in their entirety.

More consumer-friendly advice and tools, including a next generation Food Pyramid, will be released by USDA and HHS in the coming months. Below is a preview of some of the tips that will be provided to help consumers translate the Dietary Guidelines into their everyday lives:

• Enjoy your food, but eat less.
• Avoid oversized portions.
• Make half your plate fruits and vegetables.
• Switch to fat-free or low-fat (1%) milk.
• Compare sodium in foods like soup, bread and frozen meals—and choose the foods with lower numbers.
• Drink water instead of sugary drinks.

This edition of the Dietary Guidelines comes at a critical juncture for America’s health and prosperity. By adopting the recommendations in the Dietary Guidelines, Americans can live healthier lives and contribute to a lowering of healthcare costs, helping to strengthen America’s long-term economic competitiveness and overall productivity.

USDA and HHS have conducted this latest review of the scientific literature, and have developed and issued the 7th edition of the Dietary Guidelines for Americans in a joint effort that is mandated by Congress. The Guidelines form the basis of nutrition education programs, Federal nutrition assistance programs such as school meals programs and Meals on Wheels programs for seniors and dietary advice provided by health professionals.

The Dietary Guidelines, based on the most sound scientific information, provide authoritative advice for people 2 years and older about how proper dietary habits can promote health and reduce risk for major chronic diseases.

The Dietary Guidelines aid policymakers in designing and implementing nutrition-related programs. They also provide education and health professionals, such as nutritionists, dietitians and health educators with a compilation of the latest science-based recommendations. A table with key consumer behaviors and potential strategies for professionals to use in implementing the Dietary Guidelines is included in the appendix.

The 2010 Dietary Guidelines is available at www.dietaryguidelines.gov. For more information on dietary guidelines, see www.health.gov/dietaryguidelines and www.healthfinder.gov/prevention

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FDA and Optivia Collaborate on Dietary Supplements

Nutrition Horizon 2/4/2011 ---

Optivia Biotechnology Inc., a leading provider of in vitro transporter assay services, announced that the company and the U.S. Food and Drug Administration (FDA) have signed a collaboration agreement to assess the effect of dietary supplements on key drug transporters. The goal of the collaboration is to identify potentially harmful drug-dietary supplement interactions, such as an interaction with acetaminophen and other drugs associated with liver toxicity.

The importance of drug transporters to drug safety is gaining increased attention, aided by a recent report from the International Transporter Consortium ("Membrane Transporters in Drug Development," Nature Reviews-Drug Discovery, March 2010), which identified the most clinically significant transporter-related drug-drug interactions.

The research collaboration will assess the ability of various dietary supplements, including black cohosh, green tea, ginko biloba, kava, usnic acid and potentially others, to affect various drug transporters. As a starting point, the seven transporters cited by the International Transporter Consortium and the FDA as the most clinically relevant to transporter-related drug-drug interactions will be examined using Optivia's transporter technology platform. This novel platform features polarized mammalian cell assays that closely model human biology. Optivia and the FDA will then analyze and interpret the drug transporter data as preparation for publishing the results.

"This project further advances Optivia's leadership position in the development of quantitative tools for optimizing the safety and efficacy of drugs," stated Yong Huang, Ph.D., president and chief executive officer of Optivia Biotechnology. "We are excited about this opportunity to expand the use of our technology to examine the role of dietary supplements in causing drug-related liver injury."

Drug-induced liver toxicity is estimated to be responsible for as many as five percent of all hospital admissions and 50 percent of all acute liver failures. It is well established that transporters greatly influence the disposition by the liver of a number of commonly used drugs (e.g. antibiotics, statins, and hypoglycemic agents) and others that were subsequently removed from the market (e.g. the antidepressant nefazodone).

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Nitrate Improves Mitochondrial Function

Nutrition Horizon 2/3/2011 ---

The muscles' cellular power plants - the mitochondria - are boosted by nitrate, a substance found in abundance in vegetables such as lettuce, spinach and beetroot, new research from the Swedish medical university Karolinska Institutet shows.

For half a century, inorganic nitrate has been associated with negative health effects, but more recently, evidence of the

contrary has mounted. In the 1990s, a research group at Karolinska Institutet demonstrated how the body can convert nitrate to NO, a molecule involved in many important bodily functions, such as blood pressure regulation, the immune defence and cell metabolism.

In this new study, the same team had healthy people take nitrate equivalent to 200-300g of spinach or lettuce for three days, after which they were given a cycling task to perform. The researchers then analysed samples from their thigh muscles and compared them with similar samples from the same subjects when they had taken a placebo instead. After nitrate ingestion, a significant improvement was seen in the efficiency of the mitochondria, which consumed less oxygen and produced more of the energy-rich substance ATP per consumed oxygen molecule.

"The mitochondria play a key role in cellular metabolism," says Professor Eddie Weitzberg, who is heading the study with Professor Jon Lundberg. "Improved mitochondrial function probably has many positive effects on the body, and could explain some of the health benefits of vegetables."

The results, which are published in Cell Metabolism, are of sports-physiological interest, as they show that nitrate reduces oxygen consumption during physical exercise; however, they are also of potential significance to diseases involving mitochondrial dysfunction, such as diabetes and cardiovascular disease.

The group has also recently shown that nitrate reduces the blood pressure of healthy individuals and that in laboratory animals it counteracts components of the metabolic syndrome, a pre-stage of diabetes. Other scientists have demonstrated protective effects of nitrate and nitrite in animal models against heart attack and stroke.

Publication: Filip J Larsen, Tomas A Schiffer, Sara Borniquel, Kent Sahlin, Björn Ekblom,Jon O Lundberg, Eddie Weitzberg

Dietary inorganic nitrate improves mitochondrial efficiency in humans, Cell Metabolism, 2 February 2011

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Good Diets Fight Bad Alzheimer Genes

Nutrition Horizon 2/16/2011 ---

Scientists agree that there are five molecules that are known to affect or cause Alzheimer’s disease, which plagues an estimated five million Americans. The potency of these molecules is linked to environmental factors such as diet and lifestyle.

Prof. Daniel Michaelson of Tel Aviv University’s Department of Neurobiology at the George S. Wise Faculty of Life Sciences has illuminating news about one of these five molecules APOE, created by the apolipoprotein E. gene found in all of our bodies.

Prof. Michaelson says APOE comes in two forms, a "good" APOE gene and a "bad" APOE gene, called APOE4. He has developed animal models to investigate the effects of diet and environment on carriers of APOE4, the presence of which is a known risk factor for Alzheimer’s. It appears in 50% of all Alzheimer’s patients, and in 15% of the general population which due to APOE4 is the population which is at risk of getting the disease.

The good news? In preliminary results, the researchers are exhilarated to find that a diet high in Omega 3 oils and low in cholesterol appears to significantly reduce the negative effects of the APOE4 gene in mouse models.

Exercise is not enough and may be worse

In differentiating between the good and bad variants of the APOE gene, Prof. Michaelson and his team studied many variables. They determined that while a rich and stimulating environment is good for carriers of "good" APOE, the same environment has a negative effect on those at risk for Alzheimer’s because they carry the APOE4 gene. While this environment stimulated the formation of new neuronal connections in the "good APOE" mice, it caused the death of brain neurons in the "bad APOE" mice. The stimulating environment included running wheels and tubes for hiding and sliding, as well as ropes and other toys for the mice to play on, replaced and updated with new toys weekly. Those in a non-stimulating environment had access to no toys at all.

"Conditions that are generally considered good can be harmful if the mouse is a carrier of the APOE4 gene. Extrapolating this to the human population, individuals with the bad APOE4 gene are more susceptible to stress caused by an environment that

stimulates their brain" says Prof. Michaelson.

