PFNDAI Bulletin (April 2012)

Protein Foods and Nutrition Development Association of India

22, Bhulabhai Desai Road ,Mumbai -400026(India)

Tel: +91 022 23538858

Email: pfndai@pfndai.org

Website: http://www.pfndai.com

Circulated to PFNDAI members only

PFNDAI is not responsible for the authenticity and correctness of the information published and the views expressed by the authors of the articles.

Editorial

There is a lot of talk about Mediterranean Diet being good for heart health. Many research studies have been undertaken and the outcome is fairly similar. The Mediterranean Diet really corresponds to lower blood pressure, lower cholesterol and triglycerides. What is Mediterranean Diet and why people are so crazy about?

It was noticed that people living along the coast of Mediterranean Sea in Portugal, Spain, southern Italy, southern France, Greece especially Greek island of Crete and parts of Middle East such Morocco had fewer heart disease. Although as against the name, there is no typical diet for all Mediterranean cuisine. There are some marked differences in use of ingredients of diets especially olive oil and wine. However, there are many common features which were first noticed by Ancel Keys to be beneficial to health over 60 years ago.

Harvard University's School of Public Health published a version of Mediterranean Diet in mid 1990s emphasising abundant plant foods including fresh fruits, olive oil as principal source of fat, dairy products like cheese and yogurt, low to moderate consumption of fish and poultry with red meats in low amounts and low to moderate consumption of wine. Research has shown that traditional Mediterranean diet reduces the risk of heart disease. Various studies totalling over a million adults showed that this diet reduced the risk of overall and cardiovascular mortality, reduced incidence of cancer and mortality due to it, and was associated with reduced incidence of Parkinson's and Alzheimer's diseases too.

The diet emphasizes eating primarily plant-based food including fruits, vegetables, whole grains, legumes and nuts, replacing butter and other animal fats with olive oil, using herbs and spices reducing salt to flavour foods, limiting red meats and eating fish and poultry and drinking red wine in moderation. These foods provide micronutrients, antioxidants, vitamins, minerals and fibre all working together against chronic diseases. Along with delicious diet, leisurely dining is a big part. Our lifestyle changes have made us fast eaters. Although diet is important, getting plenty of exercise is equally important as the people from Mediterranean regions would do.

We are sure that many of us would be happy to know the inclusion of wine in healthy diet as are some of the other tasty foods. More recently it has also been shown that chocolates are good in moderation. Food is a very important part of being healthy but certainly there are other important factors which have been suggested in this diet. Physical activity and taking time off to enjoy food and company are also important. Just eating healthy foods is not a magic bullet that would cure everything as some of the advertisements of TV shopping suggests. Lifestyle changes have caused many problems. Along with lack of time for exercise, enjoying food, relaxing and recouping, people have got a lot of stress trying to do too many things in too less a time to beat others.

Let us hope that we will try to beat all these lifestyle diseases with diet and our mindset. Let us regain our health and hope that our younger generation remain healthy through this rat-race.

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

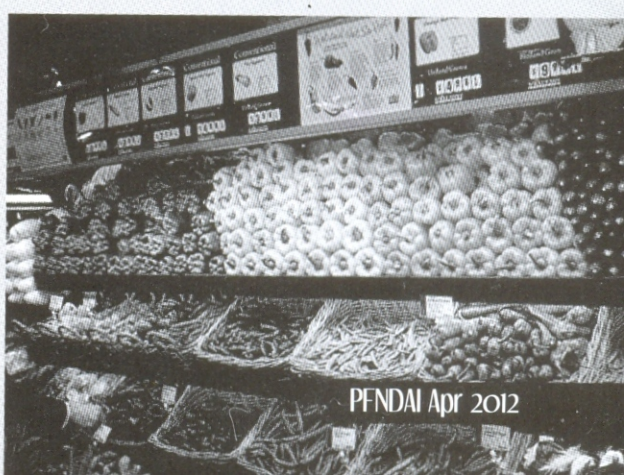
Coming Events

BÉNÉFIQ 2012
September 25-27, 2012
Quebec City Convention Centre, Quebec
T: 418-656-2131 ext. 5862
E: helene.marceau@benefiq.ca
W: www.benefiq.ca

Foodpro Bangladesh
Intl Exhibition & Conference: Food & Bev Prods,
Processing, Packaging Machinery & Allied Technologies
4-6 October 2012
BICC, Dhaka, Bangladesh
Contact: Cruz Expos (91-484-2320290
Extreme Exhibition & Event Solution
(+880-2-8713440)
W: www.foodpro.com.bd

5th International Congress FSFB 2012
Food Science and Food Biotechnology in Developing Countries
October 24-26, 2012
Marival Resorts, Mexico
http://www.amecamex.org.mx/fsfb2012/
T: 52-818-3763044
E: santos@microbiosymas.com

Drink Technology India 2012
Pack Tech India 2012
November 6-8, 2012
Bombay Convention & Exhibition Centre, Mumbai
Organisers: MMI India
(www.drinktechnology-india.com)
T: 022-4255 4710
Messe Dusseldorf India
W: www.messe-duesseldorf.de
T: +91 11 2697 1745



The Science Behind Glycaemic Index: Its Role in Health and Well-Being

Professor Jeya Henry
Director, Clinical Nutrition Research Centre, Singapore

The world is facing a diabetic pandemic. It has been estimated that in India alone, there are nearly 80 million type 2 diabetics. From time immemorial, Indians have believed in the concept of "food as medicine". Today there appears to be a renaissance of interest on the role of diet in the treatment of chronic diseases. All foods we consume are mainly composed of proteins, fats and carbohydrates. In 1981, Jenkins and Wolever showed that the quality of carbohydrate consumed may be respond differently depending on the rate of breakdown of carbohydrates leading to fast or slow release of glucose into the bloodstream. Slow release carbohydrates are called low GI foods and fast release carbohydrates are high GI foods.

