

## Editorial

Nutritional Labelling has been a much talked subject among food manufacturers, consumers, regulators, food scientists and nutritionists. This is good information consumers would like to have so they can choose from among many food products of different brands and qualities. They are getting aware of nutrition and its importance in health. They would like to count calories so they do not consume too many of them. They would also like to get essential nutrients like vitamins and minerals as well as some like fibre that would help them keep some ailments away. All this requires that product labels give this information that would be useful to consumers.

When notifications are gazetted, it is seen that besides giving the information to consumers to make them nutrition and food safety savvy, there are many other undesirables that creep in and make the life of industry personnel miserable. When GSR 491 was notified, there were many ambiguities that needed to be streamlined. There were problems of allergenic substances declaration, detailed nutritional information, proprietary food products licence, quantitative declaration of ingredients (QUID) etc. that needed reconsideration. After almost two years, there is another notification that has removed many difficulties from the earlier one, but still has some problems.

One example is that the new notification requires amount of sugar to be declared besides the declaration of carbohydrate. Now word sugar is used for many substances. Cane sugar (sucrose) is commonly called sugar. There are other sugars like glucose, fructose, lactose etc. very commonly present and/or used in food products. Substances like jaggery also contain sugars although some consumers may not be aware. Again whether it is sugar that is only added in the food preparation or it also includes sugar originally in the ingredients (like fruits contain sugars). These are issues that are very relevant from industry point of view as they do not want regulatory problems of mandatory declaration.

Also consumers should know exactly what sugar is being declared. Some may be diabetic and others may want to reduce calories from sugars for various reasons. There are also nutritionists and dieticians that formulate diets for sports persons or for certain population whose energy intake and availability need to be monitored. This and other issues need to be properly considered before the government makes rules. An excellent thought provoking article in this issue looks at regulatory process from that perspective and puts some relevant questions for stakeholders to consider.

We have also organised a conference for you, Fi-India 2008 on Novel Foods for Modern Consumers and hope to see you there in October. With season's greetings to all

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## **Fruit Juices: Dr. J. S. Pai**

Juice is prepared by squeezing fruits or vegetables. Juice may be prepared from fresh fruits and vegetables using a variety of juicers. Sometimes treatments may be necessary to macerate fruit or vegetable to pulp that could be easily extracted to get juice. Some juices like apple juice are filtered and also clarified either mechanically or using enzymes and chemicals to give them clarity, but others like orange juice are preferred cloudy by consumers so are not clarified. Juices are marketed as such after processing to preserve them as canned, pasteurised or aseptically packed. Some products are evaporated and made into concentrated form and frozen. These may be diluted with water to reconstitute as single strength. There are also dried powders made that could be reconstituted by water.

There are many fruits like apple, orange, grape, pineapple, mango, pomegranate, guava, grapefruit, cranberry etc. and some vegetables like tomato, carrot etc. from which juices are made. There are also some blends made from different fruits. There are also several juice bars where either concentrated juice products are diluted and served as single strength juices or juice centres may squeeze the fresh fruits to prepare juices.

There are many juice containing products. In UK or US, products labelled as pure juice or 100% juice may not contain anything other than juice. The sweetened juices may contain added sugar. There are many other fruit juice based products such as nectar, beverage or drink. These may contain sugar or other sweeteners besides many other thickeners, colours and flavours. In India, unsweetened juice must contain 100% juice but other products may contain less. Sweetened juice may contain 85% juice, squash, cordial, crush and syrup may contain 25% juice, mango nectar may contain 20% juice while the fruit beverage or drink may contain just minimum of 10% juice.

### **Fruit Juices & Obesity**

Fruit juice consumption has increased in recent years in many countries as consumers perceive them to be healthful. However, there is also some opposition to their consumption as opposed to eating whole fruits. This is mostly because of reduced fibre content as compared to whole fruits, and processing may be causing some losses to heat-sensitive vitamins. There is also some suggestion about relation of high amount of fructose together with low fibre with growing diabetes epidemic. Some are concerned about the high consumption of fruit juices by children and filling up on them so they consume less of foods containing other essential nutrients including proteins, essential fatty acids and other vitamins and minerals.

2005 Dietary Guidelines for Americans (My Pyramid) as well as recommendations from American Academy of Paediatrics (AAP) allow 4 to 6 oz of fruit juice per day for children from 1 to 6 years and 8 to 12 oz for those from 7 to 18 years. According to 2005 Guidelines, 1 cup of fruit or 100% fruit juice or ½ cup of dried fruit are all considered equal in fruit group.

Some years ago, physicians in the US advised parents not to let their children drink too much fruit juice because it may cause obesity. However, today the advice is different. A study done recently found no association between childhood obesity and 100 percent fruit juice with no added sugar.

Published in May/June issue of the American Journal of Lifestyle Medicine, statistics about overweight American children are alarming. Over past 20 years, there has been an increased prevalence of overweight in all ages and ethnic groups. In 2002, 10.3% children 2-5 years of age were overweight compared to 7.2% in 1994. In males and females 12-17 years of age, waist circumference increased by 4% and 5.2% respectively, between 1994 and 2004. In the article by O'Neil of Louisiana State University and Nicklas of Baylor College of Medicine, after examining 21 studies about relationship between consumption of 100% fruit juice by children and adolescent, they found no systematic association between consumption of 100% fruit juice and overweight in children and adolescents. They suggested that health professionals and policy makers should objectively review the literature on all beverages and encourage consumption of healthful beverages including water, milk and 100% fruit juice. Data supports consumption of moderate amounts of pure fruit juices and this may help children meet current recommendations for fruit.

The editorial endorsed this view and stated that these findings are very important as pure juices are nutrient dense and their consumption is an excellent way to help children meet the dietary guidelines for Americans.

### **Research findings on juice consumption and weight**

There are misconceptions about the fruit juices in children's diet. Scientific research does not support the belief that consumption of 100% fruit juice contributing to overweight problems in children or adults. Many research studies have been conducted to verify if such a link exists and they show no such connection with consumption of 100% fruit juice up to 12 ounces per day.

Nicklas et al. (Arch Pediatr Adolesc Med. 2008;162(6):557-565) investigated 100% juice consumption by children aged 2 to 11 years with up to 12 ounces daily consumption. Results showed significantly higher intakes of nutrients including vitamin C, B6, B2, folate, potassium, magnesium and iron with lower intakes of total fat, saturated fatty acids and added sugar. No significant differences were found in weight status and the amount of 100% juice consumed. It was concluded that on average, children consumed less than the maximum amount of 100% juice recommended by American Academy of Pediatrics with those consuming 100% juice had better nutrient intake than non-consumption group. 100% juice consumption was not associated with being overweight in these children. (<http://archpedi.ama-assn.org/cgi/content/full/162/6/557>)

In another study, O'Neil et al. (American J. of Lifestyle Medicine, May-June 2008 – Online) reviewed nine studies exploring relationship between 100% fruit juice consumption and weight in children and adolescent and found only 3 studies reported any

relationship whereas 6 showed no such relation. Studies showing relations had faulty subject selection with 2 studies were done with overweight children. None of these 3 studies were nationally representative and used small, local convenience samples. Data supports consumption of 100% fruit juice in moderate amounts and it may help children meet the current recommendations for fruit.

Faith et al. (Pediatrics, November 2006, 118:5:2066-75) studied preschool children and found that excessive consumption of fruit juice (24-30 ounces per day) promoted obesity but only in children who were already overweight. No association was found in normal weight children. Excessive consumption was far exceeding recommendations for preschool children, which is 4 to 6 ounces. Also overweight children did not show any weight gain when consuming recommended amounts of fruit juices.

Some other studies with large number of children also did not find any association with fruit juices with childhood obesity (Newby et al. J Am Diet Assoc July 2004, 104:7:1086-94 and Field et al. Intl. J of Obesity, 2003, 27:821-826).

### **Health Benefits of Fruit Juices**

Juices are considered nutritious and healthy. They contain many nutrients and phytochemicals that make consumption of these as healthful. Orange juice is rich in vitamin C, while prune juice contains good amount of iron and is also beneficial for digestive health. Cranberry juice has been known for alleviating bladder infections it is now shown that it prevents bacteria settling on bladder. Nowadays health professionals have changed their advice to parents and are recommending consumption of pure fruit juices. There are some fruits juices that have been identified as having powerful health benefits such as pomegranate, orange and cranberry juices.

#### **Pomegranate juice**

Pomegranate juice has received much attention recently. It is a rich source of antioxidants and has been shown to lower LDL cholesterol. It may also slow the growth of prostate cancer as it stabilises the levels of PSA (Prostate Specific Antigen), the protein in blood that is a measure of how rapidly prostate cancer is progressing. Another study found that pomegranate juice may increase blood flow to heart in patients with ischemic coronary heart disease.

#### **Orange Juice**

This popular breakfast drink may help prevent recurrence of painful kidney stones. A study has found that daily glass of orange juice can reduce kidney stone incident.

#### **Cranberry juice**

It has been a home remedy for urinary tract infections (UTI) for long. It has now been shown that cranberry juice to be helpful even before UTI develops. It is effective in preventing UTI, but it is not been proven to cure an existing infection.

There are other studies that have indicated that increased consumption of fruits and vegetable reduces one's risk of developing Alzheimer's disease. In 2006 a study showed that people drinking fruit and vegetable juices more than three times a week were 76% less likely to develop Alzheimer's than those who had juice less than once a week. (<http://www.sciencedaily.com/releases/2007/09/070905175237.htm>)

### **Phytochemicals in Fruit Juices**

These are plant substances having bioactivity and are found in plant foods like fruits, vegetables and their juices and other products. Many of these are found to protect against diseases and help promote good health. There are many antioxidants that inhibit the oxidative degradation and are very important group of phytochemicals. Some are becoming quite familiar to consumers including lycopene, resveratrol, lutein, limonene, quercetin etc. that are being studied for their healthful benefits upon consumption of fruits and fruit products including juices containing them.