Recently he expanded his original findings, first published in the Journal of Neuroscience in 2008, with a new element: diet.

APOE is a lipoprotein and known to be influenced by the good oil found in fish. Prof. Michaelson and his European colleagues, under a joint European Commission grant called LIPIDIDIET, constructed an experiment. In a standardized environment, they introduced three different kinds of diet: a normal diet, a "bad" diet high in cholesterol, and a "good" diet high in fish oil.

When it’s good, it’s good

"The main take-away message here is that good diets can alleviate the effects of bad genes. Of course nutritionists have had this general idea for a while, but it’s nice to be able to show that this approach can be applied to specifically counteract the negative effects of Alzheimer’s disease-related genes" says Prof. Michaelson.

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High-Fiber Diets Benefit Long-Term Health

February 15, 2011Food Product Design

ROCKVILLE, Md.—Individuals who follow a high-fiber diet may significantly reduce their risk of dying from cardiovascular, infectious and respiratory diseases by as much as 22 percent, according to a new study published online Feb. 14 in the ***Archives of Internal Medicine***.

Researchers at the U.S. National Cancer Institute examined dietary fiber intake in relation to total mortality and death from specific causes in the NIH (National Institutes of Health)-AARP Diet and Health Study, a prospective cohort study. Diet was assessed using a food-frequency questionnaire at baseline. Cause of death was identified using the National Death Index Plus. Cox proportional hazard models were used to estimate relative risks and two-sided 95 %confidence intervals (CIs).

During a 9-year follow-up, they identified 20,126 deaths in men and 11,330 deaths in women. Dietary fiber intake was associated with a significantly lowered risk of total death in both men and women (multivariate relative risk comparing the highest with the lowest quintile, 0.78 [95% CI, 0.73-0.82; P for trend, <.001] in men and 0.78 [95% CI, 0.73-0.85; P for trend, <.001] in women). Dietary fiber intake also lowered the risk of death from cardiovascular, infectious and respiratory diseases by 24% to 56% in men and by 34% to 59% in women. Inverse association between dietary fiber intake and cancer death was observed in men but not in women. The protective effect came mainly from cereal fiber in grains, not other sources of fiber such as fruits and vegetables.

Sources: **Archives of Internal Medicine:**
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Curcumin May Protect, Regenerate Brain Cells

February 10, 2011 **Food Product Design**

LOS ANGELES—A new molecule created from curcumin, an active component of the Indian spice curcumin, may protect and help regenerate brain cells after stroke, according to results of a new study presented at the American Heart Association International Stroke Conference Feb. 9.

The curcumin-hybrid compound—CNB-001—does not attack clots, which is the mechanism of the only current drug approved for ischemic stroke. Instead, CNB-001 repairs stroke damage at the molecular level, interrupting the cascade that shuts down normal electrical and chemical “signaling pathways" that nourish and support the neurons. CNB-001 appears to protect brain cells from damage by repairing four major pathways, one of which also plays a role in growth and survival of neurons. The compound reduced stroke-caused problems in muscle and movement control, and was effective when administered up to an hour after stroke.

“CNB-001 has many of the same benefits of curcumin but appears to be a better choice of compound for acute stroke because it crosses the blood-brain barrier, is quickly distributed in the brain, and moderates several critical mechanisms involved in

neuronal survival," said Paul A. Lapchak, Ph.D., director of translational research in the Department of Neurology at Cedars-Sinai Medical Center.

Sources: **Newswise:**
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Stealth Strategies to Increase Vegetable Intake

February 9, 2011 **Food Product Design**

UNIVERSITY PARK, Pa.—Incorporating large amounts of puréed vegetables into various foods to decrease the energy density can lead to substantial reductions in energy intakes and increases in vegetable intakes in adults, according to a study published in the ***American Journal of Clinical Nutrition***.

Researchers at Pennsylvania State University investigated whether incorporating puréed vegetables to decrease the energy density of entrées at multiple meals reduced daily energy intakes and increased daily vegetable intakes.

In the crossover study, 20 men and 21 women ate ad libitum breakfast, lunch, and dinner in the laboratory once a week for three weeks. Across conditions, entrées at meals varied in energy density from standard versions (100% condition) to reduced versions (85% and 75% conditions) by the covert incorporation of 3 or 4.5 times the amount of puréed vegetables. Entrées were accompanied by unmanipulated side dishes. Participants rated their hunger and fullness before and after meals.

According to the findings, when the energy density of the meals reduced by 15% and 25%, daily energy intake was reduced by 6% and 11%. With the 85% condition, vegetable intake increased over the day by approximately 50% and by 80% in the 75% energy dense entrées.

Sources: **American Journal of Clinical Nutrition:** ❋❋❋

‘Low fat’ is too simplistic, says Tufts professor

By Caroline Scott-Thomas, 18-Feb-2011 Food Navigator.Com

Recommendations to reduce saturated fat intake are largely based on the notion that high levels increase risk of cardiovascular disease, but unless saturated fat is replaced with other, healthy fats, many studies have suggested that fat reduction could increase risk of heart disease.

Professor of nutrition science and policy at Tufts University Alice Lichtenstein told FoodNavigator-USA.com that particularly in the 1990s, the low fat message was widely translated as meaning ‘low calorie’ – which is not necessarily the case – and the idea that ‘low fat’ and ‘low calorie’ are the same thing is still pervasive.

When it comes to reformulating products to be lower in fat, she said: *“I think in some cases it’s appropriate. For things like meat products and dairy, it is appropriate because you are focusing specifically on taking out saturated fat. But for other products such as cookies and brownies, it’s not that useful.”*

However, Lichtenstein said this hinges on the way in which manufacturers aim to reduce fat in these products. When manufacturers reduce the fat content of baked goods in particular, fat is often replaced with refined carbohydrates, including sugar, which may actually make an already unhealthy product even less healthy than the original.

On the other hand, unsaturated fats for baked goods, such as soybean oil, could provide viable alternatives, she said, and there is still room in the dairy sector for further innovation.

“There is a wide variety of low fat and non fat dairy products available. If [manufacturers] could produce more low fat cheeses that were acceptable to the consumer, that would be good, since we eat so much of it. But we have to be clear about portion size.”

Apart from substituting fat with refined carbohydrates, researchers are also investigating the potential of replacing fat with protein, but Lichtenstein warns against any simplistic response to overconsumption of saturated fat.

"I am always concerned when the default goes to what seems like the simple answer, which is 'low fat', and then we end up with unintended consequences," she said.

Nevertheless, she said that industry has a part to play and urged more collaboration between the government, public health organizations and the food industry.

"If all can partner together to come out with a consistent message that is evidence-based, we would be better off," she said. *"…The US population – and others around the world – could always benefit from more public health education, and the focus should really be on energy balance."*

And there is room for companies' reformulation efforts in such an approach, including providing lower fat dairy options, as well as adding whole grains and more vegetables to products.

She said: *"If more options are available within the context of a healthy diet then the industry would sell its products and health professionals would recommend them. I think there's room for much more collaboration."*

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Zinc Helps Reduce Severity of Colds

Published February 16, 2011
Nutraceuticals World Breaking News
Zinc administered within 24 hours of onset of symptoms reduces the duration and severity of the common cold in healthy people, according to an updated review published in the Cochrane Library.

Trials conducted since 1984 investigating the role of zinc for the common cold symptoms have had mixed results. Inadequate treatment masking and reduced bioavailability of zinc from some formulations have been cited as influencing results.