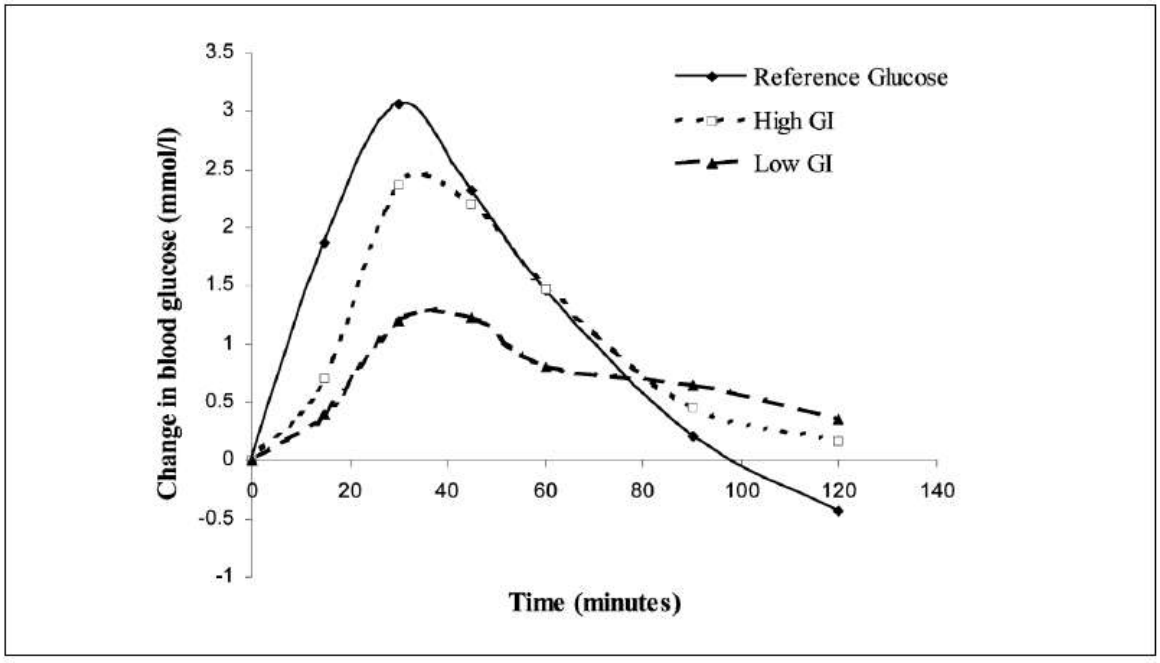
What is Glycaemic Index?

Glycaemic index or GI is the concept developed in the 1980s as a physiological basis for classifying carbohydrates. The GI of a food is determined by comparing its blood glucose response with the blood glucose response after a standard amount of a reference food (either white bread or glucose). It is expressed as a percentage of the incremental area under the glycaemic response curve (AUC) elicited by a portion of food containing 50 g available carbohydrate in comparison with the AUC elicited by 50 g carbohydrate in the reference food in the same subject. The GI of a food is calculated as follows:

$$GI = \frac{\text{Incremental blood glucose area of 50g CHO test food}}{\text{Incremental blood glucose area of 50g CHO reference food}} \times 100$$

A GI value of ≥70 is considered high, a GI value 56 – 69 inclusive is medium and a GI value ≤ 55 is low, where glucose = 100. Figure 1 shows a typical blood glucose profile in response to high and low GI foods.

Figure 1: Blood glucose response to high and low GI foods in comparison to reference glucose.



The concept of glycaemic load (GL) was first introduced by researchers at Harvard University to quantify the glycaemic impact of a portion of food. GL of a typical serving of food is essentially the product of the glycaemic index of the food and the quantity of available carbohydrate in that serving. It is calculated as the quantity of carbohydrate in a food (g/serving) multiplied by the quantity eaten (weight in g or volume in mL) and by its GI and then this is summed for all foods consumed.

GL = ∑ (quantity of food consumed (g or mL) x carbohydrate content of food (g/serving) x GI)

The GL of a diet can be lowered by choosing foods with low GI or by reducing the quantities of carbohydrates consumed or by both. A GL of 20 or more is high, a GL of 11-19 is medium and a GL of 10 or less is low (Table 1)

GI and diabetes

Over the past 2 decades, epidemiological studies have suggested a possible link between low glycaemic index (GI) foods and the control of chronic diseases such as type 2 diabetes, coronary heart disease and metabolic syndrome.