Juices have been found to be comparable in reducing risk compared to whole fruits and vegetables according to researchers. Review of many studies published in Intl J of Food Science & Nutrition (2006) shows that reduction of risk of diseases including cancer and cardiovascular diseases is due to the effects of both fibre and antioxidants. The review observes that there is no evidence that pure fruit and vegetable juices are less beneficial than whole fruit and vegetables and that appropriate amounts of juices should be included in diets of both children and adults as per guidelines of health authorities. ([www.rdejg-nutrition.org/pdfs/2006IJFSNfruitjuice.pdf](http://www.rdejg-nutrition.org/pdfs/2006IJFSNfruitjuice.pdf))

Recent study in France explores how the natural compounds, flavonoids help reduce age-related decline in mental function. Flavonoids are found in fruits, vegetables, tea, coffee and many other plant materials. Scientists studied over 1600 normal subjects over 65 years monitoring their intake of flavonoids over 10 years. It was found that those who consumed most flavonoids had the least mental decline as observed by cognitive function tests. Results published in Am J of Epidemiology in June indicated that increasing consumption of fruits and vegetables containing nutrients such as vitamins, fibre, antioxidants, etc. is more important than just taking supplements.

Consumption of fruit and vegetable juices has been linked to reduced risk of Alzheimer's disease as per another study published in Am J of Medicine, Sept 06. Scientists found that those who drank 3 or more servings of fruit and vegetable juices per week had 76% lower risk of developing Alzheimer's disease than those who had less than once per week. This study was carried out in older Japanese population living in Japan, Hawaii and Seattle, Washington over a period of 2 to 10 years. Researchers indicated that more research is necessary to indicate the mechanism.

There are some skeptics who suggest that benefits are more with fruits and vegetables than their juices. In some cases it may be possible but many studies have suggested that most benefits are with either whole fruits and vegetables or their juices. One study by French researchers published in April 2008 in *Molecular Nutrition & Food Research* indicates that fruit juices may have some health benefits over whole fruit. Fruit juices were found to have a more powerful anti-atherosclerotic effect in animals than the fruit itself, showing for the first time that processing fruit may have a positive impact on its health benefits.

Juicing may affect the content of phenolic compounds, the powerful antioxidants in fruits. Hamsters were fed grape or apple or their juices or water along with a high fat diet known to promote atherosclerosis. Hamsters consumed fruit equivalent to 3 apples or 3 bunches of grapes daily. For juice, they drank equivalent of 4 glasses daily. Animal given fruit or fruit juices, had lower accumulation of cholesterol, less oxidative stress, and less fat accumulation in aorta compared with those on water. In both, grape and apple diet, juices had the strongest effect, grape juice being more effective than apple juice.

### **Juices Are Healthy**

Drinking fruit juices especially 100% juices, has long been thought to be a healthy habit for both adults and children. More recently, people have become confused because of the sweet taste of juices especially since sugar lately has come under some criticism. There are fears of juices affecting dental health and consuming too much might affect consumption of other foods necessary for the balanced diet. However, drinking fruit juices has not been shown to be detrimental to health in any way. It bears no relation with obesity when consumed in recommended allowance. In fact, research has shown juices to be equivalent to fruits in most respect and at least one study has shown it to be better than fruit.

Another point that must be considered is that fruits and vegetable juice manufacturers ensure that they get their raw materials at the peak of their quality including nutrients. Care is taken to transport and store them under the optimum conditions to ensure maintenance of their peak quality and nutrients. Processing also takes similar care so juices at times contain very high quantities of nutrients and other phytochemicals, especially the sensitive ones, compared to fresh fruits and vegetables that at times may not have been taken as good a care. Fruit and vegetable juices are certainly healthful and nutritious and may be consumed by all in quantities recommended by various bodies.

## **Labelling: The Road Ahead: Dr. J. I. Lewis, Marico India**

When you chose to drive to your holiday destination, apart from enjoying the countryside you constantly look for milestones – Pune 168km. These simple words tell you a lot – you are in the right direction, how far away you are or an estimation of time of arrival or the need for a pit stop – spot of lunch, cup of coffee or fill of gas. This is labelling – simple, informative and derivative. The purpose of any labelling exercise should be the same – destination, direction, and derivative.

Recent spate of labelling rules, variously known as GSR 694, 491, 380 debated over two and half years apparently suggest that both destination and derivations are unclear within stakeholder groups. It isn't the point that rulemaking is taking too much time – the lesson to be learned is that rules should be first understood and then notified. The reverse is eminently avoidable.

### **Mists of the past must lift.**

From early days consumers bought foods in packaged forms with no labels – they still do from corner shops where foods are assembled, wrapped and delivered. Customers see the food before being packed and so it only had to be of 'the nature and substance or quality' demanded by the purchaser. It was just weighed out, wrapped and price delivered. Early legislation largely enacted during the war period focused on protecting the consumer in difficult times where adulteration – that is 'not being of the nature or substance or quality' – would be rampant without controls. 'Adulterated' later on took another extended connotation; apart from being 'not of the nature or substance or quality' – it implied that other substances added to foods such as colors were meant to conceal or 'hide damage or inferiority' – all this happened a 100 years ago with reminiscent labelling still occurring today – 'CONTAINS PERMITTED COLOURS AND FLAVOURS' – why the bold script?

Science and sensory appeal in terms of taste, texture, colour, flavour is now the way forward for consumers choosing foods and food industry product development. The past should not haunt the future

### **Labelling: from Compositional to Proprietary Foods**

Arising from a situational need for compositional standards, two restrictive practices emerged that later became the pivot of much legislative behaviour:

1. Any food that used a particular name e.g. 'Jam, or fruit nectar' etc, had to comply with the specified criteria of the compositional standard. In short the product name was reserved.
2. Another option was to require any food which resembled the appearance of a controlled product like jam for instance that product would have to comply with the specified criteria and name. This was more restrictive.

The first option allowed manufacturers to prepare foods resembling the controlled product but under a different product name so long as the product label made information available to the consumer.

We now know these foods as ‘non-standardized’ foods or proprietary foods, often interpreted with disparagement. The interpretation is based on the invalid presumption that ‘standardized’ products are necessary to ensure quality. Product quality is a separate entity and unrelated to the existence or nonexistence of a compositional standard.

For example yoghurt has never had a compositional standard worldwide – yet a variety of such products are available on market shelves of perfectly good quality. Alternatively margarine which has a compositional standard may be of substandard quality due to microbiological or sensorial defects. Products in the unstandardized sector are equal in quality to standardized products and legislative postures should be based on facts rather than feeling.

Where regulations provide safe food with appropriate labelling for informed choice the regulators interference in product formulation is least productive and benefits none. If consumer choice is to expand then compositional inspections are virtually impossible in the market place. Witness the thousands of “unstandardized products” on supermarket shelves made from a variety of ingredients or food additives currently recognized as safe for use. It is unimaginative what kind of infrastructure one would require to sample and test equitably, if all of them were subjected to compositional standards. When inspections cannot cope with the plethora of products they become selective.

Compositional standards restrict innovation, consumer choice and represent an ancient form of food regulation. Codex Alimentarius Commission corrected its position early 1990 when it concluded that enough work had been devoted to commodity standardization and resources should be better devoted to horizontal activities such as labelling, food additives, food hygiene, nutrition, export import.

**Labelling rules – the Gear Shift:** With the need for compositional standards reducing over time consumer protection relied on the ability of a consumer to choose a product based on labeling information. The label has now become the preferred method of consumer protection liberating products from restrictive specifications. Although free to produce many different products, manufacturers are however now required to meet a complex set of labeling controls.

Products in EU – a market of 27 countries where product standards differ between countries would require a mechanism to keep the consumer informed and yet not



impose on country sovereignty to maintain domestic standards. Quantitative ingredient labelling eminently provides such a mechanism for neighborhood trade as well as proprietary foods to flourish. Further locally produced proprietary foods where product names do not reveal the expected ingredient would under quantitative ingredient labelling [QUID] provide consumers with the information.

**Nutrition Labels – is the consumer being served.**

Nutritional labelling requires nutrients present in the food to be numerically labelled so that consumers are able to choose foods on its nutrient content. This is information – but is this information being used to drive a certain preferred or intended behaviour?

One of the major objectives that governments world wide are pushing their populations to achieve is balancing intakes of protein, fat, carbohydrates and total calories. While Industry is charged with the task of carrying information to the consumer – other stakeholders are woefully short on playing an equitable role in educating consumers on what is balanced nutrition. Who will educate the consumer while industry informs them through labelling?

The second objective of nutritional labelling is to make significant impact on consumer health through declarations of certain nutrients such as polyunsaturated fatty acids, omega-3, fiber, or saturated fatty acids, trans fats, cholesterol, sodium etc. These nutrient declarations follow the stated health policy objectives of the country and labelling provides positive or avoidance choices. For example the US has determined that amounts of fat calories, cholesterol, sodium, saturated and now trans fats consumed through prepackaged foods can impact consumer health through such label declarations. The Center for Food Safety and Nutrition [CFSAN] of the US FDA estimates that the daily intake of *trans* fat by Americans is about 5.8g per day and labeling of food packages would annually prevent from 600 to 1,200 heart attacks and save 250–500 lives. Based on this estimate, this rule will realize a cost savings of \$900 million to \$1.8 billion per year in medical costs, lost productivity, and pain and suffering.