For this review, researchers evaluated randomized, double-blind, placebo-controlled trials using zinc for at least five consecutive days to treat, or for at least five months to prevent the common cold.

The assessment included 13 therapeutic trials (966 participants) and two preventive trials (394 participants). Intake of zinc is associated with a significant reduction in the duration and severity of common cold symptoms. There was a significant difference between the zinc and control group for the proportion of participants symptomatic after seven days of treatment.

When supplemented for at least five months, zinc reduces cold incidence, school absenteeism and prescription of antibiotics in children, researchers concluded. However, there is potential for zinc lozenges to produce side effects. In view of this and the differences in study populations, dosages, formulations and duration of treatment, it is difficult to make firm recommendations about the dose, formulation and duration that should be used, they said.
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FOOD SCIENCE & INDUSTRY NEWS

Groundbreaking Industry Agreements Help Increase Availability of Healthy School Meals

Press Release -- MIAMI, FL -- January 21, 2011 -- A new multi-industry voluntary agreement announced today by the Alliance for a Healthier Generation brings together leading food manufacturers, group purchasing organizations and technology companies to help America's schools serve healthier meals at more affordable prices. As a result of these agreements, more than 30 million students across the country will have access to healthier school meals – including at least 14 million students who currently participate in the free and reduced lunch program.

AdvancePierre Foods, Domino's Pizza, JTM Food Group, McCain Foods USA, Rich Products Corporation, Schwan's Food Service, Trident Seafoods, HPS, Premier healthcare alliance, Summa/Provista, Interflex, Dole Food Company, Inc., and the National Turkey Federation have joined the effort to combat childhood obesity by agreeing to increase the availability of products that can lead to healthy schools meals. Signatories to these first of their kind agreements brokered by the Alliance for a Healthier Generation, founded by the American Heart Association and the William J. Clinton Foundation, have agreed to develop, market and competitively price products that will lead to healthier school meal options; streamline the ordering process; and make identifying healthy options easier.

“With students consuming up to half of their daily calories at school, healthy school meals are key to winning the fight against childhood obesity,” said President Bill Clinton, founder of the William J. Clinton Foundation. “Building on our agreements that have reduced the number of calories in beverages shipped to schools by 88 percent, the Alliance is now focusing on helping provide more nutritious meal options to more than 30 million school children nationwide.”

Manufacturers including AdvancePierre Foods, Domino’s Pizza, JTM Food Group, McCain Foods USA, Rich Products Corporation, Schwan’s Food Service and Trident Seafoods pledge not to price healthy options out of reach of school cafeterias. Signatories will set prices for healthier items that meet the Alliance for a Healthier Generation’s science-based standards for nutrition at prices no higher than less healthy comparable products. Participating manufacturers have also pledged to increase the sales of compliant products to at least 50 percent of their entire school sales within five years.

Manufacturers have committed to aggressively promote products that align with the Alliance’s Healthy Schools Program standards and will help schools meet or exceed the requirements currently being finalized by the USDA. Product commitments fall in at least one of the following categories within the Alliance’s science-based guidelines for school foods:

- Lean protein products, such as lean red meat, skinless poultry, lean deli meats, fat-free or low-fat cheese, beans, and tofu.
- Low-fat lunch entrées with reduced total fat, saturated fat and sodium levels.
- Whole-grain products, such as bread, pasta and pizza crust.
- Fresh, canned or frozen fruit.
- Non-fried vegetables.
- Zero trans fat cooking oils.

“Increased access and lower prices to purchase healthy meal components makes it easier for schools to offer healthier school meals—a key strategy to help combat childhood obesity and to move students and staff toward ideal cardiovascular health,” said Ralph Sacco, M.D., president of the American Heart Association and chairman, department of neurology Miller School of Medicine University of Miami.

Schools can also save time and gain buying power by joining a group purchasing organization (GPO). With today’s agreement three of the largest GPOs in the U.S. with more than $70 billion in combined buying power, HPS, Premier healthcare alliance and Summa/Provista, have agreed to offer products that meet the Alliance’s nutritional guidelines. GPOs have been successful at consolidating buying power in other institutional food service settings including hospitals, healthcare facilities and universities. By applying this same model to America’s schools, schools will see a savings of 10 to 20 percent in their food and beverage purchases.

In order to help schools take the first step in changing their purchasing process, the Alliance is collaborating with the technology firm Interflex to create an online tool that streamlines the procurement process by assisting schools with planning, bidding and purchasing healthier products. Dole Food Company, Inc. and the National Turkey Federation have also agreed to leverage their tools and resources to support schools in their implementation of this new approach to school meals.

“Today is just the beginning. The food manufacturer, group purchasing and technology agreements are just three components of the Alliance’s larger healthier school meals strategy with the goal of impacting more than 30 million students within a five year period,” said Ginny Ehrlich, executive director of the Alliance for a Healthier Generation.

Additional components in the Alliance’s school meals strategy to support food service professionals being launched over the next year will include in-person and online training programs, menu planning and cooking techniques and recipes from celebrity chefs to school food service staff.

Last week, the USDA released the proposed rule for the nutrition standards in the National School Lunch and School Breakfast Program. To help schools more easily navigate the Alliance and USDA standards, the Alliance will update their guidelines to meet or exceed the final rule. The Alliance agreement announced today helps alleviate barriers districts will face in serving healthier school meals, and will enhance schools’ ability to meet those updated standards.

Parents, school administrators and food service directors can help the Alliance fight childhood obesity and bring healthier meals to schools across the country by joining the Alliance for a Healthier Generation’s Healthy Schools Program online at www.healthiergeneration.org. There is no cost to join the Healthy Schools Program, and members have access to hundreds of resources, including a variety of free technical tools that enable anyone who makes purchasing decisions about school meals to implement and promote healthier options for students.

SoyTech eNews February 4, 2011

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Global Weight Control Products Market to Reach US$46.9 Billion by 2015 - Analysts

Food Ingredients First 08 Feb 2011

Obesity is on the rise at an alarming rate worldwide, both among adults as well as children, and is rapidly reaching epidemic proportions leading to huge healthcare costs and burden for the individual as well as for the economy of a country. Statistics reveal that about 1.6 billion people globally are overweight or obese, with the US accounting for the highest percentage of that population. Presently, around 70% of the US population is either obese or overweight. Health costs incurred by the overweight Americans alone is projected to reach US$117 billion per year by the year 2015.

The epidemic proportions of obesity and its related illnesses have over the past few years thrown the spotlight on weight control products. Weight control and weight loss have become a part of life for a large percentage of the population in developed countries. With the calorie rich diets of the cash strapped economies making the battle against the bulges fiercer, there exists lucrative opportunities for weight control and weight loss products, and this is the key reason for the weight control products market to resist global economic crisis, and continue its growth momentum. Busier, yet sedentary lifestyles, and consumption of less nutritious and high caloric food are major reasons for the dramatic increase in global obese population. Diet management has thus emerged as a challenging proposition for millions of people worldwide. While many manage to lose weight, very few are able to control the same beyond a few years and most people regain the weight lost. Although intensive efforts are required to lose weight, not many realize that weight control is equally important and similar effort is needed for controlling weight.

The US dominates the world market for Weight Control Products, as stated by the new market research report on Weight Control Products. Though the demand for the products that help in reducing and managing weight continues to soar in the country, the US retains the distinction of being home to the world’s largest population of overweight and obese individuals, both in number and proportion. This is the key factor fueling growth for weight control products in the US. Almost nine in ten American households use Low fat foods, while an estimated 85% consume low calorie products. Most people are increasing consumption of low calorie foods. Obesity and overweight issues have also been pestering several countries across Europe as well. Within Europe, the UK, Germany, and Finland have the highest proportion of overweight and obese people.