The high prevalence of diabetes and related chronic diseases in India has prompted greater research attention into ways and means of curbing their further escalation. Dietary interventions have become the cornerstone of diabetes prevention and management. There is a large body of evidence suggesting that a reduction in postprandial glycaemia is a key strategy to prevent and control diabetes. Low-GI foods may reduce the insulin demand, improve blood glucose control, reduce blood lipid concentrations and body weight and thus could help prevent diabetes-related cardiovascular events.

Table 1: GI of some common Indian foods

Food	GI	Serving Size (g)	GL
White rice (oryzasativa), boiled (India)	69	150	30
Parboiled rice eaten as part of traditional Indian meal (India)	99	-	-
Basmati rice, white, boiled	58	150	22
Parboiled rice served with green leaf curry and gravy	55	-	-
Chapatti	64	-	-
Chapatti, amaranth-wheat (50:50) composite flour, served with bottle guard and tomato curry	76	60	23
Dosai (parboiled and raw rice, soaked ground, fermented and fried) with chutney	77	150	30
Idli (parboiled and raw rice + black dhal, soaked, ground, fermented, steamed) with chutney	77	250	40
Idiappam (steamed rice flour dough with tender coconut) eaten with gram curry	86	250	52
Rice , boiled served with bottle guard and tomato curry	69	150	26
Lentils	29	150	5
Semolina, steamed and gelatinised (India)	54	150	6
Millet/Ragi	84	70(dry)	42

Ingredients that lower GI of foods

Over the years, numerous food ingredients have been proposed to reduce the glycaemic response of carbohydrate foods. These include lactose, galactose, fructose and soluble fibres. In addition, cereal-based natural products and modified carbohydrates have been used as ingredients to lower the GI of foods. Barley β-

glucan is a natural soluble dietary fibre that has been shown to lower glycaemic response when incorporated to a variety of foods including breads, breakfast cereals, cereal bars, flatbreads, pastas, cookies, crackers and juice drinks. β-glucan is a linear homopolysaccharide of glucose residues connected via a mixture of α- (1 →3] and α- (1 ->4] linkages, resulting in tricellulosyl and tetracellulosyl units linked by single (1 ->3] linkages. High molecular weight barley β- glucan was able to reduce the GI of flat breads (chapattis) when tested in healthy subjects. Fenugreek, a condiment used in Indian cuisine for centuries, has been shown to have an active ingredient capable of reducing blood glucose. A recent meta analysis by Hu et al in 2012, published in the British Medical Journal, found a significant relationship between white rice consumption and the risk of type 2 diabetes. White rice elicits a relatively large glycaemic response and is thus associated with exacerbating impaired glucose tolerance. It contributes a large glycaemic load (GL) to the diets of people in India where it is one of the main staples and is consumed in large quantities. India is incidentally also where diabetes rate is markedly increasing. Given the high GI of rice-based diets, further research is necessary to establish the optimal legume/pulse accompaniment that will maximise the reduction of blood glucose.

The GI debate

Ever since Jenkins et al developed the concept of GI in 1981, it has been used by various researchers to study the effect of various ingredients on blood glycaemia. Recently GI has become a controversial area of nutrition research. Researchers have argued that its high variability limits its use in real life situations for predicting glycaemic response to mixed meals. A further criticism is that the use and application of the GI concept is based on single foods; however in most societies, single foods are rarely eaten alone on a daily basis. The application of the GI concept in Asia is much more relevant due to the high carbohydrate consumption in these communities. Several dietary guidelines recommend the consumption of carbohydrate-rich foods leading to an increased consumption of rice, bread, potatoes and bread. However, such foods have a medium or high GI values when eaten alone.

Conclusion

The high prevalence of diabetes and related chronic diseases in India has prompted greater research attention into ways and means of curbing their further escalation. Diabetes is fundamentally a condition of abnormal glucose metabolism. The type of dietary carbohydrate can therefore influence the risk and course of this disease. The GI which is based on the glycaemic response is a well established indicator of the blood glucose raising potential of a carbohydrate food. Studies show that regular consumption of high-GI diets is associated with an increased risk for type 2 diabetes mellitus and there has been strong evidence suggesting that low GI diets reduce the incidence of diabetes. Besides focusing on the dietary GI in which the form of dietary carbohydrate is important in the management of diabetes, other aspects of carbohydrate-containing foods such as the amount and type of dietary fibre, the type of monosaccharide components, the presence of large amounts of fat or protein, the type and quantity of condiments and accompaniments eaten with the carbohydrate food are important factors that may influence the glycaemic response and alter the glycaemic index of a food.

If there is one scientific point that the reader can take home from this article is that all carbohydrates do not elicit the same blood glucose response. All carbohydrates are not physiologically the same! Food manufacturers and consumers would gain great benefit by selecting low GI foods in their battle to reduce the risk of developing type 2 diabetes and obesity. In India where type 2 diabetes is a major affliction, the time has come for both food manufacturers to develop low GI foods and consumers to demand for such products.

‘Natural’: The most meaningless word on your food label?

Consumers, the marketers all tell us, want foods that are ‘wholesome’, ‘authentic’, and above all ‘natural’, although few of them can articulate what this means.

And they are not alone. Regulators on both sides of the Atlantic have not had a good stab at defining ‘natural’ either.The US FDA follows a 1993 policy that states: “[FDA] *has not objected to the use of the term[natural]on food labels provided it is used in a manner that is truthful and not misleading and the product does not contain added color, artificial flavors or synthetic substances.”*

Is FDA 1993 definition very useful?

