

# PFNDAI Bulletin March 2009

## Editorial

New regulations regarding food labelling have become mandatory from 19<sup>th</sup> March 2009 by a notification GSR 664 of 19<sup>th</sup> September 2008 and now consumers will get more information regarding quality, safety and nutrition of the food products.

As per the new regulation, a list of ingredients will have to be given as before, but if there is any emphasis of some ingredient, then its quantity will have to be mentioned as percentage in bracket while giving the list of ingredients. For example, if a biscuit is emphasised on label to contain oat fibre, then while giving the list of ingredients after oat fibre ingredient in bracket its percentage will have to be mentioned. This emphasis may be either in name or graphics or in a statement of claim. Henceforth, such emphases like “contains honey”, “cashew biscuits”, “has goodness of strawberry” etc. will necessitate information being provided of the quantities of such ingredients like honey, cashew and strawberry.

This will be useful to consumers who can now compare two products claiming to add some quality ingredient to their respective products. Of course, this will not be applicable when the manufacturer emphasises say “orange flavoured” biscuits as this product may not contain any orange at all. Also, when some spice or condiment products like cooking sauces etc. may have names like “chicken masala” that may not have any chicken. Some other products like breakfast cereals may show a picture of their product with added milk just as a serving suggestion.

Such things are yet to be clear to many manufacturers and consumers. So it is going to take some time before the regulation will be properly assimilated and implemented.

Another aspect of the regulation is nutrition information. There will have to be declaration of energy (calories), protein, carbohydrate & sugar, and fat to be given per 100g or 100ml or per serving on all products. In addition, if any claim is made of another nutrient say calcium or iron, then its quantity will also have to be given. Furthermore, if there are claims of fat (low fat, high unsaturated fat etc.) or cholesterol (low or free) then further elaboration with respect to saturated, mono & polyunsaturated, trans fatty acids and cholesterol will have to be given.

Some products contain hydrogenated vegetable fat or bakery shortening. These will have to bear declaration ‘hydrogenated vegetable fats or bakery shortening used – contains trans fats’, provided that if they contain less than 0.2g trans fat per serving then label can claim ‘trans fat free’. It would be confusing to consumers if both declarations are made one stating the product contains trans fat and the other states trans fat free.

Nutritional information is not necessary for wheat, rice, cereals, spices, salt, sugar, packaged water, fruits & vegetables, pickles, papad etc. Also food served in hospitals, hotels etc. or by halwais are exempt. We will be including an article in the forthcoming issue giving details of the regulation and its implications.

In our past issue we tried to raise an issue of regulatory impact analysis especially for those which we claim are meant for consumers. The present regulation is touted to be for consumers giving nutritional information to consumers at a whopping cost to industry as they have to change the labels with new design and artwork, they have to analyse the products and ensure that so many requirements are met with. How far are consumers benefited due to this? Government must do analysis. At the same time there is a likelihood of regulatory harassment as due to seasonal and varietal changes, nutrients are going to vary in contents.

One of the important points in this regulation is trans fat. Indian manufacturers do not use that much of hydrogenated vegetable fat compared to Americans, who consume large amounts through bakery products like biscuits, rolls, pastries, doughnuts etc. Many American cities have banned trans fats even in restaurants and fast food joints. However, our regulators have exempted hotels, restaurants and halwais etc. many of whom are using vanaspati not only to prepare bakery products but also to fry samosa, vada, bhajia etc. because vanaspati is cheap and also products do not look oily. We must have application of mind and proper discussion with stakeholders including industry while making these regulations.

We welcome new corporate members namely Agro Tech Foods Ltd., EAC Industrial Ingredients, National Food Products, Scientific Precisions Ltd. and associate member Mrs. Manisha Naik. We hope they have a long, enjoyable and extremely useful association with PFNDAI. We also hope that all our members have a highly successful coming financial year.

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## Carbohydrates: Good Carbs, Bad Carbs or No Carbs?

Dr. Jagadish S. Pai

Carbohydrates have been discussed in relation with nutrition and diet for a long time. They have been recognised as essential nutrients providing energy to tissues along with many other important physiological roles. However, they were implicated in obesity and various diets appeared restricting their intake such as low-carb or no-carb diets. Again in the last few years they have been recognised as essential in our diets but the nature of these were being recommended such as complex carbohydrates were preferable compared to simple carbohydrates. More recently, concepts of glycemic index and glycemic load have been developed to group the foods containing different types of carbohydrates that would help selecting the diets.

### Introduction

Carbohydrates are the most abundant of the major classes of biomolecules. They carry out many important functions in living beings including serving as energy stores e.g. starch and glycogen with readily available energy utilising glucose. They are important structural components in plants (cellulose) and in animals (cartilage and chitin). Carbohydrates and their derivatives perform important roles in immune systems, fertilisation, pathogenesis, blood clotting and development processes.

Carbohydrates are found in many foods like bread, beans, milk, cereal grains, potatoes, cookies, soft drinks, cakes etc. The most commonly they are found as sugars, dietary fibres and starches. Carbohydrates are grouped in two categories: simple carbohydrates such as sugars like fructose, glucose, common sugar (sucrose) etc. and complex carbohydrates such oligosaccharides, starch, dextrins etc.

Chemically the building blocks of the carbohydrates are monosaccharides such as glucose, fructose, and galactose which combine with two or more of the same or different monosaccharides to form other carbohydrates. Disaccharides contain two monosaccharides so maltose contains two glucose units; sucrose contains one each of glucose and fructose while lactose (sugar in milk) contains one each of glucose and galactose. Similarly trisaccharides contain three monosaccharide units and so on.

In fact, those containing between two and ten units of monosaccharides are also called oligosaccharides.

Besides disaccharides, important oligosaccharides are raffinose (trisaccharide of galactose, fructose & glucose, present in beans, cabbage, broccoli etc.) and stachyose (tetrasaccharide of 2 galactose, 1 glucose and 1 fructose present in soya and other beans). One oligosaccharide is being used recently is fructooligosaccharide (FOS) contains mostly fructose units and may be prepared from inulin (natural fructose polymer present in Jerusalem artichoke and chicory) by chemical or enzymatic degradation.

Larger carbohydrates are called polysaccharides, examples being starch and cellulose. Although both are glucose polymer, starch contains alpha 1-4 linkages of glucose units whereas cellulose contains beta 1-4 linkages of glucose units. Hence, while starch can be digested by humans, cellulose is not since human enzymes cannot hydrolyse beta linkages of cellulose. Ruminants like cow and goat have microbes in their rumen capable of hydrolysing cellulose so these animals can eat cellulosic materials like grass and leaves. Starch is present in large quantities in cereals and pulses as well as many unripe fruits and most vegetables.

There are many polysaccharides used in food industry that are derived from beans, vegetables, trees, microbes etc. Some examples are gum Arabic (acacia), guar gum, gum karaya, locust bean gum, pectin, hemicellulose, xanthan, and dextran. These are large polymers and are indigestible by humans. They have applications in food products as thickeners, stabilisers and texture modifiers. Some of them like pectin may also form gels. There are some like chicle gum and modified or synthetic gums that are used in chewing and bubble gums. Since these are not digestible, they form part of dietary fibre along with cellulose. They help push food in gastro-intestinal tract, thus preventing constipation and also prevent colon cancer.

### **Carbohydrate Metabolism**

Only monosaccharides like glucose, fructose and galactose can be absorbed in small intestine so larger carbohydrates including disaccharides need to be digested or hydrolysed to monosaccharides before being absorbed. Food is consumed in the form of fruits and vegetables (either raw or cooked) that may contain some starch and sugars, grain products like bread or chapatti may contain mostly starch, certain foods may contain added sugar and dairy products may have lactose.

All these products when eaten are first acted upon by salivary amylase and then with pancreatic amylase that break down bigger starch molecules to maltose, maltotriose and some glucose. These are then acted upon by enzymes at intestinal brush border converting them to glucose. There are enzymes in small intestine that digest disaccharides like sucrose and lactose to respective monosaccharides. All these monosaccharides are then absorbed in small intestine. Cellulose and other non-digestible carbohydrates including raffinose, stachyose, FOS, various gum polysaccharides, limit dextrins left after hydrolysis of amylopectin fraction of starch etc. may pass through the intestine undigested but in large intestine some partial breakdown may occur due to bacteria.

Of the monosaccharides absorbed, glucose is delivered to various tissues/cells which use it for their energy needs. Fructose and galactose are converted to glucose in liver although they can also be used for energy. Glucose may also be converted to other necessary carbohydrates like ribose, deoxyribose, glucosamine, etc. and also for synthesis of nonessential amino acids. Excess is converted to glycogen or fatty acids and stored in the body. The blood glucose level is affected when glucose is absorbed from the intestine as well as when glucose is consumed by various cells or tissues for energy purpose and also when glucose is converted to various metabolites and glycogen or fatty acids. All these conversions either increase or reduce the blood glucose level.

Fasting level of blood glucose is between 70 and 100 mg/100ml and this may either be replenished by glucose absorbed after a meal and/or be depleted by energy demands or conversions to other substances. Glycogen in liver and muscle also plays important role in supply of glucose when needed. Some energy needs of various tissues are also met by fat although brain can utilise only glucose for its

energy needs. There are various hormones that regulate reactions involved in glucose metabolism and ensure that glucose level in blood is maintained at somewhat constant level. Among these are insulin, glucagon, epinephrine, glucocorticoids and growth hormone. When the glucose level falls below 70 mg/100ml hypoglycemia occurs and a person may experience a variety of symptoms but most problems occur due to lack of glucose supply to brain causing its impairment leading to seizures or coma.

Insulin helps metabolism of glucose to energy or to other substances. When carbohydrates are consumed blood glucose rises but insulin tries to keep constant level by metabolising it so it does not rise too high. However, when insulin is not adequately produced by body or carbohydrate consumption and its digestion is too rapid for the control mechanism, the level of blood glucose goes high. If it remains high for long, the condition is called diabetes. In type I diabetics, insulin production is low and in type II, body develops resistance to insulin. Type II diabetes is preventable and is caused mainly due to obesity and lack of physical activity, a problem of today's lifestyle.

### Glycemic Index

Different carbohydrates in foods are digested and absorbed at different rates. One means of comparing the speed at which they are taken up is Glycemic Index (GI). Taking the GI of glucose as 100, foods containing carbohydrates are compared and given numbers, higher numbers indicating faster utilisation and lower indicating slower uptake. Foods containing fixed amounts of carbohydrates (about 10 to 50 g) are fed to healthy individuals after overnight fasting and their blood sugar is measured over next 2 hours. The rise and fall of blood glucose is then measured and compared with reference and GI is calculated.

GI however does not give any idea about amount of digestible carbohydrate the food contains. Although watermelon has very high GI it has very small amount of carbohydrate per serving so the effect on blood sugar is quite small. Hence the concept of glycemic load (GL) has been developed by multiplying GI by the amount of carbohydrate (in %) the food contains. In general GL of 20 or more is high, 11 to 19 medium and 10 or less is low.

Glycemic load (GL) is another useful system of measuring carbohydrate content and its utilisation from a mixed meal. It depends on the portion size of each carbohydrate containing food. High GI food consumed in small quantity would give same effect as larger quantities of low GI food on blood sugar. When lesser quantities of high GI foods are consumed, rise in blood glucose is less and this is important in meal planning for diabetics. GL is obtained by multiplying carbohydrate content of a food by GI and gives an idea about how much effect that portion of food has on blood sugar level.

### GI & GL of some foods

Food	Glycemic index (GI)	Carbohydrate content (by wt)	Glycemic Load (GL)
Baguette (French bread)	95	50%	48
Banana	52	20%	10
Carrots	47	7.5%	3.5
Corn tortilla	52	48%	25
Potato	50	19%	9.3
Rice (boiled white)	64	24%	15.4
Watermelon	72	5%	3.6

### Carbohydrate contents & GI of some common foods

High GI Foods	Portion size	GI	Carbohydrate per portion	Calories (kCal)
Corn flakes	1 small bowl (30g)	84	26	108
White rice	6 tbsp (180g)	87	56	248
White bread	1 large slice (38g)	70	18	85
Pizza	1 large slice (115g)	60	38	288
Baked potato	1 medium (180g)	85	22	94
Chips	Average (165g)	75	59	450
Raisins	1 tbsp (30g)	64	21	82
Watermelon	1 slice (200g)	72	14	62
Ice cream	1 scoop (60g)	61	14	62
Tortilla	1 bag (50g)	72	30	230
Glucose	1 tsp (5g)	100	5	19
Sucrose	1 tsp (5g)	65	5	19
<b>Moderate GI Foods</b>				
Muesli	1 small bowl (50g)	56	34	183
Basmati Rice	4 tbsp (60g)	58	48	215
Noodles	4 tbsp (230g cooked)	46	30	143
Rye Bread	1 slice (25g)	41	11	55
Muffin	1 (68g)	44	34	192
Sponge cake	1 slice (60g)	46	39	181
Carrots	2 tbsp (60g)	49	3	14
Boiled potato	2 medium (175g)	56	30	126
Peas	2 tbsp (70g)	48	7	48
Baked beans	1 small tin (205g)	48	31	166
Apricots	1 (40g)	57	3	12
Banana	1 (100g)	55	23	95
Mango	Half (75g)	55	11	43
Milk chocolate	1 bar (54g)	49	31	281
<b>Low GI Foods</b>				
Chick peas	4 tbsp (140g)	33	24	168
Red kidney beans	4 tbsp (120g)	27	20	124
Red lentils	4 tbsp (160g)	26	28	160
Soya beans	4 tbsp (120g)	18	6	169
Apples	1 (100g)	38	12	47
Full cream milk	300 ml	27	14	198
Skimmed milk	300 ml	32	15	99
Yoghurt (low fat)	150g	33	27	135
Peanuts	50g	14	4	301
Fructose	5g	23	5	19

Many factors affect the glycemic index. Grains that are milled and are refined after removing bran and germ and also those that have been finely ground have higher glycemic index than whole grains. Starch has different configuration, some of which are easier to digest to sugar molecules. Starch in potato is digested and sugars absorbed into blood relatively quickly. Fibre in foods delays the digestion of carbohydrates and absorption of sugars so they reduce the GI. As fruits and vegetables ripen there is more sugar than in unripe ones so their GI increases. Fat and acid content of the foods also slow down the digestion and absorption of carbohydrates.