Preceding nutritional labelling governments should widely publicize food based dietary guidelines to educate consumers on how to read food packages. This is well explained and illustrated in scientific booklets published by the Indian Council of Medical Research – but unfortunately lies within the limited reading domain of nutritionists and food scientist. A good example is the widely referred to Food Pyramid or the American guidelines of food intakes relating to fat, saturated fat, cholesterol, sodium etc.

Food labelling rules emerge from national policies, community obligations or immediate and impending concerns. When policy is unclear or unstated stakeholder consultations become divergent with tenuous position holding and often leaves one with the feeling

that Indian regulations emerge from an impatient desire to catch up with international norms and not from domestic realities

National governments are the most trustworthy source of information for consumers' health. When regulatory intent is enforcement centric legislative behaviour becomes enforcement driven though ostensibly masquerading as consumer concerns. If regulatory intent is in fact concern for consumer health then consumer education should precede consumer information if the latter is to make a beneficial impact. Like road signs – reducing lifestyle risk factors should be the destination; nutrition labelling one of the directions and wise consumer choices the derivations.

## Nutrition Research

### Big Breakfast Diet

Have you ever heard the adage "*Breakfast like a king, lunch like a prince, dine like a pauper*"? It turns out that there is hidden wisdom within this saying which might just be a secret weapon in the fight against obesity. New research suggests that a **big breakfast diet** rich in protein and carbohydrates may be the key to losing weight, and more importantly keeping it off.

In a study by a team led by Dr. Daniela Jakubowicz of the Hospital de Clinicas in Venezuela, women who followed this regime lost an astonishing 21 percent of their body-weight. Those following a traditional, low-carb diet lost a mere 4.5 percent.

Jakubowicz's study compared 94 obese, inactive women. All the women were put on low-fat, low-calorie diets, but there were differences in how carbs were distributed. Around half of the women were put on a big breakfast diet. This group was allowed to eat a big breakfast of around 610 calories. They were allowed to eat this breakfast in stages, as long as they had finished by 9am. During the rest of the day this group would eat a further 630 calories, meaning their daily total was around 1,240.

In comparison the other group of women followed a low-carb diet, but only ate 290 calories for breakfast. This group would eat around 795 more calories during the day. This meant they ate a total of 1,085 calories, less than the big breakfast diet group. Importantly, breakfast was their smallest meal of the day.

Over the course of four months, researchers carefully measured weight loss. The low-carb diet caused an average weight loss of 28 pounds whilst the big breakfast diet group lost an average of 23 pounds. It was after eight months, however, that the true benefits of a big breakfast diet became apparent. After eight months the low-carb dieters had regained 18 pounds. The big breakfast diet group continued to lose weight, losing another 16.5 pounds on average. The women who followed the big breakfast diet reported that they felt less hungry before lunch, and therefore less prone to snacking.

What makes these new findings so attractive to those looking to lose weight is their simplicity. There are no expensive supplements to buy, nor overly restrictive guidelines. According to head researcher Dr. Jakubowicz the big breakfast diet works because it controls appetite and cravings for carbohydrates. The highly respected Joan Salge Blake, who is a professor of nutrition at Boston University, agrees with Dr. Jakubowicz in this regard. Blake comments that she and her colleagues know women who don't eat breakfast are more likely to do impulsive, unplanned snacking. Professor Blake also adds that: It's no big surprise that having breakfast and having protein is a good thing when it comes to weight loss.

As well as being part of the ABC News Medical Expert Network, and a prolific contributor to top journals, Professor Joan Salge Blake is the author of the acclaimed 'Nutrition and You'. This book is highly sought after due to its personalized nature, and the way Blake engages and motivates her readers. According to Dr. Jakubowicz the big breakfast diet also allows people to eat more fruit, meaning they get more fiber and vitamins.

From: [www.bigbreakfastdiet.com](http://www.bigbreakfastdiet.com)

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### **Argentine Scientists Develop 'Healthful Hamburger,' Blending Beef With Nutritious Oils**

Buenos Aires -- May 9 -- (EFE). -- Scientists at Argentina's University of La Plata have developed a "healthy hamburger" free of saturated fats that has already won the kiddies' seal of approval, the press reported Friday.

Prepared in the laboratory, the new burgers are made from top-quality lean beef with marine and vegetable oils, such as high oleic sunflower oil.

"The product will offer the food industry a safe, healthy, high quality alternative. For consumers it will be an option for a better quality of life at every age," said Alicia Califano, a member of the Research and Development Center for Food Cryogenic Technology at the University of La Plata, who is in charge of the project.

The healthy hamburger passed the yummy test with 40 children and adults who tried it and compared its flavor, texture and quality to that of conventional hamburgers.

As the scientists told the Buenos Aires daily Clarin, taste tests show that the new product has the same flavor as ordinary hamburgers but is healthier.

Califano said that the trials have all been done to guarantee the successful mass manufacture and marketing of the product, which will cost between 25 and 40 percent more than ordinary hamburgers.

The scientists are also studying ways to develop sausages from lean beef and chicken with processes similar to those used to make the healthy hamburger.

[http://www.soyatech.com/news\\_story.php?id=8352](http://www.soyatech.com/news_story.php?id=8352)

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### **Role of Red Grape Seeds in Alzheimer's Disease Cure**

Researchers have discovered that poly-phenolics from red grape seeds may be useful to prevent or treat Alzheimer's disease (AD). They explored the possibility of developing pills that would replace glass of red wine for AD prevention. The disease is characterized by impairment of memory and cognition. Dr. Pasinetti, senior author from Mount Sinai School of Medicine said that the study used grape seed polyphenolic extract and showed

its efficacy to reduce AD-type neuropathology and the cognitive deterioration in a mouse model. The study is published in Journal of Neuroscience, June 18, 2008, 28(25):6388-6392. The compound is ready for testing in clinical settings.

Over past few years researchers Mount Sinai School of Medicine are investigating whether the recommendation of daily servings of red wine has same effects suggested by other studies.

This new study explored the possibility of developing 'wine mimetic pills' that would replace the beneficial glass of red wine a day for AD prevention. Dr. Pasinetti and his collaborator Dr. Jun Wang of Mount Sinai, through a partnership between the Research Center at Mount Sinai School of Medicine and Dr. Anil Shrikhande, the Director of the Polyphenolics Division of Constellation Brands, a major producer of biologically active grape products, tested the hypothesis that certain molecules contained in red wine, in particular in red grape seeds currently being developed with the name of Meganatural AZ, might offset disease progression in mice genetically modified to develop Alzheimer's disease.

"Meganatural AZ grape seed extracts significantly reduced Alzheimer's disease - type cognitive deterioration in the Alzheimer' disease mice through mechanisms that prevents the formation of a more complex form of a molecule known as amyloid in the brain," said Dr. Pasinetti. "The implications of these studies, however, are not limited to patients suffering from Alzheimer's disease. In fact, amyloid is present in everyone's brain and whenever it comes together in a more complex structure it makes the brain to function less efficiently like in Alzheimer' disease. As a result, Meganatural AZ compounds' ability to inhibit the formation of such 'more complex' amyloid structures suggests that Meganatural AZ from red grapes might even help prevent memory loss in people that did not yet developed Alzheimer's disease. "

Mount Sinai researchers believe they are one step closer to understanding the exact molecule in Meganatural AZ that is responsible for protecting memory and by extension closer to test whether Meganatural AZ can be used in patients affected by Alzheimer's disease.

From: Mount Sinai News June 17, 2008

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### **Is Animal Worse Than Vegetable Protein for Bone Health?**

Protein has been identified as being both detrimental and beneficial to bone health depending on a variety of factors. Robber Heaney and Donald Layman from the University of Illinois, US, have conducted a meta analysis that attempts to untangle the contradictory evidence establishing what confounders are responsible for such results and how protein is best consumed for healthy bones.

Loss of bone mass (osteopenia) and loss of muscle mass (sarcopenia) that occur with age are closely related. Protein intake has been both positively and negatively linked to both. Protein makes up

approximately 50% of the volume of bone and one third of its mass. This bone protein undergoes continuous turnover and remodelling. Many of the collagen fragments released during proteolysis as part of remodelling can not be reutilised to build new bone. Therefore dietary protein is required for bone maintenance.

Protein has been found to be both detrimental and beneficial to bone health. Heaney and Layman identified a number of factors that are thought to alter this balance to one side or the other, and investigated each theory. These include the level of protein in the diet, the protein source, calcium intake, weight loss and the acid/base balance of the diet.

High intakes of protein, particularly animal protein are thought to increase calcium excretion, and therefore reduced bone mass. Among subjects with adequate calcium intake, the team found no increase in calciuria in diets where protein provided 30% of the energy. Furthermore, although increased protein intake was associated with increased urinary calcium, intestinal absorption of calcium also increased. Therefore increased calciuria does not necessarily translate to calcium loss, or reduced bone mass. However low protein intakes are associated with reduced calcium absorption and reduced levels of parathyroid hormones, causing the release of calcium from the bone.

It is also thought that animal protein is more detrimental than vegetable protein. In this study the team found that animal protein is associated with higher serum levels of insulin like growth factor (IGF-1) when compared to soya protein. Higher levels of IGF-1 are associated with increased bone mineralization. The team found little evidence to support the hypothesis that animal protein is more detrimental to bone health than vegetable protein.

There are also concerns that protein affects the acid / base balance of the bone towards the acidic. This may be associated with osteoporosis and urinary calcium loss. However fruits and vegetables have an alkalisng effect. The authors suggest that it would be more healthful to ensure adequate fruit and vegetable intake to address the acid / base balance, than to reduce protein intake.