But what about high fructose corn syrup, partially hydrogenated vegetable oils, organic solvents such as hexane, GMOs, pesticides and a whole raft of other ingredients that some stakeholders believe do not belong in a product labeled as ‘all-natural’?

Now many observers would argue – persuasively - that high fructose corn syrup is no more or less natural than sugar from sugar beet (given that both go through some hefty processing from farm to fork) and that trying to pin down something as nebulous as natural is a fool’s errand in the first place.

However, increasing numbers of commentators now believe that a more formal definition would at least ensure that if two manufacturers are both using the term on a product label, it should mean the same thing.

Natural means whatever food manufacturers say it means

So should the Food and Drug Administration (FDA) take heed?

“*Absolutely*,” says Marion Nestle, Professor in the Department of Nutrition, Food Studies, and Public Health at New York University.

“*Why the FDA refuses to take this on is beyond me. Natural is a marketing terms that food manufacturers get to use practically in any way they want. This is not a good situation.”*

Confused consumers, happy attorneys?

Scott Martling, who heads up global business development at product development consultancy International Food Network agrees: *“Without a clear definition we see manufacturers and retailers taking different positions with this topic.*

“We feel that this situation ultimately just leads to more confusion on the consumer’s part.”

It is also leading to lawsuits, notes Justin Prochnow, shareholder at law firm Greenberg Traurig LLP.

"The issue of 'all natural' is a labeling issue to which companies in the food and beverage industries need to pay close attention.

"Because the FDA has declined to formalize a definition of natural, plaintiffs' lawyers have seized upon the opportunity to file lawsuits over the use of 'all natural', knowing that the ultimate decision of whether a product is truly natural or not is one that will often have to be decided by a judge or jury.

"That usually means a long, drawn out case that forces many defendants to settle the case or risk huge legal fees, so the lack of a formal definition of natural is a great situation for plaintiffs' lawyers. For that very reason, most companies in the food and beverage industries would welcome an FDA definition of natural."

At least a clearer definition would be fair and consistent

Fergus Clydesdale, distinguished professor at the University of Massachusetts, is not sure that 'natural' has any meaning from a scientific perspective, but says that *"at least a clear definition would let consumers know what is meant and allow food manufacturers to meet their needs".*

Almost two thirds of respondents to a recent FoodNavigator-USA/NutraIngredients-USA poll agreed, and want the FDA to develop a more precise definition, with less than 1% believing its 1993 guidance is sufficiently clear.

But there was also strong support for an industry-led approach that would see trade associations co-ordinate efforts to develop voluntary guidance on natural – perhaps reflecting a belief that the FDA is unlikely to oblige – at least anytime soon.

Big firms don't want this kind of publicity

One such is the Natural Products Association (NPA), which will release new standards to underpin the use of the word 'natural' on meat & poultry products and snacks & cereals this year as part of its Natural Seal certification scheme.

While cynics would argue that firms most likely to play fast and loose with the term 'natural' are the least likely to participate in any voluntary certification scheme, this does not mean it is a waste of time, stressed NPA vice president of scientific and regulatory affairs Cara Welch last year.

"The aim of the natural seal initiative is to give companies developing natural products something that shows consumers they have gone the extra mile."

But she added: "*I certainly hope that the bigger branded firms buy into it. Consumers are getting pretty skeptical about natural now; look at all the recent lawsuits over natural and GMOs. These stories are getting a lot of traction and big firms don't want this kind of publicity."*

DuPont: FDA is unlikely to define natural any time soon

Jennifer Lindsey, director of marketing for DuPont Nutrition & Health in North America, agrees that it is up to the food industry to try and sort this out, because the FDA has probably got bigger fish to fry right now.

She adds: "*It's not likely that we're going to have any more definitive guidance on natural definitions. It seems clear that the government is not going to provide that, and it is, at least in part, because we're talking about something that's very subjective.*

"The FDA tries to take an objective approach to clarifying what is generally considered safe, or not safe, for consumption, but we shouldn't expect that they will ever go further than that.

"It really is for food companies and retailers to decide how best to deliver what their consumers are comfortable with."

Article from Food Navigator USA by Elaine Watson, 28-Feb-2012

❁❁❁

Research in Nutrition & Health

Dietary Salt Intake Linked to Gastric Cancer Risk

A new study investigating a link between high salt intake and risk of gastric cancers could add to increasing pressure for industry-wide sodium reduction, researchers have said. The study – a meta-analysis of previous research published in Clinical Nutrition – investigated the relationship between habitual dietary salt intake and the risk of gastric cancer using data from nearly 270000 people. Using data from seven previous studies, the researchers reported to find "a graded positive association between salt consumption and incidence of gastric cancer."

"Our pooled estimates indicate that habitual 'high' and 'moderately high' salt intake are associated with 68% and 41% greater risk of gastric cancer, respectively, compared with 'low' salt consumption," said the research team, led by Professor Pasquale Strazzullo, from the University of Naples Federico II.

Speaking with FoodNavigator, Professor Graham MacGregor of the Wolfson Institute of Preventive Medicine, UK, and Chairman of Consensus Action on Salt and Health (CASH) said that whilst the findings of the study are not new, what it does do is confirm "in a very well done study" that previous findings are correct. "My own view is that it's getting to the stage where we can say that it is almost certainly causative," said MacGregor, who added that the meta-analysis offered further evidence for the mechanisms behind salt's effect on gastric cancer.