Diets rich in high GI foods, which cause quick and strong increases in blood sugar levels, have been linked to an increased risk for diabetes, heart disease, and overweight. There is preliminary evidence

that high GI diets are related to age-related macular degeneration, ovulatory infertility and colorectal cancer. Foods with low GI have been shown to help control type 2 diabetes and improve weight loss. There are some studies that show no effect of GI on weight or health. In sports and physical activity or work, energy may be needed quickly for continuation in sports and recovery after exhaustion. High GI may be useful in such instances.

### **Diabetes:**

When one eats foods containing carbohydrates, the digestive system breaks down the digestible ones into sugar, which then enters blood. As blood sugar rises, pancreas makes insulin which helps metabolise glucose for energy or storage and sugar level in blood falls. When it falls lower than normal, pancreas starts making glucagon that makes liver release stored sugar. Thus insulin and glucagons ensure that all cells in body and especially brain, gets enough of glucose. People with type 1 diabetes don't make enough insulin so their cells can't metabolise glucose rapidly. Those with type 2 diabetes generally don't respond well to insulin signal. It is known as insulin resistance and causes blood sugar and insulin levels to remain high long after eating. Over time insulin production slows or stops. It is estimated that 90% of type 2 diabetes cases could be prevented by a combination of healthy diet and a physically active lifestyle. Genes, sedentary lifestyle, obesity, and diet rich in high GI foods can promote insulin resistance. Eating whole grains can improve insulin sensitivity and also controlling type 2 diabetes, atherosclerosis, heart disease, colon cancer, etc.

### **Applications in Food Industry**

Since carbohydrates serve as most easily accessible energy source for muscles and organs most energy drinks and energy bars contain these. Sugars are easily digested and so are many starches. Most sports drinks contain carbohydrates as these sustain the energy required in various physical activities including very vigorous energy intensive ones as well as long distance marathons. Addition of low GI carbohydrates sustains the energy needs for a longer period. Carbohydrates also have a role in recovery after an exhaustive workout or an intensive sports activity. There are many formulations of sports drinks or bars meant for specific sports with different combinations of carbohydrates for better effectiveness.

Sugars have special place in foods because of their sweetness. Most people like sweet taste and some crave for it. Sweets such as candies, sweet biscuits (cookies), fruit based products like jams, jellies, preserves, squashes, syrups, etc., cakes and other similar sweet bakery products, chocolates, ice creams, Indian traditional sweets like pedha, burfi, jalebi, shrikhand, gulab jamun, roso golla, mysore pak, and a long list of sweets are very popular among people of all ages. Sugar in many of these products has a dual role of preservation besides sweetness. In products like jelly and ice creams, they also markedly affect the texture.

In many formulated foods, besides the other nutrients and ingredients that give flavour, colour etc. as well as some other active ingredients, there is a need for filler material that gives bulk to the food. This is commonly provided by carbohydrates. Starch and maltodextrins have been used for such purposes but in case caloric restriction is essential then cellulosics and gum based substances are used to some extent. Many carbohydrates especially maltodextrins from potato and rice starch have bland flavour profiles so they could be added to any food without affecting the original flavour of the food. There are many artificially sweetened foods that use intense sweeteners instead of sugar. Since sugar in sweets is a major ingredient bulking agents are very essential in these products to fill the gap left by leaving out sugar. Such bulking agents are mostly carbohydrates.

Carbohydrates have been used for giving desired texture to food products. They have great affinity of water and hold large amount of it, so when one needs body in a beverage, carbohydrates are used that will thicken them. Different carbohydrates have different ability of tie up water and increase the viscosity. Among gums, acacia gum does not change viscosity much unless good amounts are used, but guar gum immediately elevates viscosity even with small amounts. Gums are commonly used at

0.25% to 0.5% level. Some may be partially hydrolysed to give desired properties at the process and storage temperatures and pH.

Starches and hydrocolloids interfere with ice crystal formation in ice cream or thicken pastry filling preventing weeping into surrounding crust. They can also substitute fat to some extent helping reduce fat without affecting mouthfeel.

Dietary fibre, mostly composed of non-digestible carbohydrates, has become very important because of its healthful effects. It prevents constipation and colonic cancer that is on the rise because of present diets with low dietary fibre intake. Also it helps diabetics to control blood glucose when carbohydrates are consumed as it slows the uptake of sugars. It also helps satiety after a meal so overeating may be curtailed. Many food products have come in market which use ingredients like whole grains or fibre derived from rich sources to be added to foods. Prime examples are bakery products like bread and biscuits that earlier used refined flour with low fibre content, are now being prepared from whole wheat and other grains. Alternatively fibre is added in formulations. Process needs modification when such changes are made as gluten formation and leavening are affected adversely when fibre is increased. Fibre also has effects on taste.

Browning is another effect of carbohydrates alone or with amino groups mostly from proteins. When bread is baked, coffee is roasted, potatoes are fried, and sugar is heated, brown colour is formed along with an appealing aroma. This is because of reactions involving sugars with or without amino compounds.

Many soft products like cakes, become hard and less palatable if they lose moisture. Carbohydrates along with emulsifiers are also useful in binding and holding moisture in foods for a longer period. Commonly polyols like sorbitol, mannitol are used as humectants. These are sugar alcohols prepared from carbohydrates by fermentation but there are polyols that are naturally present. They also have sweetness.

### **Gazing Into Future**

There has been a lot of negative perception in the minds of people about carbohydrates. As long as people love snacks there will always be carbohydrates from grains like wheat, corn and rice used for making them. Although sweets will be increasingly made from artificial sweeteners but sugars will have their prime place. Texture is becoming quite important as more novel ingredients are used to make foods and carbohydrates in many forms and their derivatives will be used. The market for sports nutrition is expanding and drinks and bars use more varieties of carbohydrates with different GI. As greater emphasis is being given on health from fibre, more products are being made from fibre from a variety of sources. There are even natural foods like corn and rice with more resistant starch being used for healthy reasons.

Most people think of refined flours and sugars when they think of carbohydrates and equate them with undesirable food components. But this perception is changing rapidly and many carbohydrates, some quite novel, are being used for newer applications as the consumer needs are changing.



## **Uses for Dairy Deepen**

**WheyVolution** – a theme name for the 5<sup>th</sup> International Whey Conference – brought more than 50 speakers to provide insights on use of whey products as functional and nutritional ingredients. In particular, the event focused on the different directions that these whey derivatives are taking in food formulating.

The name WheyVolution could probably serve as a mantra for dairy ingredients in general, not just whey proteins.

- **From a health perspective**, dairy ingredients can promote a satiety effect, which is an important factor in weight management.
  - Dairy products can enhance the nutritional profile of the finished product as a source of calcium, protein, and other valuable components.
- **From a functionality perspective**, dairy ingredients can help enhance the flavour and texture of the food product.
  - Buttermilk is gaining some time in the spotlight.
  - Sour cream has come a long way from its association with potato pancakes.
  - Yogurt can function as an ingredient in various formats.

Applications for these dairy ingredients are broadening. These will be discussed in this article illustrating the potential benefits of dairy ingredients and their possible impact in future formulating.

### Inspiring New Directions

At the 2008 IFT Food Expo®, one of the prototypes highlighted was Cheesy Hash Browns. In this prototype, aged cheddar cheese helped reformulate a traditional breakfast side dish—hash browns—adding flavour, body and texture, and nutrients such as protein and calcium. Sour cream also provided a flavourful, creamy taste with rich body texture.

As seen by this prototype, cheese can be used to create a variety of new products in the marketplace. Other prototypes using cheese include:

- Silver-dollar-sized burgers topped with rich blue cheese, zesty Pepper Jack cheese, or mellow Baby Swiss, and enrobed in pastry dough
- Cheese and Fruit Turnovers combining flavours such as apple and Cheddar, pear and Havarti, cherry and Mascarpone

Hispanic cheeses can also add new appeal to entrees, snacks, sauces, appetizers, side dishes, and salads presenting new market opportunities for cheese processors and food manufacturers.

Other than cheese, prototypes that highlight the functionality and nutritional value of whey and milk proteins have also been developed. Some prototypes include:

- A peach-flavoured drink infused with whey protein and fibre, designed to promote satiety
- A mango-flavoured green tea with whey protein
- A children's chocolate pudding snack enhanced with milk protein (MPC 70) that builds body and texture and adds dairy protein and calcium

Whey proteins are especially offering new opportunities for beverage manufacturers. Whey protein, because of its solubility, can remain clear at the low pH range of 2.8 to 3.5 found in high-acid beverages such as isotonic drinks. This clarity and solubility makes it possible to pack whey protein into a variety of beverages.

The use of dairy ingredients in a broadening range of applications may be further fuelled by FDA's recent approval of new health claims linking calcium and vitamin D with bone health and a reduced risk of osteoporosis.

### Addressing Formulation Challenges

A number of new ingredient solutions from a foods company in Minnesota may play a role in broadening applications of dairy ingredients.

The company reformulated a particular line of cheese powders to replace partially hydrogenated oils (PHOs) with high-oleic canola oil. The oil has a clean taste compatible with organoleptic qualities of dairy ingredients and also provides excellent shelf stability. Perceived as a healthier alternative by consumers, this oil has 7% saturated fat.

The same company has also introduced calcium-fortified cheese powders through a new patented approach. This enables food developers to add cheese flavor and significant levels of calcium to wet and dry ingredient systems without the chalky mouth feel often associated with calcium fortification.

### **Dairy Prototypes Reflect Makeover**

Although the word can be misleading to consumers, buttermilk actually has less fat than whole milk (the fat being removed to make butter). It is high in potassium, B-12 and calcium, and is more quickly digested, which is why it is recommended to those with lactose intolerance.

A Philadelphia flavours company created a prototype suitable for breakfast: buttermilk-based cultured smoothie with lower fat and high calcium. The prototype also has flavours of traditionally indulgent breakfast foods including strawberry, blueberry pancakes and coffee cake.

Inspired by the indulgent chocolate confection, creamer truffles melt easily in coffee and deliver flavour, creamer, and sweetener to the cup. Flavour options include White Chocolate Raspberry Cream and Chocolate Irish Cream.

Moo-Makers are fortified, flavoured cubes for milk. These can help children add sweetness, flavour, colour, and nutrients (Vitamins C, B, and fibre) to a glass of milk. Available prototypes include Purple Peach, Green Mango, and Blue Orange Berry.

### **Slurping Healthfully**

An exhibit at SupplySide West 2008 provided a Wisconsin foods company the opportunity to demonstrate the functionality and health benefits of dairy-derived ingredients, especially protein blends, in beverages. For example, a berry smoothie featured Bioferrin® lactoferrin, which is a natural milk protein helping to stimulate immune system enhancement. The smoothie formulation also contains TruCal®, which is a balanced combination of milk calcium and other essential minerals promoting optimum bone health.

Another protein berry smoothie highlighted Solmiko MPC 80, which is a good source of native caseins and whey proteins with clean flavour profile, excellent solubility and heat stability, and low bacterial counts. Produced from fresh ultra-filtered skim milk, the Solmiko family of spray-dried proteins can be easily incorporated into applications where functionality and flavour are critical, including protein-rich beverages.

### **Appetizer Demonstrates New Cheese Solution**

A prototype application, Crispy Parmesan Polenta, demonstrates the functionality of a new dairy flavour called Creamery Exceed® Plus. This flavour is said to offer a cost-effective option that will improve the impact of cheese and dairy flavours in new or existing formulations. It is available in powder form and can function well in sauces, fillings, seasonings, and other products. It can also be used in all manufacturing processes such as freezing, coating, batter/breading, retorting, and baking.