Obesity rates is also increasing at an alarming rate in developing countries, with rapid urbanization and related lifestyle changes blamed for the overweight and obesity issues. Wide range of weight management products, and weight management plans are increasingly becoming accessible to consumers, which in conjunction with education and awareness efforts, are fuelling a desire in an increasing number of obese/overweight people to cut excess weight in developing countries. The growing demand for weight control products and diet foods is an important indicator of awareness about the trend towards controlling obesity. The market for weight control products in Asia-Pacific is projected to grow at a CAGR of more than 7.0% over the analysis period.

Recent trends in consumer preferences indicate growing inclination of consumers towards weight management products enriched with functional ingredients, and foods and beverages providing satiety. Consumer’s today demand weight loss products with quick results, and the development and introduction of satiety products is clearly in this direction. Protein and fiber are core satiety ingredients typically used in satiety products, which are known for their ability to boost the person's willpower and enhance the feeling of fullness for longer duration. Majority of the products launched on satiety platform are based on fibres and protein combination, or products with high fiber content or protein content. Another key market trend is the alarming number of children suffering from obesity. Manufacturers are getting their act together to attract the attention of kids through catchy advertisements and mind-boggling varieties of tastes, and flavors. Child obesity is widely prevalent in the United States, Europe, Australia, and China. It is little wonder that the global market is inundated with new products featuring tangy flavors, targeting this lucrative audience.

Major players profiled in the report include Abbott Laboratories, EAS Inc., Abbott Nutrition, The Coca-Cola Co., Genisoy Food Company Inc., HJ Heinz, Idea Sphere Inc., Twinlab Corp., Kraft Foods Inc., Mead Johnson Nutritionals, Nestle SA, PepsiCo Inc., Rexall Sundown Inc., The Groupe Danone, Unilever, Slim-Fast Foods Co., Schiff Nutrition International Inc., among others.

The research report titled "Weight Control Products: A Global Strategic Business Report" announced by Global Industry Analysts Inc., provides a comprehensive review of the weight control products markets, impact of the recession on the market,

key statistical facts on obesity, current market trends, major growth drivers, recent industry activity, and profiles of major/niche global as well as regional market participants. The report provides annual sales estimates and projections for weight control products market for the years 2007 through 2015 for the following geographic markets – US, Canada, Japan, Europe, Asia-Pacific and Rest of World. Key product segments analyzed include Low-Fat & Fat-Free Dairy Products, Carbonated and Other Liquids, Light Foods, Prepared Intakes, Herbal Supplements, and Dressings. Also, a seven-year (2000-2006) historic analysis is provided for additional perspective.

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Ethical apps 'give consumers power' on green issues

Software for mobile devices which allows users to check the sustainability and ethical sourcing credentials of food products will become increasingly commonplace in the future. This is according to Ethical Consumer magazine, which is soon to launch its own phone app that will allow users to verify how sustainably and ethically their food and drink purchases have been produced. "Apps are going to be a major way ethical ratings are delivered," said Dan Welch, co-editor of Ethical Consumer. "Apps can take power from the hands of marketers and give it to the consumer," he added.

However, Mr Welch warned that shoppers interested in using apps to inform their purchases should ensure they are aware of "the stories and sources behind the ratings" and research their accuracy. Meanwhile, a new Channel 4 television series is expected to raise UK consumer awareness of important issues like ethical sourcing, recyclable packaging and food miles. The British programme will feature the best produce available locally in various regions across the country, with the aim of making viewers consider their carbon footprint and food waste when shopping for groceries.

Ingredients Network.Com 14 February 2011
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Salt discovery to boost healthy food production

Ingredients Network.Com 21 February 2011 1242 Views

British scientists have discovered an artificial substitute for salt, which could potentially boost the production of healthy convenience foods and ready meals in the future. Researchers at the University of Nottingham have found that compounds called dextrans can trick the human brain into tasting food saltier than it is in reality. The team said that dextrans, which are commonly found in dental plaque, could soon be used to help food producers reduce the amount of salt in their ready meals and snack products.

Professor Bettina Wolf, who led the study, commented: "Though reducing the salt content in processed food could significantly improve the health of the population, the detrimental change in flavour presents a major challenge as consumers generally find low salt products unacceptable." She added that "high concentrations" of low-molecular dextrans could be used to enhance the consumer's perception of salt in 'unseasoned' foods. Meanwhile, in the US, the Food and Drug Administration has been called upon to ban two types of carcinogenic chemicals, often labelled as "caramel colouring", found in beverages from Coca-Cola and PepsiCo among others.

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Banking on the Harvest

In the Maradi area in south central Niger, where 70 percent of the population lives below the poverty line, the months before the harvest are called "the hunger season." From mid-July to mid-September, food supplies are at their lowest and most families only eat one meal a day.

Since the 1960's, the entire Sahel region which includes Burkina Faso, Chad, Eritrea, Mali, Mauritania, Niger, Nigeria, Senegal and Sudan, has been experiencing increasingly extreme drought and hunger. The Maradi region has been hit especially hard and cereal harvests have dropped by nearly a third. Strained or empty grain reserves cause many families to sell tools, seeds, and livestock in order to raise money for food and the next planting. Farmers with nothing to sell are forced to work for others to earn an income. Some even leave their homes in search of work in other villages, leaving behind their wives and children to tend to the farm and home on their own.

But with the help of the International Fund for Agricultural Development (IFAD), many women are taking local food security into their own hands. In response to the food crisis in the area in 2005 when severe locust attacks compounded with drought to put 3.5 million people in the Sahel at risk of starvation, IFAD's Project for the Promotion of Local Initiative for Development in Aguie helped to create a new kind of bank, run entirely by women, that dispenses loans in the form of cereal instead of money.

Called the soudure bank, or pre-harvest bank, IFAD's project is based on exchange. Every week during the pre-harvest season, poor farmers receive cereal as a credit. At the end of the season, farmers can pay back the loan with their own crops with 25 percent interest-an interest rate that the villagers picked on their own.

The banks have already made a huge difference. Today there are 168 soudure banks throughout Niger, managed by over 50,000 women and storing over 2,800 tons of millet-enough to feed 350,000 people for at least a month. During the 2008 global food price crisis, when 90 percent of the population living in Niger was at risk for starvation, villages with a soudure bank were able to sustain themselves through the harshest period of the year.

One bank client, Rabia Ada, quoted on the project page, says that "from the bank I had 56 kilograms of millet that helped us cope for one month and gave us something to eat other than just leafy vegetables." Adds another client, Nana Ayouba, "if we didn't have the banks, our alternative strategies would have been to borrow from our neighbors or to send the men away in search of jobs."

And the banks help to empower women who are otherwise left out of community-wide organizations and decision making. In their new roles as bank managers, with the support of their husbands, women can now play an integral role in improving local food security, diets, and livelihoods.
Danielle Nierenberg **Nourishing the Planet**
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Intelligent ink monitors cold chain temperatures for chilled and frozen foods

By Rory Harrington, 08-Feb-2011 Food Production Daily.Com

The German-based company said its OnVu ICE label is able to *"memorise temperature"* and provide a visual indication of the current state of chilled or deep-frozen foods. The label changes colour depending on temperature – with the darker its colour, the better the cold chain has been maintained. The system is more effective than relying on 'best before' dates, said BASF.