Salt – some but not too much

Sodium is of course a vital nutrient and is necessary for the body to function, but the average daily salt consumption in the western world, between 10 and 12 grams, vastly exceeds maximum recommendations from WHO/FAO of 5 grams per day to control blood pressure levels and reduce hypertension prevalence and related health risks in populations. In countries like the UK, Ireland, the USA, and other industrialized countries, over 80% of salt intake comes from processed food, and people therefore do not realize they are consuming it.

Previous research has suggested that increased consumption of salted foods could increase the risk of certain cancers – including gastric cancer. "In general, the detection of statistical associations in prospective studies provides stronger support to the possibility of a cause–effect relationship; however, in the case of excess salt intake and risk of gastric cancer the cohort studies available did not show consistent results," explained Strazzullo and his team.

"For this reason, we carried out a systematic review and meta-analysis of these studies to evaluate the association between habitual levels of dietary salt intake and risk of gastric cancer and to obtain an estimate of risk."

Industry action

The process of reducing salt levels in foods is an ongoing process within the industry, with many now acknowledging that high sodium levels in some foods is a major issue for the industry.
Strazzullo and his colleagues explained that population reduction in salt intake –recognised as a global priority – through many avenues, including industry reformulation, has been suggested for the prevention of cardiovascular disease both in developed and developing countries.

"Although our results do not conclusively prove a causal relationship between excess salt intake and risk of gastric cancer, they do suggest the potential for further benefit by this policy in addition to its effects on cardiovascular morbidity and mortality," they said.

MacGregor said that the latest findings "give another angle to salt reduction," explaining that it adds into other evidence on cancer and cardiovascular disease to show that "reducing salt intakes globally needs to be a priority. I think if you talk to most people in the food industry, then they would say that so long as it's a level playing field, and everybody has to do it together, then they don't mind doing it," he said.

However, as simple as taking out some salt in foods might sound, the challenges associated with reducing levels in food are intricate and have major challenges in reformulation. Speaking to FoodNavigator previously, Dr Paul Berryman, CEO of Leatherhead Food Research, explained that reducing salt in foods is "a complex issue. Salt reduction sounds easy, but it isn't!" said Berryman, adding that the effects of salt reduction on food safety and shelf life are a particular worry because of salts action as a preservative.
Food Navigator by Nathan Gray, 06-Feb-2012
❁❁❁

Healthy Aging

Researchers at the University of Zurich are set to begin a multinational study of simple, cost-effective strategies for preventing chronic diseases in the elderly.

The number of European seniors aged 70 and over is expected to increase by 40% in the next 20 years, while those aged 80 and over will more than double, causing a corresponding increase in the number of people suffering costly and age-related chronic diseases such as osteoporosis, arthritis, heart and lung diseases and dementia. This expectation is the backbone of a soon-to-begin, multinational European study geared to evaluate the benefits of vitamin D3, omega 3s and home exercise on prevention of chronic diseases in the elderly.

Dubbed DO-HEALTH (Vitamin D3-Omega 3-Home Exercise-Healthy Aging and Longevity Trial), the study will be primarily focused on the effect of the study interventions on five key health indicators: risk of fractures, blood pressure, lower extremity function, cognitive function and rate of infections. In addition, other important aspects of senior health, such as falls and osteoarthritis, as well as blood biomarkers, will be investigated.

Given the potential for social and economic repercussions associated with treating chronic conditions on a rapidly growing European population segment, the researchers behind the study sought to examine measures that were safe, effective and affordable. The DO-HEALTH study will be Europe's largest healthy aging study and is expected to provide solid evidence in supporting the efficacy and safety of the preventive interventions of vitamin D and omega 3 fatty acid supplementation in tandem with a simple home exercise program.

The study will measure several other important parameters, such as the severity of knee pain in patients with osteoarthritis, the ability to carry out daily life activities and the participants' general quality of life.

"Various studies have shown that vitamin D and simple targeted exercise programs can significantly improve functional mobility and reduce falls and fractures in seniors, even by up to 30% [and] omega 3 provides significant health benefits to seniors," commented Professor Heike Bischoff-Ferrari, director of the Centre on Aging and Mobility of Zurich University and DO-HEALTH principal investigator. "DO-HEALTH hopes to provide definitive evidence that the three interventions, alone or combined, are able to reduce the number of fractures, the functional and cognitive decline, the risk of hypertension and the risk of infections in the senior population."

Starting this May, DO-HEALTH will recruit participants in eight European cities: Zurich, Basel and Geneva in Switzerland, Toulouse in France, Berlin and Nuremberg in Germany, Coimbra in Portugal, and Innsbruck in Austria. The researchers said they expected to recruit and observe more than 2000 healthy-at-start community-dwelling seniors, aged 70 and older. Participants' follow-up will be in-person and in quarterly intervals, including yearly clinical visits.

Each DO-HEALTH participant will be followed over 36 months. Every year, the participant will be invited to the trial center for a clinical visit including a physical examination, blood exams, physical and cognitive tests and interviews. Every three months each participant will be contacted via phone by the study center in order to get information about health status, record any adverse event or new living condition, and to motivate the patient to adhere to the assigned study interventions.