### **Chicken Soup for Lowering Blood Pressure?**

An ingredient containing a dairy peptide for managing blood pressure earned a Netherlands-based foods company the 2008 HIE's gold award for the most innovative new health ingredient. Called TensGuard®, it works by relaxing and expanding blood vessels, which in turn helps to keep blood pressure within a healthy range. One of the prototype formulations the company reportedly developed

was a chicken soup made with the ingredient, in combination with savoury ingredients designed to reduce salt.

### **Tough Times Call For Whey?**

A possible solution to today's economic needs of cutting costs without affecting the quality of products is the use of whey proteins to replace a portion of the more expensive ingredients such as cream or cream cheese in existing products.

A line of versatile dairy proteins from a Wisconsin foods company can help manufacturers reduce costs in a variety of formulations such as cheese sauces, soups, gravies, frozen desserts, meat products, etc. In addition, it can offer products important quality improvement benefits such as water binding, viscosity, enhanced creaminess, and extended shelf life.

Some examples:

- The ingredient can replace up to 25% of milk solids while improving texture, smoothness, and creaminess.
  - This can help increase overrun so manufacturers realize additional cost savings.
- In meatball applications, the ingredient can bind and hold water in the formula, improving yield.
- A combination of the ingredient and water can replace heavy whipping cream, cream cheese, and Parmesan cheese in sauces such as Alfredo.
  - This is while maintaining the flavour, mouth feel, and quality of the original product.

### **Delivering Dairy Solutions**

Natural specialty cheese flavour ingredients from a Minnesota foods company deliver the complex, authentic aged notes of Gouda, Swiss, Cheddar, Parmesan, Romano, and Blue Cheeses. The ingredients, which contain cheese, have applications in sauces, dressings, snacks, and other products.

Developed using combinations of natural biological processes, these ingredients are said to convey authentic aged flavour notes ordinarily provided by ripened cheeses in days instead of weeks.

### **Whey Raises the Bar**

Benefits of incorporating whey proteins in snack bars:

- Helps to create a better-for-you option
- Provides important functionality benefits, such as:
  - Extending shelf life
  - Enhancing texture, especially when in the form of crisps
  - Imparting a neutral, bland flavour profile that can work well with other flavours

A variety of snack bar formulations by an ingredients company based in California demonstrates the effectiveness of whey proteins. Jalapeno Cheddar Crisp Bar shows that snack bars can be savoury or spicy. Whey crisps, a novel way to boost protein content, provide an alternative or a complement to traditional plant-based crisps and granola.

Whey proteins, in particular, appear to increase the feeling of satiety more than other proteins apart from boosting overall nutritional value. A formulation containing a specific brand of whey protein isolate, the Lemon Meringue Bar, serves as a weight management tool.

### **Differentiating with Dairy**

A range of prototypes from a Wisconsin foods company highlight some of the future directions dairy ingredients can take, thereby helping to reshape traditional perceptions of dairy and its applications.

For example:

- Cheesecake Lollipops is a bite-sized indulgent snack which uses bake-stable Neufchatel cheese filling as an alternative to baked cheesecake and sweetened condensed milk powder for added creaminess and indulgent mouth feel.
- A Cool Yogurt Dip, containing active cultures to help maintain a healthy digestive system, can be combined with fruit for a nutritious and creamy desert.

### Yogurt Helps Lead the Way

The March 2008 Ingredients section “What’s Yonder for Yogurt” covered several ingredient innovations that could help influence the directions of future yogurt products in the marketplace. The use of yogurt as a condiment was described further in the April 2008 Ingredient section.

As this article noted, yogurt is also a popular ingredient in many international cuisines and as these dishes enter the mainstream, we’ll likely see more of yogurt as a condiment.

And this trend still continues. Recently a French company launched Yoggets — granules of yogurt powder that may be used to add flavour and texture in such products as chocolate bars, cereals, and salads. Several of the prototypes described in this article will hopefully stimulate further thought on the different ways that dairy ingredients can be incorporated in traditional and emerging applications.

Condensed from an article by By Donald E. Pszczola in Food Technology January 2009 by Ms. Vinita Gaitonde



## FOOD PRODUCT TRACEABILITY

**Recent food safety crises highlight the need for better traceability in the supply chain. New software options offer affordable tracking systems, even for small companies.**

In the food and beverage industry, product traceability has always been a bothersome issue, which often pits manufacturers, packagers, and distributors against retailers, customers and government agencies. Only after the recent problems in the supply chains, the industries realized the need for better controls and for cost-effective and practical solutions.

Due to the development of new technologies and techniques, traceability is now becoming an acceptable and affordable business process. In spite of there being laws related to product traceability, such as FDA bioterrorism rule 306; they are ignored. The problem is due to the absence of an enforcement staff and limitations of enforcement agents to “post- event” inspections that have made these laws ineffective.

### Supply chain complexities

While the government has been ineffective, brand owners have started taking greater interest in traceability issues.

A small problem in a supply chain that may be connected to several other chains can have devastating effects. Lack of traceability makes the identification of the problem almost impossible to detect, ruining the entire supply chain.

GMA (Grocery Manufacturers Assn.) and other trade organizations are trying to expand the FDA’s funding and extend authority in order to verify that sites are following traceability and record keeping rules. Also, the aid of technology and extension of traceability to the farms has been recommended. Other influential retailers too, are compelling their food suppliers to follow the new set of standards on food safety management and traceability.

It was first considered acceptable if a company could present a list of its suppliers and customers as a form of traceability, but it is not so anymore. Most companies assume that they have the traceability they need, which is both commercially and legally false. It has been proven; by surveys of food manufacturers that true product traceability is hardly ever practiced. It has also been seen that less than 5% of food manufacturers meet the necessary traceability standards such as FDA 306, GFSI etc.

Traceability does not have an exact, simple and well-known definition that all the various regulations and commercial initiatives agree upon. But, there are a few tests that demonstrate the kind of traceability that is expected from manufacturers and packagers.

### **The Traceability Test**

The concept of traceability can be divided into two parts:

1. Tracking and recalling- if a specific item sent to a customer it is important to have the following information:

- Specific lot numbers of items.
- The ship dates and the carriers that shipped the items.
- The raw materials used in the items that were shipped.
- Lot date, manufacturing date and container size.

If the supplier sends an item/lot to a company using two different delivery channels, then they are not the same products from a traceability standpoint. This item should be re-labelled on its arrival with specific container/lot numbers, to prevent loss of this information.

With regard to a vendor item given, the following things are important to know:

- Vendor lot numbers and manufacturing dates of the items received.
- List of carriers carrying the items by date and lot numbers.
- List of finished goods by item/lot received by the vendor that is to be shipped (by lot).

This sort of information needs to be available and easily accessible.

2. Labeling for the supply chain-

- The item number, lot number and manufacturing date should be printed on the product.
- Labels should be differentiated by their manufacturing plant.
- The 14-digit GTIN (Global Trade Item Number) barcode number must be used to record the company and item reference.

These are some of the main points that need to be paid attention to for good traceability.

Traceability not only reports damages but also greatly reduces it. Better traceability is better for the public, the brand and the industry. With better traceability problems can be easily identified and isolated. Hence making it easier to solve. Lesser problems mean lesser interest of the press in reporting the problems and the incurred damages.

The benefits of traceability have been observed before, when a particular company had some trouble with its product. But it was very easily solved because the company had very exact lot numbers and manufacturing dates on their product. So this way, due to the immediate availability of valuable information, precious time was saved.

Traceability thus, also gives a sense of control.

### **Avoid the paper trail**

Collection of data and recording it on paper has been done for several years now. However, recording information on paper could be prone to errors. Moreover, searching for information from huge piles of paper is never easy. Even small companies produce large number of papers containing various kinds of data.

As such, a better and more effective form of recording and storing data is required. Simply installing the latest ERP (enterprise resource planning) or accounting systems will not provide

adequate traceability as it does not focus on labeling, production management etc. However, they are great for business administration.

Lack of product labeling can be very problematic. New standards like the Produce Traceability Initiative (PTI), which includes the GTIN labels, are widely acceptable. The PTI asks for the packagers/ manufacturers to include a “refined” version of a UPC code and additional lot information. This has now gained broad approval.

### **Cost of implementation**

Now the only problem that remains is the cost of its implementation and how should the implementation be done. The cost of traceability and the difficulty in implementing it, make it appear to be impractical but with time, traceability has now become a commercial and legal cost of doing business. It is no more just a “nice to have” option. Also, the Internet has greatly reduced the cost of business, making traceability highly affordable.

Previously, larger companies justified their investment by distributing their costs over larger volumes but this was not possible for smaller companies. The Internet has therefore allowed all sizes of companies to have an effective form of traceability. With the Internet the web-enabled “Software as a Service”(SaaS) came in.

SaaS is a service provider that owns and maintains the software and the computers it runs on. All the user needs is an Internet connection and a subscription fee that needs to be paid, to run the application. The costs are distributed over a large number of companies. This way the cost per user is quite less as compared to a standalone system.

Systems like Mobia are full-featured with WMS, traceability and labeling functions. Its cost per user starts at \$125 a month. Only a labeling system would cost about \$ 50 per month. RFID, which was once very expensive is now available at an affordable rate.

A good traceability system will be able to retrieve data from any point to every point, to process data retrieval for real or mock recalls and identify and document all the shipments, receipts, customers, vendors and products involved in no time.

This is very useful, as the users need not manually collect, record, organize and summarize their data for traceability.

Supply chains are now growing longer and food products getting more complex. As such a good traceability system is required. In its absence a small flaw in one supply chain can adversely affect all other supply chains interconnected with it. This makes the position of brand owners vulnerable.

In order to stay in business, manufacturers and packagers need to adapt and comply with the new traceability and labeling requirements. With the recent available cost-effective solutions, every company can with ease implement the currently announced traceability and labeling requirements.

**Extracted from article of David Miller, Food Technology Jan 09 by Sonia Khudanpur**



# MARKETING HEALTH CLAIMS

## ETHICS, SCIENCE BEFORE THE SALE

*Sophisticated consumers and GMPs are creating a stronger market for products and ingredients with valid health claims.*

There have been legislative rules regarding the marketing of health claims for years, now. Despite this, there has always been a lot of confusion in interpreting it and complying with it. Only those companies that have understood and complied well with these rules have been able to successfully set their products apart and educate customers with legal health claims backed with research.

For example, in Pharmachem laboratories, the director of new product development; Mitch Skop explained that the branded ingredients go through a series of tests and safety studies, to have sufficient proof for the claims they make on their products. They make sure they follow the regulations, before marketing their product.

In Ganaden Biotech, studies and scientific research is focused on, for the health claims made on their branded probiotics. The vice-president, Mike Bush said that their claims are reviewed by their technical and scientific operations to make sure they are abiding the regulatory rules and guidelines.

On the other hand, some companies, due to confusion are unable to figure out what can and cannot be said or commit errors due to negligence. Some just make false claims, hoping that nobody will notice. Pam Magnuson, an industry-marketing expert said that the biggest mistake companies make is to make extreme claims. By doing this they expose themselves to action by the FDA and hence lose consumer respect.

On an international level, when companies market their product, the basics are the same but the regulatory climate is completely different. Nevertheless, some still make claims that are not permitted or are not substantial. Robert Forbes; managing director of Robert Forbes and associates, said that the hurdle is the different level of regulation that every country applies to dietary supplements. For example, in USA the system of regulation places 'dietary supplements' under food law instead of pharmaceutical. In Australia, they are called 'complementary medicines' and in Canada, 'natural-health products'.

This does have some practical effect on companies marketing their products globally. In the case of complementary medicines, 'medicinal' claims are allowed. A product containing efficacious dosages of certain herbs that have been proved to relieve pain and stiffness of arthritis, through traditional or scientific evidence, can be advertised legally under complementary medicine regulation as 'relieves the pain of arthritis and improves joint mobility.' Under dietary-supplement regulation, the claim could say 'helps maintain healthy normal joints.'

To learn the climate in a given region, hiring experts has been proven to be an effective measure. Skop said that nobody outside of the geography knows as much as someone in the geography. Likewise, Pharmachem laboratories work with regulatory experts within a certain targeted region in a country. Some companies also make use of educational summits, conferences or workshops. A workshop was held last year by an institute to help companies understand health-claim regulations. The workshop was a great success.

Now the main problems that the industry insiders face are conducting the costly studies and research that is necessary to provide evidence for the health claims made, to educate consumers about the benefits of various health products and what the claims related to them actually mean and to master the art of increasing a product's marketing potential while still complying with all the regulatory rules.

Educating consumers and gaining their acceptance of the health benefits is one of the greatest challenges such functional foods and beverages face. Whatever claims are made must have sufficient

evidence supporting it and should be within the regulatory guidelines. Consumer products must fulfill the promises they make.

Even though there are lots of difficulties regarding regulations, the costs and the marketing risks, many companies still market health claims for profit. This makes the future of health-claims marketing seem bleak, but it can't be denied that the science for a lot of ingredients seems to be much better than before and companies that are ethical have committed themselves to substantiate the safety and efficacy of the ingredients.