"Manufacturers, retailers and consumers will soon be able to tell at a glance whether ice cream, pizza, fish or any other products were kept constantly deep-frozen or should rather be discarded because the cold chain was interrupted significantly," said Martin Angehrn, project manager at BASF Future Business. *"OnVu labels, which sort of memorize temperature, help to keep chilled and frozen products fresh."*

Thermometer symbol

The temperature sensitive ink is printed as a thermometer symbol and can be added to a product label or stamped directly onto packaging in-line, said the firm.

The indicator at the centre of the thermometer is activated by means of ultraviolet (UV) light - which causes it to turn dark blue. The label provides a visual monitor of the cold chain.

"As long as the centre is darker than or the same as the reference colour, there has not been any significant interruption in the cold chain and the best before date shown on the packaging remains valid," said BASF.

The colour of the labels become lighter with the passing of time as the "best by' date approaches or if the cold chain is broken. The company confirmed that the speed of the colour change process and the temperatures that trigger it can be customized.

In frozen foods, the ink remains dark blue as long as the temperature is continually kept at -18C. The higher the temperature rises, the faster the colour changes.

"When the temperature rises to cause thawing, these foods should be consumed immediately," Angehrn added. *"Our OnVu indicator shows this reliably by changing colour."*

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Vacuum frying may be a healthier alternative to deep-fat frying

A study published in the *Journal of Food Science* shows that vacuum frying can be an alternative to deep-fat frying to produce nutritious and novel snacks with desired quality attributes. Consumers look for products that contribute to their wellness and health, however, even health-conscious consumers are not willing to sacrifice taste, and intense full-flavor snacks remain an important trend. The objective of this research was to study the effect of oil temperature reduction when vacuum frying traditional (potatoes) and nontraditional products (carrots and apples) on most important quality attributes (vitamins, color, and oil uptake).

Slices were fried using equivalent thermal driving forces, maintaining a constant difference between oil temperature and the boiling point of water at the working pressure. This resulted in frying temperatures of 160°C and 180°C, and 98°C and 118°C, for atmospheric and vacuum frying, respectively. Vacuum-fried carrot and potato chips absorbed about 50% less oil than atmospheric-fried chips, whereas vacuum-fried apple chips reduced oil absorption by 25%. Total carotenoids and ascorbic acid (AA) were greatly preserved during vacuum frying. Carrot chips vacuum fried at 98°C retained about 90% of total carotenoids, whereas potato and apple slices vacuum fried at 98°C, preserved around 95% of their initial AA content. Interestingly, results showed that the antioxidant capacity of chips may be related to both the presence of natural antioxidants and brown pigments developed at elevated temperatures.

IFT Newsletter 2 Feb 2011

Relaxation drinks are 'looking for trouble', says food and drug attorney

By Caroline Scott-Thomas, 22-Feb-2011 Food Navigator

The Food and Drug Administration (FDA) released its draft guidance for industry on factors that distinguish liquid dietary supplements from beverages in December 2009, and said it issued the draft guidance because of the rise of beverages being marketed as dietary supplements with unauthorized novel and high-dose ingredients and the labeling implications that follow from that.

Marc Ullman, partner at food and drug law firm Ullman, Shapiro & Ullman, told FoodNavigator-USA.com that the relaxation beverage category may face particular problems as drinks makers look to include ingredients intended to promote relaxation or alertness in their products.

Such ingredients might include amino acids, vitamins, and minerals such as potassium, which is associated with muscle relaxation.

At next month's Nutracon in Anaheim Ullman will present on the topic, *"Product Development: FDA and the Food-Supplement Distinction: What Does it Mean For the Functional Foods and Beverage Industry"*.

The problem is with *"the fundamental categorization of a product,"* he said. *"You can't have a coffee dietary supplement. It's coffee."*

He explained that the issue is that food and beverage companies promoting such products often make claims regarding ingredients that have not gone through the GRAS (generally recognized as safe) process required for food ingredients. Although this may occur in many sectors of the food and beverage industry, Ullman said he intends to spend some time focusing on the emerging relaxation beverage category in particular during his Nutracon presentation.

"The relaxation product category is a category that's looking for trouble," he said.

The idea of relaxation or alertness drinks first emerged in Japan in 2005 when a group of products came onto the market enriched with (GABA) gamma amino butyric acid.

Formulated to help people unwind or focus better, these new drinks quickly spread to the US and have found a niche alongside energy drinks.

And the global market for relaxation beverages is booming. Recent research from Zenith International estimates that sales volumes have trebled since 2007 to 133 million liters in 2010 and the retail value of the market has risen to $521m.

Ullman said that following a flurry of FDA activity to crack down on foods and beverages that it deemed misbranded last year, there has since been a slowdown. However, he envisages ingredient issues to come to the fore again, particularly with Daniel Fabricant, formerly of the National Products Association, taking the helm as the FDA's director of its Division of Dietary Supplement Programs.

"I would guess you are going to see more emphasis on ingredients and a de-emphasis on the shape of the container," Ullman said.

Marc Ullman's presentation forms part of Nutracon's Food-Supplement Convergence track. Nutracon takes place from March 9-10, 2011. For more information and to register: www.nutraconference.com .

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Regulatory & Safety News

Consumers Value Safer Food More than Current Analyses Suggest – Study

Food Ingredients First 2/9/2011 ---

Government regulators could more realistically assess the value of improving food safety if they considered the fact that consumers typically want to avoid getting sick – even if it means they have to pay a little extra for safer food, researchers say.

In the world of food regulation, cost-benefit analyses are a primary tool for assessing the societal benefits of mandating more stringent – and more expensive – processing practices. In most cases, regulators determine a dollar value associated with pursuing new rules by estimating how many illnesses and deaths the safer processing would prevent.

But a recent study proposes a new way to approach these estimates. Instead of focusing on reducing food-borne illnesses and deaths associated with a specific pathogen, why not ask consumers how valuable food-safety improvements are to them? The researchers conducted such a national survey that they designed with the help of an economic model that predicts consumer behavior.

The results suggested that Americans would be willing to pay about a dollar per person each year, or an estimated $305 million in the aggregate, for a 10 percent reduction in the likelihood that hamburger they buy in the supermarket is contaminated by E. coli, said Brian Roe, professor of agricultural, environmental and development economics at Ohio State University and co-author of the study.

By comparison, a 2008 U.S. Department of Agriculture analysis estimated the value of eradicating a specific type of E. coli contamination from all food sources would result in a benefit valued at $446 million.

The problem with the federal estimate, Roe says, is that total eradication of the most common causes of food-borne illness is virtually impossible because of the exorbitant cost required to achieve such a goal. And, he added, the more flexible method of measurement proposed in this study suggests that consumers are willing to pay more than expected for an outcome that offers much less than total eradication of pathogens.

"We think what we are measuring is more realistic, as complete eradication is a highly unlikely outcome for any policy," Roe said. "We also are quite certain that our estimates of consumers' willingness to pay would be higher than what the USDA would calculate using its cost-of-illness approach."

Roe conducted the study with Mario Teisl of the University of Maine. The research is published in a recent issue of the journal Food Policy.

The researchers say their proposed method takes into account important variables that the average cost-benefit analysis doesn't measure, such as pain, suffering and worry, as well as food-borne illness that doesn't do any economic damage to an individual

– their example is a case of food poisoning on a Friday night that resolves before the work week begins. Their estimate also accounts for human behavior: Some consumers will opt not to eat what they buy, will overcook it to ensure they kill any pathogens, or simply do not get sick even when they eat bad food.

In contrast, current methods of cost-benefit analysis involve translating an improvement in food safety into numbers: specifically, reductions in deaths and illnesses linked to a pathogen. Costs factored into the assessment might include a co-pay for a visit to the doctor and lost wages, as well as the economic costs associated with death – say, the projected income not earned when a life is cut short.