Weight loss has also been associated with loss of bone mass in some studies but not others. A review of the literature suggests that loss of bone mass is not associated with weight loss when adequate protein, calcium and vegetables are consumed. Physical exercise may also reduce lose of bone mass while on a calorie restricted diet however the results of such studies are mixed.

The authors conclude that there is no evidence to support the widely held belief that high protein diets (especially diets high in animal protein) result in bone resorption and increase urinary calcium. Higher protein diets are actually associated with greater bone mass and fewer fractures when calcium intake and fruit and vegetable intake is adequate. (Published in the American Journal of Clinical Nutrition, 87 (5), pp 1567s - 1570s, 2008)

[http://www.soyatech.com/news\\_story.php?id=8538](http://www.soyatech.com/news_story.php?id=8538)

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## **Turmeric Shows Promise in Combating Diabetes and Obesity**

Turmeric, an Asian spice found in many curries, has a long history of use in reducing inflammation, healing wounds and relieving pain, but can it prevent diabetes? Since inflammation plays a big role in many diseases and is believed to be involved in onset of both obesity and Type 2 diabetes, Drew Tortoriello, M.D., an endocrinologist and

research scientist at the Naomi Berrie Diabetes Center at Columbia University Medical Center, and his colleagues were curious what effect the herb might have on diabetic mice.

Dr. Tortoriello, working with pediatric resident Stuart Weisberg, M.D., Ph.D., and Rudolph Leibel, M.D., fellow endocrinologist and the co-director of the Naomi Berrie Diabetes Center, discovered that turmeric-treated mice were less susceptible to developing Type 2 diabetes, based on their blood glucose levels, and glucose and insulin tolerance tests. They also discovered that turmeric-fed obese mice showed significantly reduced inflammation in fat tissue and liver compared to controls. They speculate that curcumin, the anti-inflammatory, anti-oxidant ingredient in turmeric, lessens insulin resistance and prevents Type 2 diabetes in these mouse models by dampening the inflammatory response provoked by obesity. Their findings are the subject of a soon-to-be published paper in *Endocrinology* and were presented at ENDO 2008, the Endocrine Society's annual meeting in San Francisco.

Turmeric (*Curcuma longa*) has no known dose-limiting toxicities in doses of up to at least 12 grams daily in humans. The researchers tested high-doses of a dietary curcumin in two distinct mouse models of obesity and Type 2 diabetes: high-fat-diet-fed male mice and leptin-deficient obese female mice, with lean wild-type mice that were fed low-fat diets used as controls.

The inflammation associated with obesity was shown several years ago by researchers in the Naomi Berrie Diabetes Center to be due in part to the presence of immune cells called macrophages in fat tissues throughout the body. These cells produce "cytokine" molecules that can cause inflammation in organs such as the heart, and islets of the pancreas, while also increasing insulin resistance in muscle and liver. Researchers hypothesized that by suppressing the number and activity of these cells, with turmeric or a drug with similar actions, it may be possible to reduce some of the adverse consequences of obesity.

Curcumin administration was also associated with a small but significant decline in body weight and fat content, despite level or higher calorie consumption, suggesting that curcumin beneficially influences body composition.

"It's too early to tell whether increasing dietary curcumin [through turmeric] intake in obese people with diabetes will show a similar benefit," Dr. Tortoriello said. "Although the daily intake of curcumin one might have to consume as a primary diabetes treatment is likely impractical, it is entirely possible that lower dosages of curcumin could nicely complement our traditional therapies as a natural and safe treatment."

For now, the conclusion that Dr. Tortoriello and his colleagues have reached is that turmeric – and its active anti-oxidant ingredient, curcumin – reverses many of the inflammatory and metabolic problems associated with obesity and improves blood-sugar control in mouse models of Type 2 diabetes.

In addition to exploring novel methods of curcumin administration to increase its absorption, they are also interested in identifying novel anti-inflammatory processes invoked by curcumin and in adapting those processes in the development of more potent curcumin analogues.

From: Nutrition Horizon June 23, 2008

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### **Soy Consumption Appears to Lower Cardiovascular Risks Among Diabetics: Iranian Study**

Diabetes Week: May 19, 2008 - (<http://www.newsrx.com> - NewsRx.com) -- According to a study from Iran, "Several short-term trials on the effect of soy consumption on cardiovascular risks are available, but little evidence exists regarding the impact of long-term soy protein consumption among type 2 diabetic patients with nephropathy (see also <http://www.newsrx.com/library/topics/Diabetes.html>">Diabetes). To determine the effects of long-term soy consumption on cardiovascular risks, we measured C-reactive protein (CRP) and kidney function indexes among type 2 diabetic patients with nephropathy."

"This longitudinal randomized clinical trial was conducted among 41 type 2 diabetic patients with nephropathy (18 men and 23 women). Twenty patients in the soy protein group consumed a diet containing 0.8 g protein/kg body weight (35% animal proteins, 35% textured soy protein, and 30% vegetable proteins) and 21 patients in the control group consumed a similar diet containing 70% animal proteins and 30% vegetable proteins for 4 years. Soy protein consumption significantly affected cardiovascular risks such as fasting plasma glucose (mean change in the soy protein versus control groups: -18.3 vs. 11.2 mg/dl; P = 0.03), total cholesterol (-23 +/- 5 vs. 10 +/- 3 mg/dl; P = 0.01), LDL cholesterol (-20 +/- 5 vs. 6 +/- 2 mg/dl; P = 0.01), and serum triglyceride (-24 +/- 6 vs. -5 +/- 2 mg/dl; P = 0.01) concentrations. Serum CRP levels were significantly decreased by soy protein intake compared with those in the control group (1.31 +/- 0.6 vs. 0.33 +/- 0.1 mg/l; P = 0.02). Significant improvements were also seen in proteinuria (-0.15 +/- 0.03 vs. 0.02 +/- 0.01 g/day; P = 0.001) and urinary creatinine (-1.5 +/- 0.9 vs. 0.6 +/- 0.3 mg/dl, P = 0.01) by consumption of soy protein," wrote L. Azadbakht and colleagues, Isfahan University.

The researchers concluded: "Longitudinal soy protein consumption significantly affected cardiovascular risk factors and kidney-related biomarkers among type 2 diabetic patients with nephropathy."

Azadbakht and colleagues published the results of their research in *Diabetes Care* (Soy protein intake, carotid intima-media thickness, and C-reactive protein in type 2 diabetes with nephropathy - A longitudinal randomized clinical trial. *Diabetes Care*, 2008;31(4):648-654).

[http://www.soyatech.com/news\\_story.php?id=8467](http://www.soyatech.com/news_story.php?id=8467)

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### **Red wine's resveratrol may help battle obesity**

Resveratrol, a compound present in grapes and red wine, reduces the number of fat cells and may one day be used to treat or prevent obesity, according to a new study. The results will be presented at The Endocrine Society's 90th Annual Meeting in San Francisco.



Past research found that resveratrol protected laboratory mice that were fed a high-calorie diet from the health problems of obesity, by mimicking the effects of calorie restriction. Researchers at the University of Ulm in Germany wanted to know if resveratrol could mimic the effects of calorie restriction in human fat cells by changing their size or function. The German team used a strain of human fat cell precursors, called preadipocytes. In the body, these cells develop into mature fat cells, according to the study's lead author, Pamela fischer-Posovszky, PhD, a pediatric endocrinology research fellow in the university's Diabetes and Obesity Unit.

In the cell-based study, they found that resveratrol inhibited the pre-fat cells from increasing and prevented them from converting into mature fat cells. Also, resveratrol hindered fat storage. Most interesting, according to fischer-Posovszky, was that resveratrol reduced production of certain cytokines (interleukins 6 and 8), substances that may be linked to the development of obesity-related disorders, such as diabetes and clogged coronary arteries. Also, resveratrol stimulated formation of a protein known to decrease the risk of heart attack. Obesity decreases this substance, called adiponectin.

The new finding is consistent with the theory that the resveratrol in red wine explains the French paradox, the observation that French people eat a relatively high-fat diet but have a low death rate from heart disease.

"Resveratrol has anti-obesity properties by exerting its effects directly on the fat cells," fischer-Posovszky said. "Thus, resveratrol might help to prevent development of obesity or might be suited to treating obesity."

Fischer-Posovszky cautioned that, while the health benefits of resveratrol seem promising, there is not sufficient knowledge about the effects of long-term treatment. One small study found that a single dose of up to 5 grams of resveratrol (much higher than the amount in a bottle of red wine) caused no serious ill effects in healthy volunteers, she pointed out. However, she said another study theorized that resveratrol may stimulate the growth of human breast cancer cells, possibly because resveratrol's chemical structure is similar to a phytoestrogen, an estrogen-like substance found in some plants.

From: Bio-Medicine June 16, 2008

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## **Drinking Lowfat Milk Helps to Protect Heart Diseases**

Grabbing as little as one glass of lowfat or fat free milk could help protect your heart, according to a new study published in the American Journal of Clinical Nutrition. Researchers found that adults who had at least one serving of lowfat milk or milk products each day had 37 percent lower odds of poor kidney function linked to heart disease compared to those who drank little or no lowfat milk.

To determine heart disease risk, researchers from several universities in the United States and Norway measured the kidney function of more than 5,000 older adults ages 45 to 84. They tracked eating patterns and tested albumin-to-creatinine ratio (ACR) - a measure that when too low, can indicate poor kidney function and an extremely high risk for cardiovascular disease, according to the American Heart Association.