With more and more research that is being done on functional ingredients and their benefits, the health claims related to those ingredients will be taken to a higher level of clinical support for claims. As a result the consumer's trust in the product will increase; creating more opportunity for the industry and making it more stable.

Extracted from an article by Patty Reagin in *Functional Ingredients* February 2009 by Sonia Khudanpur



## Nutrition News

### Some Diets May Be Better Than Others For Keeping Weight Off And Staying Healthy, Study Suggests

Any diet will do? Not if you want to lose fat instead of muscle. Not if you want to lower your triglyceride levels so you'll be less likely to develop diabetes and heart disease. Not if you want to avoid cravings that tempt you to cheat on your diet. And not if you want to keep the weight off long-term.

"Our latest study shows you have a better chance of achieving all these goals if you follow a diet that is moderately high in protein," said Donald Layman, a University of Illinois professor emeritus of nutrition. The research was published in the March *Journal of Nutrition*.

Layman's new study followed the weight-loss efforts of 130 persons at two sites, the U of I and Penn State University, during 4 months of active weight loss and 8 months of maintenance.

Two previous studies had looked at short-term weight loss; this one was designed to look at long-term effects, he said.

Although both plans were equal in calories, half the group followed a moderate-protein diet (40% carbohydrates, 30% protein, 30% fat) while the other followed a diet based on USDA's food-guide pyramid (55% carbohydrates, 15% protein, 15% fat).

"Persons in the first group ate twice the amount of protein as the second group," said Layman.

And the difference in protein made all the difference in improved body composition and body lipids, he said.

Although the amount of weight lost in both groups was similar, at 4 months participants in the protein group had lost 22 percent more body fat than members of the food-pyramid group. At 12 months, the moderate-protein dieters had lost 38 percent more body fat.

"The additional protein helped dieters preserve muscle. That's important for long-term weight loss because muscle burns calories—if you lose muscle, and you used to be able to consume 2,000 calories without gaining weight, you'll find that now you can only eat, say, 1,800 calories without weight gain," he said.

What were the effects on lipids? Although at 4 months the food-guide pyramid appeared to be more effective in lowering LDL and total cholesterol levels, at 12 months LDL levels came back up until both diets were equally effective, Layman said.

"This is the first study to show that short-term changes in LDL cholesterol are not maintained with long-term weight loss. Most scientists believe that high cholesterol is more a factor of genetics than of diet," he said.

But the moderate-protein diet had by far the bigger effect on lowering triglycerides, and that lasted as long as individuals remained on the diet, he said.

"Of the two types of lipid problems, high triglycerides pose a greater risk for heart disease. Approximately twice as many people have high triglycerides, and people with this condition are approximately four times more likely to die from heart disease," the scientist said.

To ensure compliance, participants met every week for weigh-ins and nutrition instruction. "We taught participants how to follow their diet, how to grocery shop, and how to prepare the meals. They also measured everything they ate three days a week," he said.

"Studies that report there is no difference among diets also report that subjects were not carefully following the diets," said Layman. "It's very important to realize the difference between diet compliance and diet effectiveness."

The protein diet was easier to follow and maintain long-term, with 64 percent of the moderate-protein dieters completing the study compared to 45 percent of dieters using the high-carbohydrate diet, Layman said.

"Subjects on the moderate-protein diet reported that they weren't as interested in snacks or desserts, and they didn't have food cravings. When you eat protein, you feel full longer," he said.

Average weight loss for the protein group was 23 percent higher than the food-pyramid group, with 31 percent of "completers" in the protein group losing more of than 10 percent of their initial body weight versus 21 percent of the food-pyramid group.

Co-authors of the study are Ellen Evans of the U of I Department of Kinesiology and Public Health; Donna Erickson, Jennifer Seyler, and Judy Weber of the U of I Department of Food Science and Human Nutrition; and Deborah Bagshaw, Amy Griel, Tricia Psota, and Penny Kris-Etherton of The Pennsylvania State University Department of Nutritional Sciences.

It was funded by the National Cattlemen's Beef Association, The Beef Checkoff, and Kraft Foods.

**From: Science Daily Mar. 5, 2009**

## **Probiotic Bacteria BLIS K12 Supports the Maintenance of Fresh Breath**

In response to the growing demand for an effective breath-freshening solution, Frutarom Inc., USA, the exclusive marketer of BLIS K12, a new oral cavity probiotic bacteria, released study results showing BLIS K12 can effectively treat bad breath. In 2007, Americans spent nearly \$6.7 billion on mouth-freshening products, according to the market-research firm Euromonitor International.

“BLIS K12 is an oral cavity probiotic with multiple functions, including helping to maintain a healthy ear, nose and throat plus maintaining immune function,” notes Laurent Leduc, VP Health Division for Frutarom. “The research on bad breath explores one of it’s many interesting activities.”

Most cases of bad breath are the result of protein breakdown by odor-causing bacteria thriving on the tongue. Bacterial by-products of this protein breakdown include foul-smelling gases which make the breath unpleasant. Good oral care, such as brushing and flossing every day, can help prevent bad breath by removing food debris and other sources of protein for these bacteria. However, for many people with chronic bad breath or on high protein diet, these steps alone do not provide a satisfactory solution.

“It’s all about bacterial balance,” explains Jocelyn Mathern, M.S., R.D., Technical Health Specialist for Frutarom USA. “ BLIS K12 can inhibit odor-causing bacteria and contribute to long-term fresh breath, rather than just masking bad breath, like most oral hygiene products do.”

Research conducted by scientists at the BLIS Technologies Center for Innovation, University of Otago, Dunedin, New Zealand, found that administration of BLIS K12 after an oral antimicrobial mouthwash reduced volatile sulfur compound levels in the mouths of individuals suffering from chronic bad breath. The outcome of this study indicates the replacement of bacteria causing bad breath by colonization with competitive bacteria, such as BLIS K12, could prove an effective strategy to reduce the severity of bad breath.

BLIS K12 was designed specifically to protect the entire oral cavity and is clinically shown to reduce the incidence of sore throat while boosting the immune system. It can be used in many applications and in combination with other probiotics.

**From: Food Ingredients News, Nutrition Horizon 02 Mar 2009**

## **Public Health Organization Stresses Importance of Vitamin D Intake**

The American Public Health Association (APHA) recently adopted 12 new policies associated with public health issues, with vitamin D deficiency and insufficiency as a leading concern. APHA's new policies, approved during their 136th Annual Meeting in San Diego, seek to support the major public health concerns for both children and adults in the U.S. Popular dietary supplement brand Nature Made claims it anticipated this public health threat four years ago and responded to the growing body of science and public health concerns regarding vitamin D deficiency by being the first company to increase the amount and potency of vitamin D offered in its products.

Researchers have estimated that nearly half (40-50%) of adults and more than 30% of children in the U.S. are at risk of vitamin D deficiency. And, according to APHA, black Americans are at the highest risk for vitamin D deficiency. Vitamin D deficiencies are also more common in those who are over the age of 50, get very little sun exposure, have lactose intolerance, are vegan, or infants who are fed only breast milk.

APHA's focus on vitamin D deficiency as a top public health issue is supported by other leading health care organizations. In the past year, the American Medical Association, the American Academy of Pediatrics and the American Academy of Dermatology have all issued position

statements or communication efforts stressing the need for increased intake of vitamin D.

In addition to the importance of vitamin D intake for bone health, recent research shows optimum levels have been linked to maintaining colon, breast, prostate and ovarian health, benefiting heart health and colorectal health, and enhancing immune system strength in adults. The best source of natural vitamin D is sunlight, yet many people don't get the needed 10 to 15 minutes of exposure without sunscreen a couple of times a week. Vitamin D is naturally found in butter, eggs, and fish liver oils, as well as fortified foods like milk and cereal. Since it is difficult for most people to meet their vitamin D needs through foods and sunlight, vitamin D supplements are extremely important.

**From: Nutraceuticals World February 2009**

## **Heart health market set to go boom**

The European heart health ingredients market will nearly quadruple over the next five years thanks to a "global fitness fad" among consumers, according to a new report from Frost & Sullivan. Extensive media coverage had heightened consumer awareness about the fatality of cardiovascular disease (CVD) and the ill effects of obesity, heightening interest towards low fat and heart-healthy food products, the researcher said.

The report, called European Heart Health Ingredients Market, said the market for heart health ingredients was worth \$545 million in 2008 and was estimated to reach \$2.0 billion in 2014. "A variety of ingredients positioned for heart-health, with their functional benefits, is increasingly used for the fortification of various food and beverage applications," said Frost & Sullivan research analyst Chandrasekhar S. "The preventive cost of CVD by virtue of these ingredients is much cheaper for the consumers than the cost of its treatment."

**From: Functional Ingredients February 2009**

## **Even small decreases in salt intake can make a difference**

At the American Heart Association's 49th Annual Conference on Cardiovascular Disease Epidemiology and Prevention, which took place March 10–14, researchers said that for every gram of salt that Americans reduce in their daily diets, 250,000 fewer new heart disease cases and more than 200,000 fewer deaths could occur over a decade. To estimate the benefit of making small reductions in salt intake, the researchers used the Coronary Heart Disease Policy Model, a computer simulation of heart disease in the U.S. adult population. The researchers used the model to estimate the impact of an immediate reduction of daily salt intake by 0–6 g on the incidence of cardiovascular disease and deaths between 2010–19. In that period, the model suggests that more than 800,000 life-years could be saved for each gram of salt lowered.

The researchers found that a 3 g/day reduction in salt intake (about 1,200 mg of sodium) would result in 6% fewer cases of new heart disease, 8% fewer heart attacks, and 3% fewer deaths. Even larger health benefits are projected for African Americans, who are more likely to have high blood pressure and whose blood pressure may be more sensitive to salt. Among African Americans, new heart disease cases would be reduced by 10%, heart attacks by 13%, and deaths by 6%.

Currently, Americans eat 9–12 g of salt/day (or 3,600–4,800 mg of sodium), which is considerably higher than the recommended 5–6 g of salt/day or 2,000–2,400 mg sodium. "It is clear that we need to lower salt intake, but individuals find it hard to make substantial cuts because most salt comes from processed foods, not from the salt shaker," said lead author Kirsten Bibbins-Domingo. "Our study suggests that the food industry and those who regulate it could contribute substantially to the health of the nation by achieving even small reductions in the amount of salt in these processed foods."

From: [http://members.ift.org/IFT/Pubs/Newsletters/weekly/nl\\_031809.htm#headlines3](http://members.ift.org/IFT/Pubs/Newsletters/weekly/nl_031809.htm#headlines3)

## New Measurement Standard for Vitamin D May Lead to Better Bone Health

In a development that could help improve the prevention and treatment of osteoporosis, rickets, and other bone diseases, government chemists are reporting an advance in developing an accurate, reliable set of standards for measuring vitamin D levels in blood. Their findings could affect the health of millions of people worldwide, particularly children, women, and the elderly, who suffer from or are at risk of these debilitating diseases. The study will be presented here at the American Chemical Society's 237th National Meeting.

The advance comes in the midst of a growing awareness that many children and adults are not getting enough vitamin D. New studies also link vitamin D deficiency to a higher risk of diseases ranging from cancer to cognitive impairment in the elderly. Everyone needs ample vitamin D not just to absorb calcium and maintain bone strength but to promote good overall health.

People produce the vitamin naturally when sunlight shines on their skin. Concerns about skin cancer, however, have reduced exposure to sunlight. Likewise, declines in consumption of certain dairy products have reduced intake of another natural source of vitamin D. The vitamin also is available as a dietary supplement.

Despite concerns about adequate vitamin D intake, there is no standard laboratory test for measuring vitamin D levels in humans, and no universal agreement on what are considered "normal" or "optimal" vitamin D levels. To understand vitamin D's role in health and disease, and use that knowledge in everyday medicine, laboratories need better measurement standards, the scientists say.

"No one really knows what methods or assays are correct at this point," says Mary Bedner, Ph.D., an analytical chemist with the National Institute of Standards and Technology (NIST) in Gaithersburg, Md. "Right now, you can send a blood sample to two different labs and get completely different results for vitamin D."

About three years ago, NIST, the Federal Government agency that sets measurement standards, began efforts to develop a standard for measuring vitamin D in collaboration with the National Institutes of Health's (NIH's) Office of Dietary Supplements. Later this year, after much consultation with experts and extensive laboratory testing, NIST scientists plan to unveil their standard to the public in a development that promises to lead to a better understanding of vitamin D in health and disease.

The most commonly used indicator of a person's vitamin D status is the measurement of 25-hydroxyvitamin D in the blood. But several different forms of this vitamin exist in the blood — including 25-hydroxyvitamin D2 and 25-hydroxyvitamin D3 — that are of clinical significance and would be overlooked by scientists focusing on total 25-hydroxyvitamin D alone.