"Such wide and diverse geographical area means that the study population will be representative of the senior

European population and the results will be more generalizable across Europe," the researchers stated via press release. "This will also allow the study to take into accounts the roles of diverse environmental and dietary factors experienced by the European seniors."

"The findings of this important new study may provide the critical evidence that will result in the implementation of simple, cost-effective strategies and medical recommendations to help tackle the growing burden of chronic diseases in Europe's senior population," commented Professor René Rizzoli, board member of the International Osteoporosis Foundation and head of the Division of Bone Diseases, Department of Medical Specialties, Geneva University Hospitals and Faculty of Medicine. "Health authorities must do all they can to ensure that senior citizens remain physically independent and active members of the community."

The DO-HEALTH consortium is comprised of 21 partners, which include both public and private stakeholders. The DO-HEALTH project is expected to benefit from the collaboration of clinical researchers, industry partners, consultants, public health organizations, IT and media partners, each selected for excellence in their respective fields of expertise.

From Nutraceuticals World March 5, 2012 By Joanna Cosgrove

❁❁❁

Study Finds No Link between Food Colors, ADHD

March 2, 2012 Food Product Design

There is not enough scientific data to support a link between FDA-approved food colors and the increased incidence of attention-deficit/hyperactivity disorder (ADHD), according to results of a new meta-analysis published in the Journal of the American Academy of Child & Adolescent Psychiatry. The results indicate food colors may promote ADHD symptoms, but when the data is limited to FDA-approved colors, the link is no longer reliable.

For the meta-analysis, researchers at the Oregon Health and Science University and the International Life Sciences Institute (ILSI) identified studies through a literature search using the PubMed, Cochrane Library and PsycNET databases through February 2011. Twenty-four publications met inclusion criteria for synthetic food colors; 10 additional studies informed analysis of dietary restriction. A random-effects meta-analytic model generated summary effect sizes.

Data suggested information from parents indicate an effect of food colors on ADHD; however, it was not found to be a reliable link when teacher input was calculated or when the analysis was limited to FDA-approved food colors.

They found an estimated 8% of children with ADHD may have symptoms related to synthetic food colors. The researchers noted renewed investigation of diet and ADHD is warranted.

The European Commission asked the European Food Safety Authority (EFSA) in 2010 to re-evaluate the safety of all previously authorized food additives, including colors, by 2020, taking into account the latest science. Based on EFSA's scientific advice, the European Commission and Member States may decide together to change the uses of additives or if needed to remove them from the EU list of authorized food additives in order to protect consumers. Food colors are being re-evaluated first as they were among the first additives to be authorized for use in the EU.

The United States has two main categories of food color additives: certified and exempt. According to FDA, color additives are safe when used properly. The FDA allows the use of colors that it knows have "a reasonable certainty of no harm" for the intended use. Color additives that have been found to cause cancer in animals or humans are not allowed for use in FDA-regulated products.

For more information on the topic, check out "Food Colors and ADHD" in the Food Product Design Content Library.❁❁❁

New Treatments on the Horizon for Food Allergies

March 6, 2012 Food Product Design

ORLANDO—The “Big Eight" allergens—tree nuts, peanuts, soy, fish, shellfish, dairy, egg and wheat—account for 90% of all food allergies, and according to the Centers for Disease Control and Prevention (CDC), there was an 18% increase in reported food allergies between 1997 to 2007. And the number of affected individuals is growing, leading market-research firms to estimate the global food allergy and intolerance sector is on track to top $26 billion by 2017.

And while controlling food allergens in a food manufacturing system is of utmost importance, new research presented at the 2012 Annual Meeting of the American Academy of Allergy, Asthma & Immunology (AAAAI) shows promise for a treatment that could make it possible for people with food allergies to eat trigger foods without having allergy symptoms.

Researchers at Johns Hopkins Children’s Center examined two potential treatments—sublingual immunotherapy and oral immunotherapy. They found children with severe milk allergy who received a longer schedule of sublingual immunotherapy and then moved to oral immunotherapy had less respiratory reactions along with less frequent use of certain medications.

“While the overall result of the study, which was recently published in *The Journal of Allergy and Clinical Immunology*, found that oral was far more effective than sublingual immunotherapy, it was also clear that oral was associated with more significant allergic reactions to the treatment," said senior study author Robert A. Wood, MD, FAAAAI, director of Allergy & Immunology at Johns Hopkins Children’s Center.

In previous research, sublingual was compared to oral immunotherapy after a short period of increasing sublingual doses. The same researchers from Johns Hopkins and Duke University decided to see if a longer period on sublingual and then oral immunotherapy would improve the safety of the treatment. Thirty children with cow’s milk allergy were randomly placed into two groups that received either a short or longer sublingual schedule followed by oral immunotherapy. Eight sublingual subjects moved over to oral immunotherapy. After comparing reactions across the doses, they concluded the longer sublingual schedule before moving to oral immunotherapy appeared to improve safety although it did not eliminate all symptoms. Symptoms occurred with approximately 25% of 2,251 doses.

While the overall rates of reaction between the two groups were similar, the longer sublingual immunotherapy group followed by oral immunotherapy had fewer lower and upper respiratory reactions and used antihistamines and inhaled beta-agonists less frequently.