Researchers found that people who reported consuming more lowfat milk and milk products had lower ACR, or healthier kidney function. In fact, lowfat milk and milk products was the only food group evaluated that on its own, was significantly linked to a reduced risk for kidney dysfunction. The study authors cited other research suggesting milk protein, vitamin D, magnesium and calcium may contribute to milk's potential heart health benefits.

An overall healthy diet, including lowfat milk and milk products, whole grains, fruits and vegetables was also associated with a benefit - 20 percent lower ACR or healthier kidney function.

The National Kidney Foundation estimates that kidney disease affects about 26 million Americans - and kidney disease is both a cause and a consequence of cardiovascular disease, the number one killer of Americans. An estimated one out of three adults is currently living with some form of cardiovascular disease.

Milk provides nine essential nutrients, including calcium, vitamin A, vitamin D, protein and potassium. The U.S. Dietary Guidelines for Americans recommend drinking three glasses of lowfat or fat free milk each day.

From: <http://www.nutritionhorizon.com/home/viewhealthnutrition.rails?Id=&pageNo=65>

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### **Weight Gain in Children Has No Association with Sugar-Sweetened Beverage Consumption**

An analysis of 12 recent studies indicates that there is virtually no link between the consumption of sugar-sweetened beverages and weight gain in children and teens. The meta-analysis is published in American Journal of Clinical Nutrition, Vol. 87, No. 6, 1662-1671, June 2008.

"My co-authors and I carefully analyzed 12 studies using scientifically validated methods and found that there is virtually no association between sugar-sweetened beverage consumption and weight gain in children and teens," Dr. Maureen Storey said. "In fact, the evidence strongly suggests that reducing or eliminating sugar-sweetened beverages would have almost no impact on children and teens weight. While other investigators have reached other conclusions, our findings are consistent with three recently published review articles that concluded that the evidence that adolescent consumption of sugar-sweetened beverages leads to weight gain is 'weak or equivocal.'"

Weight gain occurs when an individual consumes more calories than he or she burns – the source of the calories is irrelevant. The beverage industry is already working to educate children about the importance of calorie intake and voluntarily implemented National School Beverage Guidelines which remove full-calorie soft drinks and provide more low- and no-calorie beverage options in schools. In addition, the beverage industry supports daily physical activity and recess for students across the country.

"Sugar-sweetened beverages are a source of energy and energy consumption in excess of energy expended will lead to weight gain. Sugar-sweetened beverages should be consumed in moderation and as part of a balanced diet and active lifestyle," Dr. Storey said.

From: Medical News Today June 16, 2008

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### **Drinking Milk To Boost Calcium and Prevent Broken Bones**

Boosting calcium intake by drinking milk could reduce healthy adults' chances of a debilitating bone break. In a new study published in the American Journal of Clinical Nutrition, healthy men and women supplemented with 1,200 mg of calcium per day - the amount in four glasses of milk - reduced their risk of bone fractures by 72 percent.

An international team of researchers from University Hospital Zurich and Dartmouth Medical School divided 930 healthy men and women ages 27 to 80 into two groups for a four-year intervention study. One group was given a placebo, while the other took a daily calcium supplement containing 1,200 mg of calcium daily - the calcium recommendation for adults over the age of 51.

The researchers found that those receiving an additional 1,200 mg of calcium were significantly less likely to have a bone fracture of any sort during the four-year period, including everyday activity fractures (bone breaks that occurred while walking or standing) and seemingly unavoidable accident-related fractures (bone breaks sustained during falls, running, sports injuries or car accidents). In fact, during the four-year intervention, not a single adult receiving calcium experienced a fracture tied to everyday activities - fractures that researchers call "potentially preventable" and more likely linked to bone health.

To sustain the benefits, researchers found that the adults needed to maintain their calcium intakes. After the four-year supplementation period ended, the bone benefits dissipated, underscoring the need to adopt lifelong habits, like drinking milk, to prevent bone loss.

Adult bones continue to grow in density and strength until about age 35. After that, preventing further bone loss is essential. Poor bone health and bone fractures can have negative consequences for adults of all ages, interfering with recreational activities, ability to work or physical capacity to exercise and stay healthy. These adult bone

fractures may also be an early sign of risk for osteoporosis - a serious condition of brittle bones afflicting more than 10 million Americans.

The Dietary Guidelines for Americans recommend three servings of fat free or lowfat milk each day, providing 90 percent of the recommended daily value of calcium for most adults. Milk is also an excellent source of vitamin D, helping the body absorb this much-needed calcium to help maintain strong bones and reduce the risk of osteoporosis.

Medical News Today June 10, 2008

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### **Soy Intake Is Related to Lower Body Mass Index in Caucasian and Postmenopausal Women: Hawaiian Study**

2008 JUN 26 -- (NewsRx.com) -- Researchers detail in 'Soy intake is related to a lower body mass index in adult women,' new data in life sciences (see also <http://www.newsrx.com/library/topics/Life-Sciences.html>)>Life Sciences). "Experimental and epidemiologic studies suggest that soy may promote weight loss. The goal of this study was to examine the relation of soy intake with body weight over the lifespan of women with Caucasian, Japanese, and Native Hawaiian ancestry," investigators in the United States report.

"We assessed the relation between lifetime soy consumption and body mass index (BMI) among 1,418 women in Hawaii. All subjects reported anthropometric measures, regular diet, and soy intake throughout life. The lifetime soy questionnaire was completed again by a subset of 356 women 5 years after study entry and the kappa values indicated moderate agreement. We regressed soy intake on BMI at study entry and at age 21 while controlling for confounding variables, computed least square means, and performed trend tests. Higher soy consumption in adulthood was related to a lower BMI ( $p=0.02$ ). This association was only significant for Caucasian women and for postmenopausal subjects. The women in the highest category also experienced a smaller annual weight change since age 21 (by 0.05 kg/year) than the low soy intake group ( $p=0.02$ ). We observed no association between early life soy intake and BMI. High vegetable consumption was significantly associated with a higher soy intake among Caucasian women. In this study, women consuming more soy during adulthood had a lower BMI, but the relation was primarily observed for Caucasian and postmenopausal subjects," wrote G. Maskarinec and colleagues, Cancer Research Center of Hawaii.

The researchers concluded: "This indicates that the association may be due to other nutritional factors and behaviors common in women with high soy intake."

Maskarinec and colleagues published their study in European Journal of Nutrition (Soy intake is related to a lower body mass index in adult women. European Journal of Nutrition, 2008;47(3):138-44).

[http://www.soyatech.com/news\\_story.php?id=9060](http://www.soyatech.com/news_story.php?id=9060)

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## **Drinking Polyphenol-Rich Concord Grape Juice May Improve Memory in Older Adults**

As America's baby boomers continue to age, the number of people 65 years of age and older is expected to double to 70 million by 2030. As such, age-related cognitive decline and incidence of chronic conditions, including Alzheimer's, heart disease, diabetes and cancer, is on the rise. Research supports that good nutrition – particularly a diet including phytonutrient-rich fruits, vegetables and their juices – plays an important role in the aging process and may help slow and possibly even reverse age-related physical and mental declines.

Results from a recent pilot human study suggest that including Concord grape juice in the diet may provide benefit for older adults with early memory decline. This study represents the first placebo-controlled human study to investigate whether regular consumption of a polyphenol-rich food or beverage could have beneficial effects against age-related cognitive decline.

The results were presented at the 38th annual scientific meeting of the American Aging Society in Boulder, Colo., May 30-June 2, 2008. The study, led by Robert Krikorian, PhD, Department of Psychiatry, University of Cincinnati College of Medicine, included 12 adults with early memory decline. Participants drank a total of 15 to 21 ounces, depending on body weight, of either Concord grape juice or placebo daily, divided among meals, for a 12-week period. The beverages were equal in calorie and sugar content but only the Concord grape juice contained natural polyphenolic compounds, which have antioxidant and anti-inflammatory properties. Participants who drank the Concord grape juice showed significant improvement in list learning and trends suggested improved short-term retention and spatial memory.

According to Dr. Krikorian, "These results with Concord grape juice are very encouraging and certainly warrant additional study. A simple, easy-to-incorporate dietary intervention that could improve or protect memory function, such as drinking Concord grape juice daily, may be beneficial for the aging population."

Study collaborators included Tiffany Nash and Marcelle Shidler from the University of Cincinnati as well as James Joseph and Barbara Shukitt-Hale from the USDA-ARS Human Nutrition Research Center on Aging at Tufts University. Joseph and Shukitt-Hale's ground-breaking animal research has previously shown that supplementation of certain polyphenol-rich fruits and vegetables resulted in improved cognitive function in animal models. In fact, this human study was a natural next step based on their 2006 publication in *Nutrition* where they reported that polyphenol-rich Concord grape juice supplementation in the diet of aged rats resulted in beneficial effects on memory and cognitive function.

From: [http://www.eurekalert.org/pub\\_releases/2008-06/w-dpc060208.php#](http://www.eurekalert.org/pub_releases/2008-06/w-dpc060208.php#)

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## **Does calcium reduce fractures in older adults?**

New research raises questions about the use of calcium supplements to protect older adults against bone fractures resulting from falls: an analysis of past studies found no reduction in risk of hip fractures with calcium supplementation. The analysis was supported in part by the Agricultural Research Service, a research agency of the USDA. Researchers reviewed studies published between January 1960 and December 2006 and searched information from biomedical databases, reference lists, and abstracts.

Seven studies reviewed included a total of 170,991 women with nearly 3,000 hip fractures; five of the studies included a total of 68,606 men with 214 hip fractures. Pooled results from those studies suggest that a higher calcium intake did not reduce the incidence of hip fractures in either women or men.