For example, to reach its $446 million estimate to eradicate E. coli cases that produce Shiga toxin and can lead to kidney damage, the USDA took the 73,480 cases of contamination that occur each year and assigned a formula-derived dollar amount to those cases to arrive at the benefit figure.

“The projections will estimate how many fewer people will die, how many fewer will get sick, and how do we assign benefit values to those improvements in the human condition,” Roe said. “What we’re saying is, let’s think of a method where we can assign a value to that avoided case as well as one for a person who misses work and pays $20 to go to a doctor.

“To hedge their bets, would people be willing to pay $2 a year, $5 a year, to limit the odds they’re going to get sick from 1 in 100 down to 1 in 1,000? That’s the data you really want.”

Roe and Teisl analyzed surveys from 3,511 individuals. In the questionnaire, they set up six hypothetical scenarios around the purchase of either a package of hotdogs or a pound of hamburger. They set prices for the packages – both “status quo” foods and those treated with either ethylene gas processing or electron beam irradiation to reduce contaminants – and then laid out a variety of probabilities that the treated or untreated food packages contained contamination with either E. coli or listeria, another pathogen that can cause food-borne illness.

They followed by asking respondents to choose one of three actions: buy the food treated with the pathogen-reducing technology, buy their usual brand, or stop buying this product altogether.

The results showed that consumers will reach a limit to how much they want to pay to reduce their chances of getting sick. If the treated product cost only 10 cents more than an untreated package, about 60 percent of respondents said they’d buy the improved product. But when that higher price reached $1.60 more per package, less than a third would opt for the treated product.

The structure of the survey also allowed researchers to see the influence of human behavior and opinions on likely illness outcomes.

“A lot of other research is about what goes into your mouth. But you have a lot of leeway between when you pick food up in a store and when you decide whether you’re going to take a bite,” Roe said. “What we’re saying is this is not just about people who got sick, it’s about everyone who could become sick and is worried about that and is willing to shell out a few more pennies per package to avoid that.”

Among the hypothetical scenarios offered in the survey, aggregate figures for consumer willingness to pay ranged from $40 million for a 10 percent reduction of the likely presence of listeria pathogens in hotdogs to the $305 million for the 10 percent reduction in the likelihood of E. coli contamination in hamburger.

Roe noted, though, that these specific numbers are less important than the method used to reach them. He said the model used in this research to construct the hypothetical scenarios could be customized for a variety of different regulatory questions.

“If the food industry were forced to put technology in place that lowered the presence of E. coli and that ramped up prices to the extent where everybody had to pay about a dollar more out of pocket each year for hamburger, we’re saying that, according to this model, that would be about an equal tradeoff for the U.S. population. And if the technology costs only about 10 cents per person instead, that would seem like a good deal to most people,” he said.

“If regulators could become more comfortable with this measurement process, agencies might change the way they conduct their cost-benefit analysis. And that would be an interest of ours, to see if our work and others’ work in this area will eventually change the way people attack these questions.”

This research was supported by the Centers for Disease Control and Prevention; the University of Maine Agricultural and

Forest Experiment Station; the Ohio Agricultural Research and Development Center; and the Marvin and June Morrison Chair in Agribusiness at Arizona State University.

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EFSA climate risks turning consumers off healthy foods, analyst

By Ben Bouckley, 04-Feb-2011 Nutra Ingredients.Com

An uncertain climate regarding health claims could lead to EU consumers losing trust in health claims altogether and shifting back to unhealthy diets, warns Euromonitor

Assessing EFSA's (the European Food Safety Authority's) scientific opinions since 2008, Mickael Dominguez, health and wellness analyst, Euromonitor International, said in a podcast that a *"feeling of uncertainty"* had acted as a brake on NPD and marketing worldwide.

Given that this had led to firms ditching disease-reduction claims on labelling in favour of soft claims, he said: *"Ultimately, it could lead to consumers losing trust in health claims altogether and shifting back to an unhealthy diet."*

Since EFSA began publishing its opinions on health claims in 2008, Dominguez noted a move away from disease-reduction claims towards general functional claims, nutrition claims or even no claims at all.

EFSA statistics show that in 2005 disease-reduction claims accounted for around 46% of product claims within the health and wellness category, rising to 53% in 2009 but thereafter entering what he described as a *"free-fall, to an all-time low"* of 38% in 2010.

Conversely, while soft claims accounted for a still significant 47% of applications in 2009, a massive 68% of claims are now made upon this basis.

Danone ditches hard health claim

Danone was one key industry player to make such a move, Dominguez said, withdrawing EFSA applications regarding their probiotic yogurt Activia in April 2010.

The French firm removed Activia health claims from packaging within many European countries in 2010, with disease reduction claims present on packs in only 6/15 EU countries assessed – with no claims at all in three nations, including France – compared with 12/15 in 2009.

For instance, Activia's 2009 Italian labels stated: 'Reduces bloating every day.' But by 2010 the firm moved towards a nutrition claim: 'Danone Activia is the only element to contain exclusive bifidus bacteria'.

Functional feeling of uncertainty

Dominguez said such moves reflected the fact that firms are worried about what will happen next, what will be allowed and what rejected. *"There is a feeling of uncertainly taking over the functional foods industry in EU and even the world,"* he said.

"Companies are relucatant to invest millions in marketing camp for products that could soon be banned from bearing any health claims."

As for what industry could do to survive regulatory uncertainty, Dominguez said that areas such as immune support – where positive opinions have been delivered on the benefits of everything from iron, vitamin A, vitamin B6 and vitamin B9 to vitamins B12, C, D, zinc and copper – and cardiovascular health, offered more promise than, say, probiotics.

"We can easily imagine manufacturers choosing to add one or several ingredients to yogurts or juice to allow it to keep an immune support position, so long as taste is not affected," he said.

"Cardiovascular health has one of the highest approval rates, and in 2009 the global market for such products was worth $3.2bn US, 7 times lower than global sales of probiotics," Dominguez added.

Play the waiting game?

As a result, he said there was also scope for growth in sales of 'heart healthy' products in the EU, such as thiamine, omega 3, beta glucans, guar gum, pectins, to grow, especially given high incidence of coronary heart disease worldwide.

In essence, Dominguez explained, manufacturers have three options. 1. Change their market positioning and focus on soft claims. 2. As per Tate & Lyle – which he said is working on new concepts prioritising taste or rebalancing, such as high-fibre white bread with polydextrose – temporarily suspend the focus on functionality and await new EFSA guidance due to be published this spring on making health claims.

Lastly, companies could refocus sales geographically, and look to regions such as BRIC (Brazil, Russia, India and China) where Dominguez said the regulations were less taxing while there are *"massive development opportunities"*.

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Still more questions than answers on nanotechnology in food

By Caroline Scott-Thomas, 09-Feb-2011 Food Navigator.Com

The article, by US Department of Agriculture economist Jean Buzby, of the department's Agricultural Research Service, outlines some of the key questions that still surround the use of nanotechnology in food which, without answers, could stand in the way of successful commercialization of the technology.

In particular, Buzby highlights the current lack of a global definition of nanotechnology as a factor that could complicate potential labeling of nano foods and packaging.

She quotes the definition of nanotechnology given by the National Nanotechnology Initiative, as *"the understanding and control of matter at dimensions between approximately 1 and 100nm, where unique phenomena enable novel applications"*.