To account for these other forms of vitamin D, NIST developed Standard Reference Material 972 (SRM 972). The material is composed of four different pools of human blood serum obtained from a wide cross-section of blood donors. Each of the four pools contains different amounts of 25-hydroxyvitamin D2 and D3 to represent vitamin D profiles normally seen in a clinical setting. All were carefully measured using a combination of state-of-the-art liquid chromatography and mass spectroscopy — highly sensitive analytical chemistry tools.

One pool represents "normal" serum, which contains mostly 25-hydroxyvitamin D3. The second pool, which represents vitamin D deficient individuals, contains about half as much 25-hydroxyvitamin D3 as the "normal" pool. The third represents the blood profile of someone taking vitamin D supplements and contains elevated levels of 25-hydroxyvitamin D2. Finally, the fourth

pool contains high levels of 3-epi-25-hydroxyvitamin D<sub>3</sub>, or the “epi” form of vitamin D, which is typically found in the blood of small children.

By using these four blood samples as reference points, clinical laboratories can calibrate their instruments and measurement techniques to assure more accurate and reliable vitamin D measurements for blood samples so doctors can make the right treatment decisions. As a result, testing based on this standard can more reliably tell patients whether they’re getting enough vitamin D and provide information about what forms of vitamin D they need to take to stay healthy, the researchers say.

[From: Nutrition & Health News, Nutrition Horizon 31 Mar 2009](#)

## **Doctors endorse vegan and vegetarian diets for healthy pregnancies**

WASHINGTON—Well-planned vegetarian and vegan diets are healthful choices for pregnant women and their children, and vitamin B12 needs can be easily met with fortified foods or any common multivitamin, say doctors and dietitians with the Physicians Committee for Responsible Medicine (PCRM). PCRM nutrition experts are available for comment in response to a new *Pediatrics* study showing that low levels of vitamin B12 may increase the risk for neural tube defects.

The *Pediatrics* study is based on analysis of stored blood samples originally collected during pregnancy from three groups of Irish women between 1983 and 1990. It’s not clear if any of the women were vegan, but the study clearly states that this population was deliberately chosen because vitamin supplementation and food fortification were rare at that time. The women lived in a region of traditionally high neural tube defects prevalence, suggesting a moderately high genetic predisposition.

Experts agree that pregnant women can thrive on vegan diets. The American Dietetic Association, the nation’s largest organization of food and nutrition professionals, states that “well-planned vegan and other types of vegetarian diets are appropriate for all stages of the life cycle, including during pregnancy, lactation, infancy, childhood, and adolescence.” Vegetarian diets offer a number of nutritional benefits, including lower levels of saturated fat and cholesterol and higher levels of fiber, folate, and cancer-fighting antioxidants and phytochemicals.

“Women who follow vegan diets not only have healthy pregnancies, they are often healthier than moms who consume meat,” says Susan Levin, M.S., R.D., staff dietitian with PCRM. “By eating a variety of fruits, vegetables, and other healthful vegetarian foods and including breakfast cereals or other foods fortified with vitamin B12, mothers and their children can obtain all the nutrients they need to thrive.”

Choosing a vegetarian or vegan diet can also help women avoid the unhealthy hormones and environmental toxins found in dairy products, meat, and fish. Analyses of vegetarians’ breast milk show that the levels of environmental contaminants in milk are much lower than in non-vegetarians.

Vitamin B12 needs can be met easily with fortified breakfast cereals and soymilk, which are low in fat and calories. The most convenient and reliable B12 source is a daily multivitamin.

[From: Science Mode on Mar 2nd, 2009](#)

## **New Report in the Journal of Nutrition Shows Soy is Beneficial for Heart and Bone Health**

New findings published in the April issue of the Journal of Nutrition suggest soyfoods can play an important role in promoting heart and bone health. The new research was presented at the eighth

International Soy Symposium on the role of soy in health promotion and chronic disease prevention and treatment, which was held in Tokyo, November 9-12, 2008.

"Much progress has been made in understanding the health effects of soyfoods since the first Symposium was held in 1994. Each year, the amount of research conducted on the health effects of soy and soybean components continues to impress," says Mark Messina, Ph.D., author of the report and professor of nutrition at Loma Linda University. "The 2008 Symposium in Tokyo provided an ideal venue for researchers in the field to discuss and debate study designs and outcomes. The research presented on soy and heart and bone health showed strong rationale for people to include soy in their diets."

### **Soy and Heart Health**

At the Symposium, the most comprehensive systematic review of the cholesterol-lowering effects of soy was presented. It covered the years 1978 through the present and found that in about two-thirds of the studies judged to be of high or moderate quality, soy protein was shown to significantly reduce total and/or LDL (bad) cholesterol. The meta-analysis that was part of the review showed a net reduction in LDL cholesterol of approximately 5 percent, which is in line with other data. Over time, a 5 percent reduction in LDL cholesterol can reduce heart disease risk from 10 to 15 percent.

"Although modest compared to cholesterol-lowering drugs like statins, the cholesterol-lowering effects of soy protein are similar to those of soluble fiber and certainly relevant from a public health perspective," says Messina. "Integrating a variety of heart-healthy foods - like soy, beans, nuts and certain vegetables - together into a healthy lifestyle are really the best approach to heart health."

When considering all the ways that heart health is potentially improved, soyfoods certainly look impressive, Messina says. In addition to the cholesterol-lowering effects of soy protein, full-fat soyfoods are also good sources of an essential omega-3 fatty acid, which independently lowers risk of heart disease. Plus, because many soyfoods are low in saturated fat and cholesterol free, they can support healthy cholesterol levels when used in place of many of the more traditional sources of protein in the U.S. diet that tend to be high in saturated fat and cholesterol. Furthermore, soyfoods may reduce heart disease risk independent of their effects on cholesterol, through such mechanisms as lowering blood pressure.

"Although no single coronary benefit can be considered to be especially robust, certainly collectively these effects of soyfoods will contribute to a significant reduction in the risk of coronary heart disease," concludes Messina.

### **Soy and Bone Health**

There has been considerable interest in the effects of soy on bone health during the past 10 years, in part because of the low rate of hip fractures among Asians, a population known to have a high rate of soy consumption. Research presented at the Symposium offers hope that soyfoods promote bone health. For example, an Italian randomized clinical trial evaluated the effects of a soy extract on bone mineral density in postmenopausal osteopenic (those with loss of bone mass but not yet with clinical fracture or osteoporosis) women over a three-year period. Women given the soy extract experienced an 8 and 9 percent increase in spinal and hip bone mineral density, respectively, whereas among the women given a placebo, bone mineral density decreased at those sites by approximately 12 and 8 percent, respectively.

In support of these clinical findings are the results of an epidemiologic study presented at the Symposium. The Singapore Chinese Health Study, a prospective cohort of more than 63,000 middle-aged and elderly subjects, examined the relationship between soy intake and risk of hip fracture. Subjects provided information on the intake of soy and other dietary factors at the start of the study and were monitored for approximately 7 years. During the follow-up period, higher soy intake was associated with a one-third reduction in hip fracture risk among postmenopausal women. The results

of this study are in agreement with a previously published, prospective study involving women from Shanghai, which also found higher soy intake was associated with an approximate one-third reduction in fracture risk.

From: <http://www.nutritionhorizon.com/home/viewarticle.rails?id=40844>



## Research in Food & Nutrition

### Study Highlights Canola Protein's Health Advantages

Burcon NutraScience Corporation has announced that further to the Canola Council of Canada's March 11th announcement of an investment into research on the role of canola in the prevention and treatment of heart disease and diabetes, that Burcon's Supertein canola protein isolate is uniquely rich in sulfur amino acids and particularly rich in cysteine. The typical cysteine content of Burcon's Supertein is nearly double that of whey protein, which is recognized for its high cysteine content.

The exceptional cysteine content of canola protein (rapeseed protein) has long been of interest to nutritional scientists. A potential link between canola protein's high cysteine content and disease prevention has recently been reported in a study in the British Journal of Nutrition. The study's aim was to determine whether rapeseed protein, described by the study's authors as "an emergent cysteine rich protein," could inhibit the onset of the metabolic syndrome. [Mariotti F, Hermier D, Sarrat C, Magné J, Féart E, Evrard J, et al, Rapeseed protein inhibits the initiation of insulin resistance by a high-saturated fat, high-sucrose diet in rats. British Journal of Nutrition. 2008 Nov;100(5):984-91.].

The main finding of the study "is that rapeseed protein substituted for milk protein inhibited the onset of insulin resistance in rats fed the high-saturated fat, high-sucrose diet." The authors further declared that rapeseed protein mitigated certain factors associated with metabolic syndrome: "The study's result highlights the importance of the type of protein as a major component of diet quality, in terms of cardiovascular and diabetic risks." They concluded that "the quality of dietary protein may be an underestimated parameter in dietary strategies against the metabolic syndrome."

Metabolic syndrome is a combination of medical disorders that increase the risk of developing cardiovascular disease and diabetes. It affects one in five people, and prevalence increases with age. Some studies estimate the prevalence in the USA to be up to 25% of the population. [Ford ES, Giles WH, Dietz WH. Prevalence of metabolic syndrome among US adults: findings from the third National Health and Nutrition Examination Survey. JAMA. 2002 287(3):356-359.]

"We believe Supertein with its exciting level of cysteine poses an exceptional opportunity as a functional ingredient for use in a broad array of food and beverage applications." stated Johann F. Tergesen, Burcon's President & COO, who added, "Burcon is already investigating an opportunity to have similar scientific studies conducted using Supertein as the test material."

Supertein is a highly soluble canola protein isolate with promising nutritional prospects and functional properties that include excellent solubility; the ability to form transparent and heat stable solutions in acid conditions; and foaming.

Since 1999, Burcon has developed a portfolio of composition, application, and process patents originating from our core protein extraction and purification technology. The company are developing the world's first commercial canola proteins, Puratein and Supertein with unique functional and nutritional attributes, and CLARISOY, a revolutionary soy protein isolate which is 100% soluble and completely transparent in acidic solutions.

From: Food Ingredients News, Nutrition Horizon 31 Mar 2009

## Study Finds Nutritional Level in Fruit Depends on Growing Location

Black raspberries have been studied for decades by scientists and medical researchers interested in the fruits' apparent ability to limit the onset or severity of degenerative diseases, including cancer.

The fruit of many popular berries, including blackberries, blueberries, strawberries, elderberries, grapes, and plums, are known to have strong antioxidant capacity, mainly as a result of high levels of anthocyanins—chemicals that give plants their vibrant colors—and other phenolic compounds. The darker the fruit, the more anthocyanins are present. Anthocyanins appear to work by inhibiting compounds that weaken the immune system and stimulate tissue inflammation. They can also destroy harmful free-radical molecules that attack cells and cause aging, heart disease, and cancer.

The prospective health benefits of black raspberries and other antioxidant-rich produce has led to increased consumer awareness and demand for fresh, locally produced fruit.

A research study presented in the journal *HortScience* was designed to determine whether where black raspberries are grown influences the antioxidant level in the berries. The research group, headed by Mustafa Ozgen from the Department of Horticulture at Gaziosmanpa University, Tokat, Turkey, included Faith J. Wyzgoski, The Ohio State University at Mansfield, Artemio Z. Tulio, Jr., Aparna Gazula, A. Raymond Miller, and Joseph C. Scheerens from the Ohio Agricultural Research and Development Center, R. Neil Reese from South Dakota State University, and Shawn R. Wright of The Ohio State University South Centers.

To estimate variability in phytonutritional quality of black raspberries, the researchers studied 19 samples representing four common Midwestern black raspberry cultivars harvested from eight production sites. Samples were frozen within 24 h of harvest in on-farm, conventional freezers. These materials were transported in their frozen state to the Ohio Agricultural Research and Development Center and stored in 100-g batches at 29 °C until analyzed. The team then evaluated each of the cultivars to determine antioxidant levels.

According to the researchers; "Inverse relationships among black raspberry samples suggested that site differences may be partially attributable to fruit ripeness at harvest. Relationships among these parameters versus regional differences in soil temperatures were also significant, but weak." Variation in fruit phytonutrient contents related to growing location may prove important in future health-related studies or clinical applications, as well as affecting nutritional benefits to consumers.

The study also contains recommendations for black raspberry growers and marketers, indicating that phytonutrient levels may be affected by genetic, cultural, and/or environmental factors. "Black raspberry producers wishing to optimize antioxidant levels of their fruit products must consider how greatly antioxidant levels might vary among locally grown cultivars from harvest site to harvest site and, as a consequence, of how they are handled and marketed." remarked Ozgen.

Based on this preliminary research, the team continues to explore the effects of culture, ripening, postharvest practices, heat, light, water, and other environmental stresses on the production of antioxidants in black raspberry and other berry fruits.

From: <http://hortsci.ashspublications.org/cgi/content/abstract/43/7/2039>

## New approach discovered to lowering triglycerides

CORVALLIS, Ore. – Studies done with laboratory rats suggest that supplementation of their diet with lipoic acid had a significant effect in lowering triglycerides, which along with cholesterol levels and blood pressure are one of the key risk factors in cardiovascular disease.