Increased calcium intake is still commonly recommended as a single-fracture prevention strategy, although there is uncertainty about optimal intake levels: the recommended daily calcium intake for adults over age 50 is 700 mg. daily in the U.K. but 1,200 mg. in the U.S. Future fracture-prevention studies should focus on the best combination of calcium plus vitamin D, not calcium supplementation alone, say the authors of the new research.

From: <http://www.ars.usda.gov/is/pr/2008/080611.htm>

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## **Tomato and Soy Products May Aid in Treatment for Prostate Cancer Claim Scientists at Ohio State University**

2008 JUN 3 - (<http://www.newsrx.com>) -- "Tomato and soy products are hypothesized to reduce the risk of prostate cancer or enhance efficacy of therapy (see also <http://www.newsrx.com/library/topics/Prostate-Cancer.html>). A study was completed to determine if men with active prostate cancer will adhere to a dietary intervention rich in tomato products and a soy protein supplement men (n = 41) with recurrent, asymptomatic prostate cancer were randomized among 2 groups: Group A (n = 20) consumed tomato products (no soy) for Weeks 0 through 4, targeting a minimum of 25 mg of lycopene/day," scientists in the United States report.

"Group B (n = 21) consumed soy (no tomatoes) for Weeks 0 through 4, providing 40 g of soy protein/day. For Weeks 4 through 8, all men consumed a combined tomato-rich diet and soy supplements. No grade II through IV toxicities were observed. During Weeks 0 through 4, mean daily lycopene intake for Group A was 43 mg ( 15 mg) and mean soy intake for Group B was 39 g ( 1 g), remaining similar during Weeks 4 through 8. Serum lycopene increased from 0.72 +/- 0.09 mu mol/l to 1.21 +/- 0.10 mu mol/l (P < 0.0001) and urinary isoflavone excretion increased from not detectable to 54.1 +/- 5.7 mu mol/l (P < 0.05) with 8 wk of diet intervention. Serum prostate-specific antigen decreased between Weeks 0 and 8 for 14/41 men (34%). Mean serum vascular endothelial growth factor for the entire group was reduced from 87 to 51 ng/ml (P < 0.05) over 8 wk," wrote E.M. Grainger and colleagues, Ohio State University.

The researchers concluded: "Prostate cancer patients will consume diets rich in tomato products and soy with excellent compliance and bioavailability of phytochemicals. Further studies combining tomato and soy foods to determine efficacy for prostate cancer prevention or management are encouraged."

Grainger and colleagues published their study in Nutrition and Cancer - an International Journal (A combination of tomato and soy products for men with recurring prostate cancer and rising prostate specific antigen. Nutrition and Cancer - an International Journal, 2008;60(2):145-154).

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## **Study Finds Certain Rice Good for Your Heart**

(PHILADELPHIA) 9-Jun-2008 – A clinical study on patients who have suffered a heart attack found that a partially purified extract of Chinese red yeast rice, Xuezhikang (XZK), reduced the risk of repeat heart attacks by 45%, revascularization (bypass surgery/angioplasty), cardiovascular mortality and total mortality by one-third and cancer mortality by two-thirds. The multicenter, randomized, double-blind study, was conducted on almost 5,000 patients, ranging in age from 18-70 over a five-year period at over 60 hospitals in the People's Republic of China. Corresponding author David M. Capuzzi, M.D., Ph.D, director of the Cardiovascular Disease Prevention Program at Jefferson's Myrna Brind Center of Integrative Medicine and Zonliang Lu, M.D., Ph.D, from the Fuwai Hospital at the Chinese Academy of Medical Science report their findings in the June 15th edition of the American Journal of Cardiology.

"It's very exciting because this is a natural product and had very few adverse side effects including no abnormal blood changes," said Capuzzi. "People in the Far East have been taking Chinese red yeast rice as food for thousands of years, but no one has ever studied it clinically in a double-blind manner with a purified product against a placebo group until now and we are pleased with the results. However, people in the United States should know that the commercially available over-the-counter supplement found in your average health food store is not what was studied here. Those over-the-counter supplements are not regulated, so exact amounts of active ingredient are unknown and their efficacy has not been studied yet."

The study looked at patients who had suffered a heart attack in the previous year. Study participants were given two-300-milligram XZK capsules or a placebo and tracked over a five-year period. The XZK capsules contained a combination of lovastatin, lovastatin hydroxyl acid, ergosterol and other components.

"I think it is surprising that a natural product like XZK would have this great an effect," said Capuzzi. "If further testing and study prove true, my hope is that XZK becomes an important therapeutic agent to treat cardiovascular disorders and in the prevention of disease whether someone has had a heart attack or not. But it is important to recognize the fact we do not know exactly how Chinese red yeast rice works. The exact ingredients from the XZK capsules have not been isolated and studied yet. Still the results were so profound, even out performing statins prescribed in numerous western populations, that further study should certainly be investigated."

[http://www.soyatech.com/news\\_story.php?id=8855](http://www.soyatech.com/news_story.php?id=8855)

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## Regulatory News

### **FDA Approves Brown Rice Health Claim for Protection Against Heart Disease and Certain Cancers**

ARLINGTON, Va., May 8 /PRNewswire/ -- Brown rice, a 100 percent whole grain food, joins the recognized ranks of healthful whole grains, according to an announcement this week from the U.S. Food and Drug Administration (FDA) that will allow brown rice food labels to bear the whole grain health claim. This will enable consumers to easily identify brown rice as a food to help them increase whole grain consumption and reduce their risk of heart disease and certain cancers.

Brown rice and other whole grain foods are widely recommended to consumers by the public health community including the American Heart Association, American Cancer Society and the 2005 Dietary Guidelines for Americans for their protective effects against heart disease and certain cancers. In fact, the Dietary Guidelines recommend "making half of all grain servings whole," or three daily whole grain servings in a standard 2,000-calorie reference diet. Still, data from a recent consumer survey conducted by EatingWell magazine and the USA Rice Federation show that the majority of Americans (65 percent) are not meeting their whole grains quota(1).

Consumers can now be on the lookout for brown rice labeled with the FDA whole grain health claim: "Diets rich in whole grain foods and other plant foods and low in total fat, saturated fat and cholesterol may reduce the risk of heart disease and some cancers."

FDA's action explicitly extends an existing health claim to include whole grain rice. For the first time, FDA states that all single ingredient whole grain foods qualify for the claim regardless of whether they meet the requirement for a minimum level of dietary fiber, as long as they meet the other general health claim requirements. The dietary fiber requirement was established in 1999 in order to monitor compliance with the claim. FDA now states that compliance for single ingredient whole grain foods will be monitored by examining package ingredient statements, not through fiber content. The science on which the health claim is based clearly acknowledges that the health benefits of whole grains are independent of their fiber content.

From a public health perspective, this news means that now there's one more option for the nearly 90 percent of Americans who know that whole grains should be part of a healthy diet and the 70 percent who say they would be likely to increase whole grain consumption if the benefits were clearly listed on the package(1).

"Rice is the most popular grain around the world, which makes brown rice a great choice for increasing whole grain intake," says Joann Slavin, PhD, RD, whole grains expert and Professor of Food Science and Nutrition at the University of Minnesota. "In the United States, where chronic diseases such as heart disease and cancers are common, encouraging whole grain brown rice consumption could have a significant public health impact."

One hundred percent whole grain brown rice is an economical, nutritious and versatile food. With only the inedible hull removed, brown rice contains beneficial phytonutrients including antioxidants, anthocyanins, phytosterols, tocopherols oryzanol and many other potentially protective substances that have been found to help reduce the risk of heart disease, certain cancers, type II diabetes and potentially aid in weight maintenance. Brown rice also contains 15 vitamins and minerals, including B-vitamins, potassium, magnesium, selenium, iron, and 2 grams of fiber per one half cup of cooked rice.

According to the EatingWell/USA Rice survey:



-- 87 percent of consumers know that whole grains are good for them. However, while more than 80 percent know whole grains can be protective against cardiovascular disease, less than two-thirds are aware that they also offers protection against certain cancers.

-- There's still confusion about what foods are whole grains. While 80 percent of consumers know that brown rice is a whole grain, more than 80 percent also mistakenly think that bran cereal and breads marked simply as "wheat" are also whole grains.

-- Most individuals (80 percent) said they would be likely to eat more whole grains if these foods were clearly labeled as whole grains; and another 68 percent said they would increase consumption if the health benefits were stated on the package.

"Since eating just one cup of brown rice is equivalent to two of the three recommended daily whole grain servings, the new health claim will certainly assist people in meeting their whole grain goals," said Slavin.

"This is a milestone event. Today brown rice joins the recognized ranks of healthful foods that are entitled to make this claim. Having this information on packages of brown rice will help consumers increase whole grain consumption and reduce their risk of heart disease and some cancers," said Al Montna, chairman of the USA Rice Federation.

The FDA action adds support to the growing body of scientific data that shows that rice is a healthy food choice. Recent research found that rice eaters are more likely to eat a diet consistent with the Dietary Guidelines for Americans(2). Americans who eat rice have healthier diets than non-rice eaters and may have reduced risk for chronic diseases including heart disease and type II diabetes(2,3). Compared to people who do not eat rice, people who eat rice consume less added sugar and fat; consume more nutrients, such as folic acid, potassium and iron that are contained in rice products; are less likely to be overweight or have an increased waist circumference; have 34 percent reduced risk of having high blood pressure; and have a 21 percent reduced risk of metabolic syndrome(3).