Buzby said: *"However, this current nanometer range is an arbitrary measure and was not set on any real meaning or relationship between particle size and toxicological effects or kinetics, such as chemical reaction rates…The lack of a widely accepted definition of nanotechnology complicates the development of appropriate labeling to inform consumers."*

Current consumer products

The Project on Emerging Nanotechnologies (PEN) keeps what is widely seen as the most accurate inventory of commercial nanotechnology applications. However, it is not comprehensive, with listed items claimed by manufacturers rather than independently certified as using nanotechnology. As of July 29, 2009, the inventory included about 800 products, including 74 food and beverage applications, and three foods.

The three food and beverage applications were an Israeli canola oil, said to inhibit cholesterol transportation into the bloodstream and allow greater penetration of vitamins, minerals and phytochemicals; a Chinese tea, said to provide health benefits; and a US chocolate shake drink, said to use a form of cocoa that enhances flavor, thereby eliminating the need for excess sugar.

Communication

Buzby said that the potential benefits of nanotechnology, for industry, consumers and society as a whole, need to be communicated. Such benefits could include improved food safety and security through new materials to detect pathogens and reduce food spoilage; use of the technology to make supplements more bioavailable or potent; development of biodegradable food contact materials; and job creation.

The article added that there needs to be much more investment in research looking at the technology's safety. It said that current annual global spending on nanotechnology is around $9bn, but only about 4 percent ($39m) of that is used to analyze potential risks to human health and the environment.

Buzby concluded: *"Achieving safe and widely accepted commercial uses of nanotechnology will require concerted effort across countries, Federal agencies, disciplines and sectors. Ultimately, the success or failure of nanotechnology may hinge on how and the extent that these challenges are overcome."*

Source: *The Journal of Consumer Affairs*

Botanicals Show Promise but Regulations Pose Obstacles in Europe

Nutraceutical World Breaking News January 27, 2011
Demand for healthy foods and drinks has created a significant opportunity for botanicals to act as functional ingredients. However, with the adoption of new health claims legislation in Europe, manufacturers must reevaluate their approach to NPD, according to a new report from Business Insights.

The report, titled "Targeted Botanical and Herbal Food and Drinks in Europe," analyzes the impact of new health claims legislation on the botanical and herbal food and drinks industry. By examining the current product launch landscape and existing health claims and clinical data, manufacturers can assess the potential of specific botanicals.

Among the various claims made on new product launches made through to August 2010, 49% were targeted at the metabolic/endocrinology therapeutic area, with weight management being the main area of focus. The World Health Organization estimates that worldwide there are more than 1 billion overweight adults, of which 300 million are obese.

Other than probiotics, botanicals and herbs have been least successful area in securing positive approvals from EFSA. Of the 67 opinions published pertaining to botanicals and herbs in the first two batches, 66 have been rejected.

Botanicals have temporarily been removed from EFSA's assessment process creating uncertainty over the future regulatory environment. With the EC contemplating the adoption of an alternative assessment procedure, it could still be possible for previously rejected health claims to successfully reach the market via an updated evaluation process.

This report identifies the leading botanicals currently used in food and drinks products; examines examples of product innovation in the botanical foods industry; analyzes the therapeutic areas being targeted by food and drinks manufacturers through product launches and health claims submissions; assesses the potential of specific herbs and botanicals as indicated by research, manufacturing and health claim activities; and examines the impact of a more stringent regulatory environment and how it impacts which botanical and herbal ingredients to use.
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Kids' Taste for Fat, Salt and Sugar Formed Early

Food Product Design January 26, 2011

EUGENE, Ore.—Preschoolers prefer salt, sugar and fat and equate their taste preferences to brand-name fast-food and soda products, according to a new study published in the journal Appetite. The findings suggest teaching children to make smart food choices at an early age may help curb obesity.

Researchers at the University of Oregon and the University of Wisconsin-Madison involved developmental psychology and marketing for a two-part study. In the first experiment, 67 children ages 3 through 5 and their mothers were recruited from preschool classes in a large city. The mothers completed a 21-item survey to report on the taste preferences of their children. The children responded to their perceived tastiness of 11 natural and 11 flavor-added foods. Photos of the foods were presented without labeling or packaging. Parents noted the desire for foods high in sugar, fat and salt, while their children showed preference for flavor-added foods that contained these ingredients.

Foods well within the preschoolers' experience were presented in the experiment. Natural foods included apples, bananas, plain milk, fruit salad, water, green beans and tomatoes. Flavor-added foods included cheese puffs, corn chips, watermelon hard candy, jellybeans, banana soft candy, ketchup, colas and chocolate milk.

In the second experiment, researchers explored the association of preschoolers' palate preferences to their emerging awareness of brands of fast foods and sugar-sweetened beverages. The study included 108 children from five urban preschools. They were shown 36 randomly sorted cards—12 related to each of two popular fast-food chains, six to each of the two leading cola companies and six depicting irrelevant products. All children were able to correctly place some of the product cards with the correct companies, indicating their differing levels of brand recognition.

The researchers said the results suggest fast food and soda brand knowledge is linked to the development of a preference for sugar, fat and salt in food. The relationships also appeared to reflect the children's emotional experiences in a way that says the brand-named products deliver their developed taste preferences.

"Our findings present a public policy message," the researchers said. "If we want to pursue intervention, we probably need to start earlier." Parents, she said, need to seriously consider the types of foods they expose their young children to at home and in restaurants. "Repeated exposure builds taste preferences."

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Childhood Obesity Linked to Lifestyle Choices

January 31, 2011 Food Product Design

ANN ARBOR, Mich.—Children who eat a school lunch instead of a packed lunch from home and spend two hours a day watching TV or playing video games are more likely to be obese, according to a new study published in the *American Heart Journal*. The findings suggest lifestyle is more closely linked with childhood obesity than genetics.

Researchers at the University of Michigan Cardiovascular Center examined data from 1,300 children who participated in Project Healthy Schools, a school-based program supported by communities and the U-M Health System to teach middle-school students about healthy lifestyles to reduce their future risk of cardiovascular disease and diabetes. They found 58 percent of obese children had watched two hours of TV in the previous day, compared to 41 percent of non-obese children. Forty-five percent of obese students always ate school lunch, but only 34 percent of non-obese students ate school lunch.

According to the findings, 15 percent of the middle-school students were obese, but nearly all, whether overweight or not, reported unhealthy habits. More than 30 percent had consumed regular soda the previous day, and less than half remembered eating two portions of fruits and vegetables within the past 24 hours. Only one-third of students said they exercised for 30 minutes for five days in the previous week.

“For the extremely overweight child, genetic screening may be a consideration," says study senior author Kim A. Eagle, M.D., a cardiologist and a director of the U-M Cardiovascular Center. “For the rest, increasing physical activity, reducing recreational screen time and improving the nutritional value of school lunches offers great promise to begin a reversal of current childhood obesity trends."

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Salty Snacks Increase Asthma in Kids

January 28, 2011 Food Product Design

ATHENS—Children who eat salty snacks more than three times a week have a nearly fivefold higher risk of having asthma symptoms, according to a new study published in the *Journal of the American Dietetic Association*. The association was even more prominent in children who watch TV or play video games more than two hours per day.

The findings also revealed children who ate Mediterranean diet were less likely to have asthma symptoms, consistent with previous studies evaluating the association between the Mediterranean diet and asthma in children.

Researchers enrolled 700 children age 10 to 12 from 18 schools located in the greater area of Athens. Children and their parents completed questionnaires, which evaluated, among other things, dietary habits. Adherence to the Mediterranean diet was evaluated using the KIDMED (Mediterranean Diet Quality Index for Children and Adolescents) score.