In the lab animals, supplements of lipoic acid lowered triglyceride levels up to 60 percent. If the effect were the same in humans – which is not yet clear – that would be a greater impact than found with other dietary supplements, and similar to the effects of some prescription drugs.

The [results](#) were just published in the *Archives of Biochemistry and Biophysics*, a professional journal.

"The extent of triglyceride reduction was really dramatic, we didn't expect it to be this profound," said Regis Moreau, an assistant professor with the Linus Pauling Institute at Oregon State University. "The potential is good that this could become another way to lower blood triglycerides and help reduce the risk of atherosclerosis. It's pretty exciting."

Lipoic acid is a natural compound found at low levels in some foods, including red meat and green leafy vegetables. A powerful antioxidant, it's been of considerable research interest in recent years for its apparent ability to reduce mitochondrial decay in cells and perhaps slow the process of aging. And it's been used in Europe for decades as a treatment for the neuropathic complications of diabetes.

"Lipoic acid is known to influence glucose uptake, and bring down blood glucose by increasing its transport into skeletal muscle," Moreau said. "Less has been done to study its potential value in reducing triglycerides."

Until about 10 years ago, Moreau said, high blood levels of triglycerides – basically a form of fat – were not thought to be as significant as cholesterol at predicting atherosclerosis and heart disease. That perspective has changed, he added, and most experts now see triglycerides as a third important risk factor for atherosclerosis, along with levels of "good" HDL and "bad" LDL cholesterol.

Widely prescribed medications are often taken to influence all of these issues, especially when efforts to control them with diet, exercise, and proper weight have not been effective. However, some of these medications have unwanted side effects that remain a concern.

In this research, it was found that supplements of lipoic acid appeared to affect triglyceride levels through two pathways. After eating, lipoic acid supplementation increased the rate of disappearance of triglycerides in the bloodstream. And supplements also reduced the genetic expression of enzymes in the liver that synthesize triglycerides.

This is the first study that has identified the molecular targets by which lipoic acid can lower triglyceride levels, the researchers said, and to show the effect on liver enzymes resulting in less production of triglycerides. It also found that the mechanism of action of how lipoic acid can lower triglycerides appears separate and distinct from that provided by fibrate drugs, a group of prescription medications often used for that purpose.

Lipoic acid supplements have in various studies been shown to be an appetite suppressant, but control groups of laboratory animals were used in this research to ensure that lower triglyceride levels were not the result simply of less food intake.

The rats used in the experiment were obese to begin with, and developed higher triglyceride levels as the experiment proceeded and they aged – but the animals given lipoic acid fared much better. As they grew from five weeks of age to nine weeks, the blood triglyceride levels doubled in rats given the supplement, but went up more than 400 percent in the other group not given supplements.

The amount of lipoic acid supplementation used in these laboratory experiments would equate to about two grams per day for a 150-pound person, researchers said. Lipoic acid has been used by some people for years as a dietary supplement and found to be safe, Moreau said.

Tory Hagen, a principal investigator and holder of the Jamieson Endowed Chair in Healthspan Research at the Linus Pauling Institute, was a co-author on this study. The work was supported by the National Institutes of Health and the National Center for Complementary and Alternative Medicine.

"We believe that a novel means of controlling triglyceridemia in this animal model has been revealed," researchers wrote in their report. "Given its strong safety record, lipoic acid may have therapeutic applications for the treatment or prevention of hypertriglyceridemia and diabetic dyslipidemia in humans."

**From: EurekaAlert 30 March 2009**

### **Omega-3 Fatty Acids Reduce Risk of Advanced Prostate Cancer**

Omega-3 fatty acids appear protective against advanced prostate cancer, and this effect may be modified by a genetic variant in the COX-2 gene, according to a report in *Clinical Cancer Research*, a journal of the American Association for Cancer Research.

"Previous research has shown protection against prostate cancer, but this is one of the first studies to show protection against advanced prostate cancer and interaction with COX-2," said John S. Witte, Ph.D., professor of epidemiology and biostatistics at the University of California San Francisco.

For the current study, researchers performed a case-control analysis of 466 men diagnosed with aggressive prostate cancer and 478 healthy men. Diet was assessed by a food frequency questionnaire and researchers genotyped nine COX-2 single nucleotide polymorphisms.

Researchers divided omega-3 fatty acid intake into four groups based on quartiles of intake. Men who consumed the highest amount of long chain omega-3 fatty acids had a 63 percent reduced risk of aggressive prostate cancer compared to men with the lowest amount of long chain omega-3 fatty acids.

The researchers then assessed the effect of omega-3 fatty acid among men with the variant rs4647310 in COX-2, a known inflammatory gene. Men with low long chain omega-3 fatty acid intake and this variant had a more than five-fold increased risk of advanced prostate cancer. But men with high intake of omega-3 fatty acids had a substantially reduced risk, even if they carried the COX-2 variant.

"The COX-2 increased risk of disease was essentially reversed by increasing omega-3 fatty acid intake by a half a gram per day," said Witte. "If you want to think of the overall inverse association in terms of fish, where omega-3 fatty acids are commonly derived, the strongest effect was seen from eating dark fish such as salmon one or more times per week."

**From: Nutrition & Health News, Nutrition Horizon 25 Mar 2009**

### **Diabetics on High-Fiber Diets might need Extra Calcium**

The amount of calcium your body absorbs might depend, in part, on the amount of dietary fiber you consume. Researchers at UT Southwestern Medical Center report that patients with noninsulin-dependent diabetes (type 2) excreted less calcium through their urine when they consumed 50 grams of fiber a day than when they ate 24 grams a day. Excreting less calcium indicates that they absorbed less of the mineral.

"We already know that fiber helps improve your cholesterol and glucose control and improves your bowel regularity. Our new findings suggest that dietary fiber reduces the body's capacity to absorb calcium," said Dr. Abhimanyu Garg, professor of internal medicine and an investigator in the Center for Human Nutrition at UT Southwestern. He is senior author of a study appearing online in *Diabetes*

Care. "Because more calcium equals better bone health, we recommend that people on high-fiber diets talk to their physician about increasing their dietary calcium as well, in order to get the most benefit from both."

Dr. Garg said it's important to speak with a physician or a registered dietitian before increasing your calcium intake because excessive levels may cause kidney stones. The American Diabetes Association (ADA) recommends a daily intake of 24 grams of dietary fiber, but the average American consumes about 14 to 15 grams of fiber a day.

Sometimes called "roughage," dietary fiber is the indigestible portion of plant foods that pushes food through the digestive system, absorbing water and easing defecation. Calcium is a nutrient found in food that is absorbed by the body and then excreted in urine, feces or sweat. It is the most abundant mineral in the human body.

Prior research at UT Southwestern has shown that a high intake of dietary fiber, mostly from fruits and vegetables, lowers blood glucose levels and leads to decreased insulin levels in the blood, as well as lowering blood lipid concentrations in patients with type 2 diabetes, the most prevalent type of diabetes.

For the current study, 13 patients with type 2 diabetes ate either a high-fiber diet (50 grams per day) or the moderate-fiber diet (24 grams per day) recommended by the ADA for six weeks, then switched to the other diet for six weeks. All participants stayed at UT Southwestern's Clinical and Translational Research Center (CTRC) for the final week of each six-week period.

CTRC staff prepared both diets so that they contained the same number and proportion of calories from carbohydrates, fats and proteins, as well as an equal amount of minerals such as calcium, phosphorous, magnesium, sodium and potassium. The high-fiber diet included numerous fiber-rich foods including cantaloupe, grapefruit, papaya, okra, winter and zucchini squash, granola and oatmeal. No supplements were used.

"The reduction of urinary calcium excretion on high-fiber diets tells us that the amount of dietary fiber has a direct impact on calcium absorption," Dr. Garg said. "In other words, the participants excreted less calcium on the high-fiber diet because the additional fiber caused their bodies to absorb less calcium."

Though most of the additional fiber in the high-fiber diet was soluble fiber, Dr. Garg said he cannot say for sure whether soluble or insoluble fiber affects calcium absorption. "Generally, more fiber of either type is beneficial," he said. "We should encourage people to try food sources rich in fiber and calcium such as spinach, broccoli, figs, papaya, artichoke, okra, beans, mustard and turnip greens, and cactus pads."

Other UT Southwestern researchers involved in the study were Dr. Meena Shah, lead author and clinical associate professor of clinical nutrition; Dr. Manisha Chandalia, clinical associate professor of internal medicine with the Center for Human Nutrition; Beverley Adams-Huet, assistant professor of clinical sciences; Linda Brinkley, former research dietitian; Dr. Khashayar Sakhaee, chief of mineral metabolism; and Dr. Scott Grundy, director of the Center for Human Nutrition.

**From: Medical News Today 25 Mar 2009**

## **Eating Soy Early in Life May Reduce Breast Cancer Among Asian Women**

Asian-American women who ate higher amounts of soy during childhood had a 58 percent reduced risk of breast cancer, according to a study published in *Cancer Epidemiology, Biomarkers and Prevention*, a journal of the American Association for Cancer Research.

"Historically, breast cancer incidence rates have been four to seven times higher among white women

in the U.S. than in women in China or Japan. However, when Asian women migrate to the U.S., their breast cancer risk rises over several generations and reaches that of U.S. white women, suggesting that modifiable factors, rather than genetics, are responsible for the international differences. These lifestyle or environmental factors remain elusive; our study was designed to identify them," said Regina Ziegler, Ph.D., M.P.H., a senior investigator in the NCI Division of Cancer Epidemiology and Genetics (DCEG).

The current study focused on women of Chinese, Japanese and Filipino descent who were living in San Francisco, Oakland, Los Angeles or Hawaii. Researchers interviewed 597 women with breast cancer and 966 healthy women. If the women had mothers living in the United States, researchers interviewed those mothers to determine the frequency of soy consumption in childhood.

Researchers divided soy intake into thirds and compared the highest and lowest groups. High intake of soy in childhood was associated with a 58 percent reduction in breast cancer. A high level of soy intake in the adolescent and adult years was associated with a 20 to 25 percent reduction. The childhood relationship held in all three races and all three study sites, and in women with and without a family history of breast cancer. "Since the effects of childhood soy intake could not be explained by measures other than Asian lifestyle during childhood or adult life, early soy intake might itself be protective," said the study's lead investigator, Larissa Korde, M.D., M.P.H., a staff clinician at the NCI's Clinical Genetics Branch.

"Childhood soy intake was significantly associated with reduced breast cancer risk in our study, suggesting that the timing of soy intake may be especially critical," said Korde. The underlying mechanism is not known. Korde said her study suggests that early soy intake may have a biological role in breast cancer prevention. "Soy isoflavones have estrogenic properties that may cause changes in breast tissue. Animal models suggest that ingestion of soy may result in earlier maturation of breast tissue and increased resistance to carcinogens."

As provocative as the findings are, Ziegler cautioned that it would be premature to recommend changes in childhood diet. "This is the first study to evaluate childhood soy intake and subsequent breast cancer risk, and this one result is not enough for a public health recommendation," she said. "The findings need to be replicated through additional research."

**From:** <http://www.nutritionhorizon.com/home/viewarticle.rails?id=40818>

## **Scientists Discover why a Low GI Meal makes you feel Full**

Eating a meal with a low GI (glycaemic index) increases gut hormone production which leads to suppression of appetite and the feeling of fullness. This is the finding of new research being presented at the annual Society for Endocrinology BES meeting in Harrogate.

Researchers from King's College London studied the effects of a low versus high GI meal on levels of gut hormones. This is the first study to provide clues as to how a low GI meal produces satiety.

GI is a ranking assigned to carbohydrates according to their effect on the body's blood sugar levels. A low GI meal takes longer to digest and releases sugar into the bloodstream more slowly than a high GI meal. High GI foods include white bread, croissants and cornflakes, whereas granary bread, milk and most fruit and vegetables are all classed as low GI foods.

A low GI diet is known to cause reduced appetite(1) but the mechanisms behind this have so far remained unknown. To address this, Dr Reza Norouzy and colleagues at King's College London looked at the effects of a single low versus high GI meal on gut hormone levels in twelve healthy volunteers. Each participant ate an identical medium GI meal for dinner, fasted overnight, and was given either a low (46) or high (66) GI meal for breakfast. Blood samples were then taken every 30 minutes for 150 minutes, and levels of the gut hormone glucagon-like peptide 1 (GLP-1) and insulin

measured. GLP-1 is a hormone produced by the gut that has been shown to cause a feeling of fullness and suppression of appetite(2).

Volunteers who ate a low GI breakfast had 20% higher blood plasma levels of GLP-1 (area under curve =  $4839 \pm 1831$ ) and 38% lower levels of insulin ( $10088 \pm 4757$ ), compared to those who had consumed a high GI breakfast ( $3865 \pm 1630$  and  $16245 \pm 7600$  respectively). These results show for the first time that eating a low GI meal increases GLP-1 production and suggest a physiological mechanism as to why a low GI meal makes you feel fuller than a high GI meal.