In both whole grain brown and enriched white forms, rice is a complex carbohydrate that is naturally low in calories, is sodium-, gluten- and cholesterol-free, has just a trace of fat, and contains no trans or saturated fat. Due to its mild flavor, rice also complements many other healthy foods, including vegetables, lean meat, seafood, poultry, beans and soy foods. Rice is nutritious due to its nutrient profile, and it is also highly-digestible and non-allergenic, and can be enjoyed by young and old alike. Rice poses no risk for those who are sensitive to or intolerant of gluten or other proteins commonly found in other grain-based foods.

U.S.-grown rice accounts for nearly 88 percent of the rice consumed in America, and there is an ample supply of U.S.-grown rice for the domestic market. Rice is grown and harvested by farmers in five south central states and California according to the highest quality standards. The U.S. produces short, medium and long grain rice, as well as specialty rices including jasmine, basmati, and arborio, red aromatic and black japonica, among others. For more information, visit <http://www.usarice.com/>.

[http://www.soyatech.com/news\\_story.php?id=8324](http://www.soyatech.com/news_story.php?id=8324)

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## Europe Parliament heart group advocates colours on front of packs

The European Parliament's Heart Group has declared its preferred best approach to front of pack labelling for food so consumers can see at a glance whether a product is good for their heart: four key nutrient quantities, plus colour coding. Heart health is of major global concern. In Europe, cardiovascular disease - which is closely linked with obesity and diabetes - accounts for 4.3 million deaths a year, and costs the EU over €192bn. Although addressing the problem is only partly a matter of food (with physical activity, education and government strategy also important), it is very relevant at the present time since the European Commission proposed new legislation on food labelling at the beginning of this year.

The Commission proposed that products would be required to show energy, fat, saturated fat and carbohydrates (the four key nutrients), with specific reference to sugars and salt content of the product, expressed in terms of per 100ml/100g or per portion. In addition, the amount of these elements in relation to the reference intakes would have to be indicated. This approach is broadly in-line with the Guidance Daily Amounts (GDA) scheme developed by the CIAA (Confederation of the Food and Drink Industries of the EU) and already being used by more than 50 manufacturers across the bloc.

However it left way for national schemes to co-exist, since it said it did not have sufficient data to back one particular scheme. In the UK, the Food Standards Agency (FSA) has propounded an at-a-glance scheme using traffic light colours, which is based on nutrient profiling and indicates whether a product contains high, medium or low levels of energy, saturated/trans fats, sugars and salt.

At a meeting in Brussels yesterday, members of the Parliament's Heart Group said they want the Commission to "*improve*" on its proposal, by applying colour coding such as that used in the UK to quantitative information on the four nutrients on the front of pack. It also wants mandatory information on the front of pack on 'the big eight' - that is, energy, protein, carbohydrate, sugars, fibre, fat, saturated fat, trans fat and salt.

Co-chair of the MEP Heart Health Group, Dr Adamos Adamou, MEP, said "Consumers demand and people need better information on label; information that is clear, simple, comprehensive and standardised."

"Front of pack labelling should allow consumers to know at a glance whether a product contributes to their health or not," said Susanne Logstrup, director of the European Heart Network.

But Professor William Wijns, spokesperson for the European Society of Cardiology, also stressed the importance of consumers actually knowing what foods are good for them. "We also need to educate consumers on the adequate amounts of sugar, salt and fat intake, as well as healthy portion sizes."

Meanwhile, a recent survey conducted by Standard Life Healthcare has indicated that at present one in three men and one in five women do not read the nutrition information label on food packaging. The survey, conducted amongst 1000 adults as a follow-on from an earlier study showing that people are confused by mixed-messages on healthy eating, also identified some differences in what catches the attention of different consumer groups. The under 25's were seen to be more concerned with calorie counting than with levels of salt, protein, fibre and fat; man are more concerned about protein, fibre and salt than women.

"The issue is how many people don't check out what's healthy and what's not and that suggests that there is still confusion," said Mandy Blanks, a spokesperson for Standard Life Healthcare. "Minor changes to diet can not just help overall health it can also have a major impact on mood and general wellbeing too so it's worth getting good advice on nutrition."

A spokesperson for the European Commission told FoodNavigator.com that the law making process for the food labelling legislation is still at a relatively early stage. A second meeting on the proposal is scheduled for next week, June 12. It is impossible to say when the final version may be agreed, as it depends very much on the priorities of the incoming French presidency, she said.

From: Food Navigator June 4, 2008 by Jess Halliday

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#### **US FDA establishes food allergen thresholds**

In the latest issue of the Journal of Food Protection, the Threshold Working Group of the U.S. Food and Drug Administration's Center for Food Safety and Applied Nutrition (CFSAN) has published details of the various approaches it taken in order to establish thresholds for major food allergens.

From: <http://www.ingentaconnect.com/content/iafp/jfp/2008/00000071/00000005/art00026>  
and <http://www.cfsan.fda.gov/~dms/alrgn2.html>

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## **Other News**

### **Dr. V. Prakash Decorated as Fellow of IFT (USA)**

The Institute of Food Technologists, USA, one of the largest Food Technology Associations has honoured Dr. V. Prakash, Director, CFTRI by decorating on him the prestigious Fellowship of the Institute on June 28, 2008 at New Orleans, USA in front of a large gathering of Professionals, Fellows, Academia and Policy makers across the globe by the President of Association Prof. John D. Floros.

The fellowship has been decorated on Dr. Prakash for his sustained contributions in the area of Food Science and Food Technology and proteins and enzymes with a focus on his greater role and impact in policy inputs at National and International levels.

Dr. Prakash has been one of our Honorary Members and is also an active adviser to PFNDAI. The Association congratulates Dr. Prakash for this great honour.



### **At Time of Food Crisis, New Rice Varieties Boost Rice Production**

Cotonou, May 23, 2008 (Africa Rice Center/All Africa Global Media via COMTEX News Network) -- As African governments and tens of millions of poor African consumers faced a dangerous rice crisis in 2007, new rice varieties adapted to African conditions helped achieve a 6 percent increase in the continent's output. Though this represents a major advance, it is still far short of meeting demand, according to a report released today in advance of a key international conference in Japan on Africa's development.

The new rice varieties, which are suited to drylands, were distributed and sown on more than 200,000 hectares during the last five years in several African countries, notably Guinea, Nigeria, Cote d'Ivoire, and Uganda, according to the Africa Rice Center report.

The results of the New Rice for Africa (NERICA(R)) Project, which is funded by the African Development Bank, the Japanese government, and the United Nations Development Programme, will be discussed next week at the Fourth Tokyo International Conference on African Development (TICAD IV) in Yokohama, where world leaders and development experts are meeting for three days, starting May 28, to talk about pressing development issues in Africa.

The gains from the new rice varieties came against a worrisome backdrop of rapidly increasing consumption of rice in Africa, which imports 40 percent of its rice. Africa Rice Trends, a report released earlier this year by the Africa Rice Center, notes that rice production in West Africa - the continent's main rice belt - increased 5.1 percent annually from 2001 to 2005, while consumption increased 6.5 percent annually during the same period. Africa imports more than one-third of the rice traded in the world. In 2006, when prices were much lower, the region's rice imports cost US\$2 billion.

"Relying so much on rice from other countries is a recipe for disaster for this continent," said Dr. Papa Abdoulaye Seck, Director General of the Africa Rice Center, one of 15 centers supported by the Consultative Group on International Agricultural Research (CGIAR). "Unless government leaders take strong action now, the economic recovery experienced in so many parts of Africa will evaporate. We need short-

and long-term solutions that boost domestic rice production." The Center's African Rice Initiative is managing the \$35 million, five-year project, which started in 2005.

In less than three years, the project has shown tangible impact in seven countries - Benin, The Gambia, Ghana, Guinea, Mali, Nigeria and Sierra Leone. According to the Food and Agriculture Organization (FAO) of the United Nations, Guinea achieved a record harvest of 1.4 million tonnes in 2007 - 5 percent higher than in 2006 and the highest in its history, largely because of the government's massive support for NERICA(R) dissemination. Domestic rice production now covers about 70 percent of consumption.

In Nigeria, the government announced that the country's rice imports had declined from 2 million tonnes in 2003/04 to less than 1 million tonnes in 2005/06. And officials in Uganda reported that the country had reduced its rice importation from 60,000 tonnes in 2005 to 35,000 tonnes in 2007, saving Ugandans roughly \$30 million. The initiative has helped disseminate improved rice varieties in about 30 African countries, including post-conflict countries.

Overall, since 2005, the project has produced more than 10,000 tonnes of improved rice seed. Experts from the Africa Rice Center estimate that 1 tonne of that seed is enough to plant 20 hectares of land. The project has trained 6,500 farmers, more than half of them women, to produce high-quality seed. In addition, the initiative has helped train 1,225 technicians.

At the TICAD meeting, Africa Rice Center experts will discuss the importance of boosting the continent's agricultural production to increase food self-sufficiency and reduce reliance on imported food staples and food aid. Researchers said that while people around the world have been feeling the impact of the soaring prices of key staples like rice and maize, no one has been hurt more than Africans.

Over the last several months, food riots have broken out in several rice-importing countries in Africa. According to the Africa Rice Center, the best option for Africa is to combine emergency responses in the short term with measures that favor sustainable expansion of the continent's rice supply in the longer term.

Short-term measures include reduction of customs duties and taxes on imported rice and setting up mechanisms to avoid speculation in rice markets. At the same time, governments must avoid undermining incentives for domestic rice production. In the medium- and long-term, taxes on all critical inputs, cost-saving agricultural machinery and equipment as well as post-harvest technologies need to be reduced.