Overall lifetime prevalence of asthma symptoms was 23.7% (27.6% boys, 20.4% girls; P=0.03). Forty-eight percent of children reported salty-snack consumption (≥1 times/week). Salty-snack consumption was positively associated with the hours of television/video-game viewing (P=0.04) and inversely with the KIDMED score (P=0.02). Consumption of salty snacks (>3 times/week vs never/rare) was associated with a 4.8-times higher likelihood of having asthma symptoms (95% confidence interval: 1.50 to 15.8), irrespective of potential confounders. The associations of salty-snack eating and asthma symptoms were

more prominent in children who watched television or played video games >2 hours/day. In addition, adherence to the Mediterranean diet was inversely associated with the likelihood of asthma symptoms.

"Since the prevalence of asthma is quite high in industrialized populations, and has continued to increase during the past years, future interventions and public health messages should be focused on changing these behaviors from the early stages of life, by informing parents, guardians, teachers and any other person that could teach children a healthier lifestyle," the authors said.

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Educating Consumers About 'High' Risk of Energy Drinks

January 26, 2011 Food Product Design

Health professionals should make it a priority to educate the public about the dangers of consuming energy drinks, and industry officials and servers should caution consumers about the risks of mixing alcohol with energy drinks, according to a new commentary published in the *Journal of the American Medical Association* (JAMA).

The authors outlined a number of reasons why energy drinks present a threat to individual and public health and safety, including caffeine's association with adverse health effects, the link between mixing energy drinks with alcohol to drinking high volumes of alcohol serious alcohol-related consequences, and the risk for alcohol dependence and prescription drug use.

The authors suggested regulatory agencies should require specific labeling regarding caffeine content, with warnings about the risks associated with caffeine consumption in adolescents and in pregnant women as well as with explicit information about the potential risks associated with mixing energy drinks with alcohol.

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FSA Creates Guidance to Prevent E.coli Contamination

Food Ingredients First 2/16/ 2011 ---

The FSA has issued guidance to clarify the steps that food businesses need to take to control the risk of contamination from the food bug E.coli O157.

Serious outbreaks of E.coli in Scotland in 1996 and Wales in 2005 resulted in serious illness in some individuals and, in a few cases, death. These outbreaks were attributed to cross-contamination arising from the poor handling of food. This guidance has been developed to remind food businesses what they should be doing to protect their customers from the serious consequences of E.coli food poisoning.

Many businesses will already be following the steps contained in the guidance but it is intended to provide reassurance that they are doing everything they can to prevent cross-contamination.

It is also expected that the guidance will be used by local authority food safety officers when inspecting businesses in their area.

Some of the key measures highlighted in the guidance to control E.coli are:

- Identification of separate work areas, surfaces and equipment for raw and ready-to-eat food.
- Use of separate complex equipment, such as vacuum-packing machines, slicers, and mincers for raw and ready-to-eat food.
- Handwashing should be carried out using a recognised technique. Anti-bacterial gels must not be used instead of thorough handwashing.
- Disinfectants and sanitisers must meet officially recognised standards and should be used as instructed by the manufacturer.

Although E.coli is the key focus of this guidance, the measures outlined will also help in the control of other bacteria, such as campylobacter and salmonella.

The full guidance, developed following a public consultation and Professor Hugh Pennington's report into the 2005 E.coli

outbreak, can be found at the link below, along with a factsheet for businesses, which summarises the guidance.

Most strains of E.coli are harmless, but the strain called E.coli O157 can cause severe illness. This is because it can produce toxins (called verocytotoxins). In other countries different strains that produce these toxins are more common, such as E. coli O111 and E. coli O26.

E.coli O157 (and other similar toxin-producing E.coli) are transmitted through eating, drinking or contact with undercooked minced beef and milk that is unpasteurised, hasn't been pasteurised properly, or has been contaminated after pasteurisation.

It's also possible to become infected by direct contact with people or animals that are infected, or with land contaminated with animal faeces.

What are the symptoms?
- Bloody diarrhoea and abdominal cramps
- Can have very serious complications, including kidney failure, severe anaemia and neurological problems
- Can sometimes lead to death

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Kids Unfazed by Fast-Food Calorie Labels

February 15, 2011 **Food Product Design**

NEW YORK—Calorie labeling on menus does little to influence the purchasing behavior of teenagers or what parents buy for the children, according to a new study published online in the ***International Journal of Obesity***. The findings reveal taste is the most-important factor considered by teens when ordering fast-food items.

Researchers at NYU Langone Medical Center compared receipts and surveys from 427 parents and teenagers at fast-food restaurants before and after mandatory labeling began in July 2008. They focused on lower income communities in New York City and used Newark, N.J., as a comparison because it does not required labeling. Data was collected before labeling began, and one month after labeling laws went into effect.

Before mandatory labeling, none of the teens in the study noticed calorie information in the restaurant; however, 57 percent in New York and 18 percent in Newark noticed the calorie information after labeling began. According to the findings, 9 percent said the information influenced their choices, and all of the teens used the information to purchase fewer calories. Twenty-nine percent of adults said the labeling influenced their choice.

Taste was the most important reason teens bought a fast-food item, while price was a consideration for more than 50 percent. About 25 percent said they limited the amount of food they ate to control their weight. The study also reported that most teenagers underestimated the amount of calories they had purchased, some by up to 466 calories.

Sources: **NYU Langone Medical Center:**

FDA seeks to invest in foodborne illness prevention

The U.S. Food and Drug Administration (FDA) is requesting a budget of $4.3 billion to protect and promote the public health as part of President Barak Obama's fiscal year (FY) 2012 budget—a 33% increase over the FDA enacted budget for FY 2010. The FY 2012 request covers the period of Oct. 1, 2011 through Sept. 30, 2012.

"FDA protects and promotes the health of all Americans through every stage of life," said Margaret A. Hamburg, Commissioner of Food and Drugs. "The breadth of this mandate means that FDA responsibilities continue to grow. The new budget contains new resources so that FDA can fulfill its growing responsibilities to the American public."

One critical area of the proposed budget is the Transforming Food Safety and Nutrition ($324 million) Initiative. With this increase, the FDA will begin to implement the landmark Food Safety Modernization Act and also empower Americans to make healthier food choices. FDA will establish a prevention-focused food safety system and leverage the valuable work of FDA's state and local food safety partners. The result will be a stronger, more reliable food safety system to protect American consumers. The FDA will also empower Americans to make more healthful food choices through menu and vending machine labeling.

IFT Newsletter February 16, 2011
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Energy drinks may pose health risk for children

Energy drinks may pose a risk for serious adverse health effects in some children, especially those with diabetes, seizures, cardiac abnormalities, or mood and behavior disorders, according to new findings from pediatric researchers at the University of Miami Miller School of Medicine. The study, "Health Effects of Energy Drinks on Children, Adolescents and Young Adults," was published online in the journal *Pediatrics*. In a review of the current literature, the authors determined that energy drinks have no therapeutic benefit to children, and both the known and unknown properties of the ingredients, combined with reports of toxicity, may put some children at risk for adverse health events.

Youth account for half of the energy drink market, and according to surveys, 30–50% of adolescents report consuming energy drinks. Typically, energy drinks contain high levels of stimulants such as caffeine, taurine, and guarana, and safe consumption levels have not been established for most adolescents.

"Until further research establishes their safety, routine energy drinks usage by children and teen-agers should be discouraged," said Steven Lipshultz, Professor and Chair of Pediatrics, Associate Executive Dean for Child Health, and author of the study. "We wanted to raise awareness about the risks. Our systematic review suggests that these drinks have no benefit and should not be a part of the diet of children and teens. We need long-term research to define maximum safe doses of these beverages and the effects of chronic use, especially in at-risk populations."

IFT Newsletter February 16, 2011

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