Researcher Dr Reza Norouzy said "Our results show for the first time the direct effect of a single GI meal on gut hormone levels. We already know that the hormone GLP-1 and a low GI meal independently lead to suppression of appetite. This study builds on these findings by providing a physiological mechanism to explain how a low GI meal makes you feel fuller than a high GI meal. GLP-1 is one of the most potent hormones for suppressing appetite. Our results suggest that low GI meals lead to a feeling of fullness because of increased levels of GLP-1 in the bloodstream. This is an exciting result which provides further clues about how our appetite is regulated, and offers an insight into how a low GI diet produces satiety. This is a preliminary study that only involved a small number of people. We now need expand these findings and look at the effects of low versus high GI meals in a larger cohort of people."

[ScienceDaily \(Mar. 18, 2009\)](#)

### **Vitamin C intake linked to lower risk of gout in men**

Men with higher vitamin C intake appear less likely to develop gout, a painful type of arthritis, according to a report in the March 9 issue of *Archives of Internal Medicine*, one of the JAMA/Archives journals.

"Gout is the most common type of inflammatory arthritis in men," the authors write as background information in the article. "Epidemiologic studies suggest that the overall disease burden of gout is substantial and growing. The identification of the risk factors for gout that are modifiable with available measures is an important first step in the prevention and management of this common and excruciatingly painful condition."

Hyon K. Choi, M.D., Dr.P.H., then of University of British Columbia, Vancouver, and now of Boston University School of Medicine, and colleagues examined the relationship between vitamin C intake and gout in 46,994 men between 1986 and 2006. Every four years, the men completed a dietary questionnaire, and their vitamin C intake through food and supplements was computed. Every two years, participants reported whether they had been diagnosed with or developed symptoms of gout.

During 20 years of follow-up, 1,317 men developed gout. Compared with men who had a vitamin C intake of less than 250 milligrams per day, the relative risk of gout was 17 percent lower for those with a daily intake of 500 to 999 milligrams, 34 percent lower for those with an intake of 1,000 to 1,499 milligrams per day and 45 percent lower for those with an intake of 1,500 milligrams per day or higher. For every 500-milligram increase in their vitamin C intake, men's risk for gout appeared to decrease by 17 percent. Compared with men who did not take vitamin C supplements, those who took 1,000 to 1,499 supplemental milligrams per day had a 34 percent lower risk of gout and those who took 1,500 supplemental milligrams per day had a 45 percent lower risk.

Vitamin C appears to reduce levels of uric acid in the blood, the authors note; a buildup of this naturally occurring compound can form crystal deposits in and around joints, leading to the pain, inflammation and swelling associated with gout. Vitamin C may affect reabsorption of uric acid by the

kidneys, increase the speed at which the kidneys work or protect against inflammation, all of which may reduce gout risk, the authors note.

"Given the general safety profile associated with vitamin C intake, particularly in the generally consumed ranges as in the present study (e.g., tolerable upper intake level of vitamin C of less than 2,000 milligrams in adults according to the Food and Nutrition Board, Institute of Medicine), vitamin C intake may provide a useful option in the prevention of gout," they conclude. *Arch Intern Med.* 2009;169[5]:502-507.

**From: News Medical Net 10 March 2009**

### **A diet rich in calcium aids weight loss**

Québec City, March 12, 2009 – Boosting calcium consumption spurs weight loss, according to a study published in the most recent issue of the *British Journal of Nutrition*, but only in people whose diets are calcium deficient.

Angelo Tremblay and his team at Université Laval's Faculty of Medicine made the discovery in a 15-week weight loss program they conducted on obese women. The participants consumed on average less than 600 mg of calcium per day, whereas recommended daily intake is 1000 mg. In addition to following a low calorie diet, the women were instructed to take two tablets a day containing either a total of 1200 mg of calcium or a placebo. Those who took the calcium tablets lost nearly 6 kg over the course of the program, the researchers found, compared to 1 kg for women in the control group.

"Our hypothesis is that the brain can detect the lack of calcium and seeks to compensate by spurring food intake, which obviously works against the goals of any weight loss program," said Angelo Tremblay, holder of the Canada Research Chair in Environment and Energy Balance. "Sufficient calcium intake seems to stifle the desire to eat more," he added.

Consuming sufficient calcium is therefore important to ensuring the success of any weight loss program. According to the researcher, over 50% of obese women who come to the clinic run by his research team do not consume the recommended daily intake.

Professor Tremblay and his team have studied the link between calcium and obesity for several years. Their first findings, published in 2003, revealed that women who consumed diets poor in calcium had more body fat, bigger waistlines, and higher bad cholesterol levels than those who consumed moderate or large amounts of calcium. A second study showed that the more people reduced their consumption of dairy products over the six-year period examined, the more weight and body fat they gained and the bigger their waistlines grew. In 2007, Angelo Tremblay and his team established a direct link between calcium and a lower cardiovascular risk profile among dieters.

**From: EurekAlert 12 March 2009**

### **Cinnamon may improve blood sugar levels**

A study published in *The American Journal of Clinical Nutrition* shows that consumption of 3 g of cinnamon a day may improve people's ability to control their blood glucose levels. The study involved 15 people (nine men and six women; average age 24.6) and looked at blood insulin levels after ingesting cinnamon. The subjects had an average BMI of 22.5 kg/m<sup>2</sup> and no history of diabetes. They were randomly assigned to consume 300 g of rice pudding with 0, 1, or 3 g of cinnamon added. All of the participants consumed all the meals in a random order, with one week between each. No significant effect on the rate of gastric emptying, levels of satiety, and blood glucose were reported. However, the insulin response one or two hours after the meal with 3 g of cinnamon was significantly

lower than levels after consuming the reference meal containing no cinnamon. Additionally, the change in GLP-1 (glucagon-like peptide-1) response was significantly higher after ingestion of the pudding with 3 g of cinnamon, compared to the reference level. According to the researchers, there appeared to be an association between the amount of cinnamon ingested, the delay in gastric emptying, and the reduction in postprandial blood glucose concentrations. Gastric emptying, together with other factors, regulates the postprandial blood glucose response and a delay in gastric emptying leads to a lower postprandial blood glucose concentration. The researchers concluded that ingestion of 3 g of cinnamon reduced postprandial serum insulin and increased GLP-1 concentrations without significantly affecting blood glucose, glucose-dependent insulinotropic polypeptide (GIP), ghrelin concentration (a peptide hormone secreted by cells in the lining of the stomach), satiety, or GER (gastric emptying rate) in healthy subjects.

**From: IFT Weekly Newsletter 11 March 2009**

### **Prebiotics may reduce infections in infants**

A study published in *Clinical Nutrition* shows that the addition of prebiotics to infant formula may reduce intestinal and respiratory infections in healthy infants during the first year of age. The researchers followed 342 infants in a prospective, randomized, placebo-controlled, open trial over 12 months. The infants were randomized to receive either a formula containing a mixture of galacto- and fructo-oligosaccharides (0.4 g of prebiotic per 100 mL of formula) or a control formula. Over the 12 months, the researchers documented the incidence of intestinal and respiratory tract infections and monitored their anthropometric measures.

The researchers found that the incidence of gastroenteritis was lower in the group receiving prebiotics than in the control group, with only 0.12 episodes per child during the 12 months, compared to 0.29 episodes per child in the control group. In addition, the number of infants who experienced more than three upper respiratory tract infections was 17% less amongst those receiving formula with prebiotics, than those in the control group. Finally, the number of children with multiple antibiotic courses in the 12 months was lower in children receiving prebiotics.

**From: IFT Weekly Newsletter 11 March 2009**

### **Green, Black Tea Can Reduce Stroke Risk, Research Suggests**

Drinking at least three cups of green or black tea a day can significantly reduce the risk of stroke, a new UCLA study has found. And the more you drink, the better your odds of staving off a stroke.

The UCLA researchers conducted an evidence-based review of all human observational studies on stroke and tea consumption found in the PubMed and Web of Science archives. They found nine studies describing 4,378 strokes among nearly 195,000 individuals, according to lead author Lenore Arab, a professor of medicine in the division of general internal medicine and health services research at the David Geffen School of Medicine at UCLA.

"What we saw was that there was a consistency of effect of appreciable magnitude," said Arab, who is also a professor of biological chemistry. "By drinking three cups of tea a day, the risk of a stroke was reduced by 21 percent. It didn't matter if it was green or black tea."

And extrapolating from the data, the effect appears to be linear, Arab said. For instance, if one drinks three cups a day, the risk falls by 21 percent; follow that with another three cups and the risk drops another 21 percent.

This effect was found in tea made from the plant *Camellia sinensis*, not from herbal teas.

There are very few known ways to reduce the risk of stroke, Arab said. And developing medications for stroke victims is particularly challenging, given that the drug has to get to the stroke-damaged site quickly because damage occurs so fast. Arab said that by the time a stroke victim gets medical care, it's nearly too late to impede the damage.

"That's why these findings are so exciting," she said. "If we can find a way to prevent the stroke, or prevent the damage, that is simple and not toxic, that would be a great advance."

Though no one is certain which compounds in tea are responsible for this effect, researchers have speculated that the antioxidant epigallocatechin gallate (EGCG) or the amino acid theanine may be what helps. Antioxidants are believed to help prevent coronary artery disease.

"And we do know that theanine is nearly 100-percent absorbed," Arab said. "It gets across the blood-brain barrier and it looks a lot like a molecule that's very similar to glutamate, and glutamate release is associated with stroke.

"It could be that theanine and glutamate compete for the glutamate receptor in the brain," she added.

Although a randomized clinical trial is needed to confirm this effect, the findings suggest that drinking three cups of green or black tea a day could help prevent an ischemic stroke.

The study results, published in the online edition of *Stroke: Journal of the American Heart Association*, were presented Feb. 19 at the American Heart Association's annual International Stroke Conference in San Diego, Calif.

Study co-authors with Arab are Weiqing Liu, a senior statistician in the UCLA Department of Biomathematics, and David Elashoff, associate professor of medicine in the division of general internal medicine and health services research at the David Geffen School of Medicine at UCLA.

**From: Science Daily March 4, 2009**

## **Discovery of Missing Link between Fructose, Insulin Resistance**

A new study in mice sheds light on the insulin resistance that can come from diets loaded with high-fructose corn syrup, a sweetener found in most sodas and many other processed foods. The report in the March issue of *Cell Metabolism*, a Cell Press publication, also suggests a way to prevent those ill effects.

The researchers showed that mice on a high-fructose diet were protected from insulin resistance when a gene known as transcriptional coactivator PPARγ coactivator-1b (PGC-1b) was "knocked down" in the animals' liver and fat tissue. PGC-1b coactivates a number of transcription factors that control the activity of other genes, including one responsible for building fat in the liver.

"There has been a remarkable increase in consumption of high-fructose corn syrup," said Gerald Shulman of Yale University School of Medicine. "Fructose is much more readily metabolized to fat in the liver than glucose is and in the process can lead to nonalcoholic fatty liver disease," he continued. NAFLD in turn leads to hepatic insulin resistance and type II diabetes.

Metabolic syndrome and type 2 diabetes have both reached epidemic proportions worldwide with the global adoption of the westernized diet along with increased consumption of fructose, stemming from the wide and increasing use of high-fructose corn syrup sweeteners, the researchers noted.

High-fructose corn syrup, which is a mixture of the simple sugars fructose and glucose, came into use in the 1970s and by 2005 the average American was consuming about 60 pounds of it per year.

Overall, dietary intake of fructose, which is also a component of table sugar, has increased by an estimated 20 to 40 percent in the last thirty years.

Earlier studies had established that fructose is more readily converted to fatty acids than glucose and had also linked high-fructose diets to high blood levels of triglycerides (a condition known as hypertriglyceridemia), NAFLD and insulin resistance. While researchers had implicated a gene known as SREBP-1, a master regulator of lipids' manufacture in the liver, much about the underlying molecular connections between fructose and those metabolic disorders remained mysterious.

In the new study, the researchers zeroed in on PGC-1b, a gene known for boosting SREBP-1 levels. To test its role in the effects of fructose, they blocked its activity in mice fed a diet high in that sugar for four weeks.

Those treatments improved the animals' metabolic profiles by lowering levels of SREBP-1 and other fat-building genes in their livers. The mice also showed a reversal of their fructose-induced insulin resistance and a threefold increase in glucose uptake in their fat tissue.

"These data support an important role for PGC-1b in the pathogenesis of fructose-induced insulin resistance and suggest that PGC-1b inhibition may be a therapeutic target for treatment of NAFLD, hypertriglyceridemia, and insulin resistance associated with increased de novo lipogenesis," the researchers concluded.

The new study has "revealed the transcriptional coactivator PGC-1b as a missing link between fructose intake and metabolic disorders," wrote Carlos Hernandez and Jiandie Lin of the University of Michigan Medical Center, Ann Arbor in an accompanying commentary. "The findings ... support the emerging role of gene/environment interaction in modulating the metabolic phenotype and disease pathogenesis. Thus, perturbations of the same regulatory motif may produce vastly different metabolic responses, depending on the specific combinations of dietary nutrients," they continued.