“We continue to search for the best approach for the treatment of food allergy. This study shows that for at least some children, especially those with more frequent or severe reactions to oral immunotherapy, beginning treatment with sublingual might be beneficial," Wood said.

❁❁❁

Mediterranean Diet Prevents Neurodegenerative Disease

March 5, 2012 Food Product Design

BARCELONA—Consumption of antioxidant-rich foods typical of a Mediterranean diet, including fruit, vegetables, fish, nuts, low-fat dairy, whole grains and olive oil, has been found to prevent neurodegenerative disease in older adults with cardiovascular disease, according to a study published in the Journal of Alzheimer’s Disease.

Researchers at the Lipids Unit at the Barcelona Hospital Clinic conducted the study to assess the association between the consumption of antioxidant foods typical of the Mediterranean diet and better cognitive performance. The study was conducted with a subsample of 447 participants of the PREDIMED study, a long-term nutritional intervention study aimed to assess the effects of the Mediterranean diet in the primary

prevention of cardiovascular diseases. The trial involved more than 7,000 subjects, ages 55 to 80 years who were at high risk of cardiovascular disease.

All volunteers were given a food habits questionnaire as well as a neuropsychological test to determine cognitive performance, particularly in the area of memory. Researchers also measured the excretion of polyphenols in urine as a marker of the intake of these antioxidant compounds present in many Mediterranean foods.

They found consumption of olive oil, as well as drinking coffee, was associated with better scores on tests of verbal memory. The intake of nuts was associated with better working memory and moderate wine consumption was associated with better global cognitive function. A common feature of all these foods is that they are rich in polyphenols. They also found people who had higher levels of polyphenols in urine, an indicator of increased consumption of foods containing it, scored better on memory tests.

The results suggest foods rich in polyphenols characteristic of the Mediterranean diet could counteract the cognitive decline associated with age due to its high antioxidant power.

❁❁❁

Parents Strongly Influence Kids' Nutrition

March 5, 2012 Food Product Design

GRANADA, Spain—New research published in the journal *Nutriciónhospitalaria* adds to the theory that a child's nutrition is strongly influenced by the person who prepares their meal. The findings suggest children who have lunch at home with their mother have a better nutritional status and have a lower risk of suffering obesity than children whose meal is prepared by a person other than their mother.

University of Granada researchers sampled 718 school children aged 9 to 17 years from 13 public and private schools located in the province of Granada. The children's weight, size and body mass index (BMI) by age and sex were assessed using anthropometric measurements. Skinfold measurements were performed at six sites—biceps, triceps, waist, hips, arms and thighs. The researchers also designed a questionnaire to assess the children's family environment, consumption frequency of specific foods and physical exercise habits. Their aim was to examine the relationship between family environment and obesity and overweight in childhood.

They found a relationship between sedentary leisure habits and BMI. Statistically significant differences were found in BMI between children with sedentary habits and children with good physical exercise habits.

The researchers concluded that "it is extremely important" that healthy habits are promoted and encouraged within the family; children should play "traditional games", which usually involve physical exercise. Healthy habits and physical exercise are essential for achieving healthy children.

❁❁❁

Trans Fat Intake Ups Stroke Risk in Women

March 2, 2012 Food Product Design

CHAPEL HILL, N.C.—Older women whose diets include a substantial amount of trans fats are more likely than their counterparts to suffer an ischemic stroke, according to a new study published in the journal Annals of Neurology. Results also found the risk of stroke associated with *trans* fat intake was lower among women taking aspirin.

Researchers at the University of North Carolina conducted a study of 87,025 women ages 50 to 79 enrolled in the Women's Health Initiative Observational Study (1994 to 2005) to investigate the association between *trans* fat intake and ischemic stroke. They found those whose diets contained the largest amounts of *trans* fats were

39% more likely to have an ischemic stroke than women who ate the least amount of *trans* fat. The risk was even more pronounced among non-users of aspirin. Those who ate the most *trans* fat were 66% more likely to have an ischemic stroke than females who ate the least *trans* fat.

Among women who took aspirin over an extended period of time, researchers found no association between *trans* fat consumption and stroke risk, suggesting that regular aspirin use may counteract *trans* fat intake's adverse effect on stroke risk among women.

"Our findings highlight the importance of limiting the amount of dietary *trans* fat intake and using aspirin for primary ischemic stroke prevention among women, especially among postmenopausal women who have elevated risk of ischemic stroke," the researchers said.

A separate study published in the Journal of the American Medical Association found blood levels of trans-fatty acids in Caucasian U.S. adults decreased by 58% from 2000 to 2009. The reduction is thought to be associated with the nearly decade-old federally mandated labeling of *trans* fats on food labels.

❁❁❁

Vitamin D Cuts Body Fat, Boosts Heart Health

February 29, 2012 Food Product Design

TEHRAN—Increasing daily intake of vitamin D3 can significantly improve high-density lipoprotein (HDL) cholesterol and help reduce body fat mass in overweight or obese individuals, according to a new study published in the British Journal of Nutrition.