Governments should also facilitate access to financial services and credit for stakeholders in the domestic rice sector; increase investment in water-control technologies; expand rice areas under irrigation; increase investment in regional research capacity to support the development of rice varieties resistant to major pests and diseases and sufficiently robust to withstand drought and climate change-induced shocks; and boost investment in rural infrastructure to enhance rice farmers' access to markets and capacity to respond to market signals.

Already, concerns about food import dependency in the region have led to a mobilization of resources for the rice sector in Burkina Faso, Ghana, Liberia, Mali, Nigeria, Senegal and several other countries, which are planning to step up their domestic production by scaling up the use of improved technologies. Africa has proven capable of significantly increasing rice production before. From 1985 to 2005, production in West Africa more than doubled, from 2.76 million tonnes to 5.75 million.

"We're convinced that the future for rice farming lies in Africa," Dr. Seck said. "This continent has more potential than any other area of the world because of its land and water resources. Our studies have found that local rice production under irrigated conditions can be as competitive as in Asia and much cheaper than

in the USA."

Prior to the meeting in Japan, the Chair of the Council of Ministers that has oversight responsibility for the Africa Rice Center signed a declaration commending Japan's long-term investment in science and technology toward sustainable development in Africa. In particular, the Council noted not only the current investment in high-yielding rice varieties, but also said that Japan has sent hundreds of agricultural scientists to Africa over the last few decades and contributed a total of \$593 million to the Consultative Group on International Agricultural Research (CGIAR) since its inception in 1971.

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### **World food production must rise by 50% by 2030**

United Nations secretary-general Ban Ki-moon, in an address at the World Food Summit, being held in Rome June 3-5, said that world food production must rise by 50% to meet the increasing demand. Ki-moon said that increasing hunger and civil unrest is being caused by food-price increases.

Ki-moon told the attendees that nations must minimize export restrictions and import tariffs during the food price crisis and quickly resolve world trade talks.

"The world needs to produce more food," Mr. Ban said. "Food production needs to rise by 50% by the year 2030 to meet rising demand."

The U.N. Food and Agriculture Organization is hosting the three-day summit to try to solve the short-term emergency of increased hunger caused by soaring prices and to help poor countries grow enough food to feed their own.

From: <http://www.fao.org/foodclimate/conference/statements/en/>

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### **New Report Explores Different Production Methods for Rice Fortification in Developing Nations**

A new report identifies the technical and economic feasibility of introducing cost-effective rice fortification programs in developing nations. The new report notes that the addition of essential nutrients through rice fortification provides the consuming population with much needed vitamins and/or minerals, while it also remains a cost effective means of ensuring a stronger, healthier nation.

Rice is a major diet staple in developing nations, and vitamin and mineral deficiency is often prevalent in these countries. Under a cooperative agreement with the United States Agency for International Development (USAID), the Academy for Educational Development (AED) collaborated with the Institute of Food Technologists (IFT) to conduct a four-country assessment of rice fortification with a review of production and fortification techniques in China, Costa Rica, The Philippines and the United States.

Researchers studied four fortification methods, including hot extrusion, cold extrusion, coating and dusting of rice. The authors concluded that the cold extrusion and coating method—similar to the process involving pasta production—could be a practical way to introduce fortified rice in developing nations. The study notes that the hot extrusion method produced the best quality product and maintained the most nutrients; however, it was the most expensive of the four. While dusting is the least expensive method, it is not recommended for developing countries where washing and rinsing rice before cooking is common and it results in nutrients being washed away.

### **Methods of Rice Fortification**

- Hot extrusion passes dough made of rice flour, vitamin/mineral mix, and water through a single or twin screw extruder and cuts it into grain-like structures that resemble rice grains. This process involves relatively high temperatures (70-110oC) obtained by preconditioning and/or heat transfer through steam heated barrel jackets. It results in fully or partially pre-cooked simulated rice-like grains that have similar appearance (sheen and transparency) as regular rice kernels. The teams visited two companies in China and one in the Philippines that used this technology.
- Cold extrusion, a process similar to one used for manufacturing pastas, also produces rice-shaped simulated grains by passing a dough made of rice flour, vitamin/mineral mix, and water through a simple pasta press. This technology does not utilize any additional thermal energy input other than the heat generated during the process itself, thus is primarily a low temperature (below 70oC), forming process resulting in grains that are uncooked, opaque, and easier to differentiate from regular rice kernels. One of the firms visited in Costa Rica uses this process.
- Coating combines the vitamin/mineral mix with ingredients such as waxes and gums. The mixture is sprayed to the rice on the surface of grains in several layers to form the rice-premix and then is blended with polished rice. Manufacturers in Costa Rica, the Philippines, and the United States use this process.
- Dusting, observed only in the U.S., involves dusting the polished rice grains with the powder form of the vitamin/mineral premix. The vitamin/mineral mix sticks to the grain surface because of electrostatic forces.

The report also suggests that before initiating a fortification program, consumer preferences, levels of consumption, overall cost, and financial sustainability should be considered. For example, if rice consumption by the target population is low (less than 100 g/day or 36 kg/year), the investment to introduce rice fortification is not justifiable. The cost of rice fortification is estimated between US\$10 per metric ton and US\$20 per metric ton. This means that the cost of fortified rice would be US\$0.36-0.73 or US\$1.09-2.18 more per year than the cost of unfortified rice for consumers with usual rice intakes of 100 or 300 g/day, respectively.

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## **Doctors Should Not Recommend Plant Sterols, Omega 3s to Prevent Cardiovascular Disease: UK Medical Advisory Board**

RSSL -- June 5, 2008 -- The UK's National Institute for Clinical Excellence (NICE) has published a lengthy report (238 pages) on methods of modifying blood lipids with the aim preventing cardiovascular disease (CVD). Amongst the lifestyle changes which doctors are likely to suggest to people at risk of CVD is the adoption of a cardioprotective diet. Perhaps surprisingly, it is stated that omega-3 supplements or plant sterols and stanols should not be recommended for the primary prevention of CVD.

The report contains many sections aimed at assessing individuals most at risk of CVD and proposing various interventions including the cholesterol-lowering drugs called statins, weight loss regimes, physical activity, and, as already mentioned, a heart-healthy diet. Discussing the report in the Daily Telegraph (331/05/08), Rebecca Smith points out that the market for cholesterol-lowering foods which contain plant sterols and stanols now has a value of about £500 million. Amongst the best known products are Flora Proactiv and Benecol spreads and yogurt drinks, etc. However, NICE believes that although these products may help lower blood cholesterol levels there is no evidence, as yet, that they actually prevent cardiovascular disease.

Dr Ian Campbell, a general practitioner and medical director of the charity Weight Concern, suggests that in its report NICE has made its recommendations and given its advice based on factors which have been proved to be important factors in CVD. However, Campbell said that if his own patients asked him if they should use Flora and Benecol to help lower their cholesterol he would say "yes" since he believes that anything which helps people take control of their diet and do something to help themselves is a good thing. A spokesperson for Unilever, which manufactures Flora ProActiv claimed that there was "a great wealth of evidence that reducing cholesterol leads to reductions in risks of cardiovascular disease".

It is also noted that under current legislation disease risk reduction claims are not permitted, so that Flora ProActiv only makes claims about reducing cholesterol. Such disease risk reduction claims are one of the categories covered by the new EU health and nutrition claims legislation (Regulation (EC) No 1924/2006, Article 14), but these are not due to be considered by the European Food Safety Authority until after it has sorted out the thousands of claims submitted under Article 13 (those which are "based on generally accepted scientific evidence and well understood by the consumer"). However, the EFSA did publish guidance on how to prepare a claims dossier in July 2007. The Food Standards Agency also has useful guidance notes on the process for getting authorisation for disease risk reduction claims on its web site.

RSSL's Lipids Laboratory has expertise in all aspects of fat analysis and fatty acid profiling, including the determination of plant sterol and stanol esters. For more information please contact Customer Services on Freephone 0800 243482 or e-mail [enquiries@rssl.com](mailto:enquiries@rssl.com)

Related RSSL services: <http://www.rssl.com/OurServices/AnalyticalServices/OilsandFatsAnalysis.htm>

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## **How Are Trans Fats Driving Technology and Market Trends? New Report**

Gain insight on industry and technology trends that affect the edible oil and fats industries with an analysis of the applications for edible oils and fats, both in food and non-food applications. At present, several events impact the edible oils and fats industry, including the issue of trans fats and the effect of trans fat consumption on human health and the role of genetically modified oilseed in battling this issue. Additionally, high growth is expected of edible oils in non-food applications, especially the emergence of oleochemicals as a substitute for petrochemicals, and the use of edible oils to produce biofuels.

This briefing will benefit edible oil and fat producers, users of edible oils and fats, and other stakeholders involved in the edible oil industry. Highlights of the briefing include R&D activities key players utilize in the oils and fats industries, smaller corporations and leading universities based in North America, Europe and Asia.

“The biggest issue affecting the oils and fats industry today is the issue of trans fatty acids or trans fats, whereby the U.S. Food and Drug Administration (FDA) has issued a regulation on the labeling of trans fats in foods, which took effect on January 1, 2006,” states Frost & Sullivan Research Analyst W.F. Kee. “The ruling has caused the majority of consumers to switch to food products offering low-trans and zero-trans fats. Since partially hydrogenated food products are the main source of trans fats in the human diet, thus oils and fats producers are now contemplating the alternatives to partial hydrogenation, with the two leading replacement technologies appearing to be; (1) blending with tropical oils such as palm oil and coconut oil; and (2) interestification of a mixture of oils. Another means of affecting such a change is to modify the genetic sequence of the oilseeds itself so that a more desirable fatty acid profile is expressed.”

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