From: <http://www.medicalnewstoday.com/articles/141074.php>

## **Grape Extracts May Be Effective Against Harmful Gut Bacteria**

In a new study researchers from Clemson University found various grape extracts and their compounds to be effective at inhibiting *Helicobacter pylori*, one of the leading causes of gastritis in humans.

*H. pylori* is the bacterial agent most commonly associated with peptic ulcers, gastritis, mucosa-associated lymphoid tissue lymphoma, and gastric cancer. Antibiotic therapy has proven effective at providing initial relief, however resistance can develop over time and relapse can occur.

Previous studies have examined other natural plant extracts with anti-*H. pylori* activity such as garlic, broccoli, cranberries and green tea, however, grapes have yet to be evaluated despite being well known for their high levels of antioxidants and polyphenols.

The antibacterial effects of extracts from red, white, black and muscadine grapes as well as the pure compounds resveratrol, ellagic acid, and myricetin were tested for anti-*H. pylori* activity using agar dilution, laser scanning microscopy and cell proliferation.

Following 24 hour treatment, results showed that muscadine grape skin extract had the highest anti-*H. pylori* effect, followed by muscadine grape synergy and seed extract. Additionally, two of the three compounds, resveratrol and ellagic acid, also inhibited *H. pylori*.

"In this study, grape extracts and their compounds were effective at inhibiting H. pylori in vitro, with highest efficacy by muscadine grape skin extract," say the researchers. (Brown et al. **Antibacterial Effects of Grape Extracts on Helicobacter pylori**. *Applied and Environmental Microbiology*, 2008; 75 (3): 848 DOI: [10.1128/AEM.01595-08](https://doi.org/10.1128/AEM.01595-08))

From: Science Daily March 4, 2009



## Regulatory News

### Half of all consumers ignore food labels

**About half of consumers never read the nutrition label before purchasing pre-packaged food, according to a new survey which adds weight to the Guideline Daily Amounts (GDA's) debate.**

The survey of Irish consumers' use and understanding of nutrition labels, carried out by Sarah Keogh, an independent consultant dietician, showed that 61 per cent of males and 40 per cent of females never read the nutrition label before purchase.

Understanding of labels was also limited among consumers with only 32 per cent of the population knowing that there is a difference between salt and sodium and only 10 per cent understanding the difference between energy and calories. The results were highlighted by Ireland's Nutrition and Health Foundation (NHF), which aims to promote healthy lifestyle and tackle obesity.

Dr Muireann Cullen, Manager of the NHF, said that heart attacks, strokes, and various types of cancer are the leading causes of death in Ireland. She added: *"Scientific studies have documented over and over again the role a healthy diet plays in dramatically reducing one's risk of these diseases and at a time when obesity levels are reaching an all time high, the importance of knowing what you are eating cannot be stressed highly enough. Consumers can sometimes find the information on food packages to be confusing. However, once you learn to read a food label, you're well on your way to making healthy food choices."*

The NHF said that GDA's make it easier for people to select and enjoy a mix of foods suited to their individual needs, so it is important consumers can read, understand and use them to make informed choices. Labelling schemes differ between countries and there is currently no legislation regarding a set standard or format for food labelling in Europe. But there is an ongoing debate between the European Parliament and the Council over the possibility of introducing a pan-European food labelling scheme.

The new regulation on food labelling being proposed by the European Commission is similar to the GDA scheme for nutrition labels developed by The Confederation of the Food and Drink Industries of the EU (CIAA). A spokeswoman for the CIAA told FoodNavigator.com that the findings were quite reassuring as the majority of Irish people do use labelling (only 45% are not). She said other studies - such a European Food Information Council study which showed that only one in four UK shoppers looked for nutrition information on food packaging in supermarkets - confirm the findings of the Irish survey and together these *"support the need of a consumer friendly nutrition labelling scheme"*. She added: *"GDA are increasing in usage and understanding throughout Europe (including in Ireland) through familiarity and education. "By providing at-a-glance GDA's, responsible companies are making it easy for consumers to make informed choices concerning their diet."*

Julian Hunt, director of communications at the UK's Food and Drink Federation, said that GDA's are being rolled out by more manufacturers in Ireland as a way of educating consumers. He added: *"Recent research carried out by independent market researcher Millward Brown indicated that 87 per cent of consumers interviewed found GDA's a useful way of providing clear and simple information that told them all they needed to know"*.

### **Consumer tips**

NHF offers advice on reading food labels. As well as understanding GDA's, it recommends paying close attention to serving size and the number of servings per container. It also advises consumers to look for labels with the words fortified, enriched, added, extra, and plus, which indicates additional nutrients such as vitamins and fibre.

Other tips include comparing products, monitoring salt intake and counting calories, particularly for sugar-free or fat-free products.

The survey was based on 536 consumers who were interviewed in supermarkets.

From: Report by Sarah Hills, Food & Drink Europe 24-Feb-2009

### **Testing May Help Verify Foods Labeled Organic**

Organic foods command premium prices at the supermarket, and wherever there is extra money to be made there is a possibility of fraud. Most organic producers adhere to certification standards, but there is little if any product monitoring at the retail level. So an unscrupulous producer could substitute a conventional food for an organic one. After all, organic milk doesn't look any different from ordinary milk, right? Not to a consumer, perhaps, but to a food scientist there are differences. Now a researcher in Germany has demonstrated the feasibility of laboratory testing to determine whether a carton of organic milk is what it says it is.

As described by Joachim Molzentin of the Federal Research Institute of Nutrition and Food in The Journal of Agricultural and Food Chemistry, the testing relies on the fact that in Germany at least, organic milk has higher levels of the fatty acid alpha-Linolenic acid and different carbon-isotope ratios than regular milk. These differences are related to feeding: cows that produce organic milk generally spend more time out to pasture (or consume more pasture-derived feeds like grasses and clover), while cows that produce regular milk eat corn.

To take into account seasonal variations in milk quality, Dr. Molzentin tested nearly 300 samples of organic and regular milk sold at retail in Germany over 18 months. The tests, using gas chromatography and mass spectrometry, showed that organic milk always had an alpha-Linolenic acid concentration above a certain percentage, while regular milk only rarely did (and in those cases the cows were raised in atypical conditions). Organic milk also always had carbon-isotope ratios below a certain level.

The study points out that milk produced in other countries may test differently, depending on dairy farming regulations and practices. Nevertheless, the study shows that without too much effort, it may be possible to ensure that consumers who prefer organic milk are getting what they pay for.

**From: Report by Henry Fountain in The New York Times March 3, 2009**

### **U.S. bill would ban BPA; Europe and Australia find no risk**

U.S. Senator Dianne Feinstein (D-Calif.), Representative Edward Markey (D-Mass.), and Senator Chuck Schumer (D-N.Y.) have introduced H.R. 1523—the Ban Poisonous Additives Act of 2009—to establish a federal ban on the chemical bisphenol A (BPA) in all food and beverage containers. According to the lawmakers, there are scientific papers that have shown evidence of adverse health effects related to BPA. In addition, the National Toxicology Program in the Dept. of Health and Human Services has cited "some concern" that BPA may affect neural development in fetuses,

infants, and children at current human levels. “There have been enough warning signs about the dangers of BPA that we cannot wait to act,” said Schumer. “It’s better safe than sorry. Many manufacturers and retailers have already recognized the danger and have taken steps to get kids’ products containing BPA off store shelves.” In fact, according to a *WebMD* article, earlier in March the top six makers of U.S. baby bottles—Avent, Disney First Years, Gerber, Dr. Brown, Playtex, and Evenflo—agreed to stop using the chemical in their bottles.

The bill would require that reusable beverage containers (including baby bottles and thermoses) that contain BPA not be sold, while other food and beverage containers (such as canned food or formula) containing BPA not be introduced into commerce. Under the bill, if a manufacturer can show that there is no technology available to make a particular food or beverage without the use of BPA, the U.S. Food and Drug Administration can issue renewable one-year waivers to the ban for that particular food or beverage. However, the food and beverage container would have to be labeled to indicate that BPA was used. If the bill, which was referred to the House Committee on Energy and Commerce on March 16, is passed, the ban would take effect 180 days from enactment.

Meanwhile, Australia and New Zealand have gone on record in affirming the safety of bisphenol A and stating their concurrence with the findings of the FDA and the European Food Safety Authority (EFSA). Food Standards Australia New Zealand (FSANZ), an independent statutory agency responsible for setting food standards in the two countries, issued an unequivocal statement that BPA does not cause cancer nor do low levels of exposure to BPA pose a significant health risk.

EFSA recently completed a review of the scientific literature for BPA and determined a maximum daily ‘safe limit’ for BPA. They concluded that the estimated total daily intake of BPA by a bottle-fed baby would be less than 10% of the ‘safe level’ for babies, when the bottles were cleaned using normal domestic conditions, and about 20% of the ‘safe limit,’ when the bottles were cleaned under exaggerated conditions including the use of boiling water or strong solvents. In adults, the estimated daily intake from canned foods and beverages would be about 5% of the ‘safe limit.’ Also, a draft review by the FDA determined that intakes of BPA for the most vulnerable segments of the population were well within the safe level.

**From: IFT Weekly Newsletter 25 March 2009**

### **LEAN Act may unify nutritional labeling laws for prepared foods**

On March 10, U.S. Senators Tom Carper (D-Del.) and Lisa Murkowski (R-Alaska) introduced the Labeling Education and Nutrition (LEAN) Act. This federal Act would require restaurants and grocery stores that serve prepared foods at 20 or more locations to provide consumers calorie information for each menu item. Under the bill, calories would have to be printed directly onto the menu, menu board, or in one of the approved alternative ways, such as a menu insert or a sign next to the menu board. Originally, state restaurant associations were against any labeling requirements, but as the movement gained steam over the last year, support has shifted to a uniform policy to replace the “growing patchwork of regulation.” If enacted, the LEAN Act would not only require a uniform national nutritional standard, it would also provide for a single set of guidelines in how nutrition information is calculated and would provide legal protection for restaurants that follow the law.

“It’s been nearly 20 years since the enactment of the Nutrition Labeling Education Act that requires all packaged foods to include nutrient information,” said Murkowski. “However, there is not a comparable national standard for prepared food. I believe the LEAN Act, which has bipartisan support in both the House and the Senate, will facilitate a national debate on the important issue of menu labeling and raise a broader discussion on health lifestyle choices.”

**From: IFT Weekly Newsletter 18 March 2009**

## **EFSA publishes opinion on nano risk**

The European Food Safety Authority (EFSA) has published its scientific opinion on nanoscience and nanotechnologies in relation to food and feed safety. EFSA's Scientific Committee (SC) has concluded that established international approaches to risk assessment can also be applied to engineered nano materials (ENM). However, the SC also concluded that a case-by-case approach would be necessary and that, in practice, current data limitations and a lack of validated test methodologies could make risk assessment of specific nano products very difficult and subject to a high degree of uncertainty.

This opinion focuses on the use of nanotechnologies, particularly ENMs, in the food and feed chain. It elaborates on approaches and methodologies available for risk assessment of these very small particles but does not address any specific applications of particular ENMs. The European Commission (EC) asked for this opinion because consideration needs to be given as to whether existing risk assessment approaches can be appropriately applied to this new technology.

The EFSA SC recommends that additional research and investigation is needed to address the many current uncertainties and data limitations. Specific recommendations include the following:

- Investigating the interaction and stability of ENMs in food and feed, in the gastro-intestinal tract and in biological tissues.
- Developing and validating routine methods to detect, characterize, and quantify ENMs in food contact materials, food, and feed.
- Developing, improving, and validating test methodologies to assess toxicity of ENMs (including reliability and relevance of test methods).

“The Scientific Committee has concluded that in principle it is possible to undertake risk assessments in this emerging scientific area by making use of available international approaches,” said Vittorio Silano, Chair of EFSA's Scientific Committee. “However, given current data gaps and limitations in a number of cases, it may be very difficult to provide fully satisfactory conclusions.”

**From: IFT Weekly Newsletter 11 March 2009**

## **FDA accepts novel food sterilization process**

The National Center for Food Safety and Technology (NCFST), Illinois Institute of Technology (IIT), and Avure Technologies, Inc., announced that the U.S. Food and Drug Administration (FDA) has accepted the research institute's filing of a new food sterilization process. It represents the first petition to the FDA for the commercial use of pressure-assisted thermal sterilization (PATS) processes for application in the production of low acid foods. The technology improves the quality of thermally processed foods while eliminating the food safety risks associated with bacteria such as *Clostridium botulinum* and its toxins. The PATS process, which combines mild heat with high pressure to produce commercially sterile low acid food products, underwent a validation process and safety assessment by NCFST researchers and its Dual Use Science and Technology (DUST) consortium members. PATS represents an alternative to retort processing, which involves exposure of the food to high temperatures. The successful FDA filing allows NCFST to proceed with the production of demonstration products using the PATS process.

**From: <http://www.foodhaccp.com/1news/0305091.html>**