Researcher at the Tehran University of Medical Sciences investigated the effect of vitamin D3 supplementation on cardiovascular risk factors in women. Study participants included 77 overweight and obese women with an average age of 38 who were randomly assigned to receive either the daily vitamin D3 supplements or placebo for 12 weeks. Blood pressure, serum lipoproteins, apolipoproteins and anthropometric parameters were recorded. Dietary intake was recorded using 24-hour food recall and food frequency questionnaire' physical activity was assessed by the International Physical Activity Questionnaire.

Mean total cholesterol concentrations increased in the vitamin D group, but declined in the placebo group, and a significant effect was observed. In the vitamin D group, mean HDL-cholesterol concentration increased, whereas it decreased in the placebo group. Mean apoA-I concentration increased in the vitamin D group, although it decreased in the placebo group. Mean LDL-cholesterol:apoB-100 ratio augmented in the vitamin D group, while this ratio declined in the placebo group. Body fat mass was significantly decreased in the vitamin D group more than the placebo group.

The findings showed supplementation with vitamin D3 can significantly improve HDL-cholesterol, apoA-I concentrations and LDL-cholesterol:apoB-100 ratio, which remained significant in the multivariate model including anthropometric, dietary and physical activity measures.

❁❁❁

Nitrates in Cured Meats May Aggravate COPD Symptoms

March 12, 2012 Food Product Design

BARCELONA—Eating large amounts of cured meats, such as deli meat, bacon and hot dogs may aggravate symptoms of chronic obstructive pulmonary disease (COPD) that can lead to risk of hospitalization, according to a new study published in the European Respiratory Journal. The findings suggest the nitrates used as preservatives in cured meats produce reactive nitrogen species that could damage lung tissue.

Researchers at the Center for Research Environmental Epidemiology examined data from 274 COPD patients who were monitored for an average of two years starting with their first hospital admission for the disease. Among other information, the participants reported on their consumption of cured meats, such as ham, salami, pork sausage and bacon.

They found eating large amounts of cured meats—more than one slice of ham per day, as example—may aggravate symptoms of COPD, causing people with the condition to be readmitted to the hospital.

They reported the nitrates used as preservatives in cured meats produce reactive nitrogen species that could damage lung tissue, and excessive consumption of these food items might raise the risk of hospitalization among COPD patients.

"Our findings provide the first evidence that an excessive intake of cured meat can worsen progression of COPD. We believe that adherence to current dietary guidelines, which recommend a moderate or occasional intake of cured meats, will be sufficient in order to avoid this excess of risk," study lead author Dr. Judith Garcia-Aymerich.

While the study found an association between greater consumption of cured meats and flare-ups in patients with the lung disorder, it did not prove a cause-and-effect relationship. The researchers noted their research was limited by a lack of information on changes in the patients' diets after their first hospitalization.

❁❁❁

Green Tea Reduces Brain Damage from Lead Poisoning

March 7, 2012 Food Product Design

GIZA, Egypt—Drinking green tea may provide protection against neurotoxicity induced by consuming high levels of lead in foods, according to a new study published in the journal NeuroToxicology. The findings suggest the combination of green tea and the chemical lead acetate causes less damage to the brain and nervous system compared to lead acetate alone.

In the United States, levels of heavy metals, including lead, should not exceed 10 parts per million (ppm) in any food ingredient. Imported products, such as spices and powders, pose a particular threat, because many countries do not share the United States' standards concerning lead. In fact, in 2010, four cases of lead poisoning in Indian children in the Boston area were linked to consumption of Indian spices that were used as seasonings as well as in ceremonial powders commonly used to mark newborn Indian infants for religious and cultural purposes. Investigators discovered after the children received treatment and the parents discontinued use of the spices and/or powders, all of the children had improved blood lead levels.

For this study, five groups of rats were fed placebos, lead acetate, lead acetate along with green tea, solely green tea for one month, or lead acetate for one month, followed by green tea for 15 days.

Lead acetate administration induced loss of body weight and decreased concentration of reduced glutathione and superoxide dismutase activity (SOD) activity in brain tissues, as well as significantly high DNA fragmentation and pathological changes. Co-administration of green tea with lead acetate significantly alleviated these adverse effects.

❁❁❁

When will African ingredients get the attention they deserve?

Nutra-ingredients USA 08-Mar-2012

Africa has a wealth of indigenous plant species, but has not been as successful as India and China at commercializing them as nutraceuticals, one South African firm trying to spread the word about the continent's natural ingredients tells Elaine Watson

So why isn't Africa cashing in? Lots of reasons, says Adolf Joubert, chief executive of Afrinatural , which supplies
a wide range of raw materials from baobab to marula. "The South African Medical Research Council has identified 4,000 plant species out of a database of 24,000 plants as having 'economical potential'. This is probably more than any other part of the world can offer. But people are still looking to India and China to meet their needs, even in Africa itself. We must get companies to buy the argument that Africa, just like China, India and Europe, has an enormous wealth of solutions."

Establishing Africa as a significant source of plant materials

He adds: "We have some mind-blowing research, and we like spending millions on production – either cultivation projects or manufacturing facilities - but none on creating demand, on marketing, on establishing Africa as a significant source of plant materials. "So we are oversupplied with manufactured and cultivated product that cannot be sold. When projects fail they disappear off the glossy departmental reports. And so we carry on missing the opportunities. In my opinion, part of the problem is that there is still a post-colonial mindset of waiting for some help, to be discovered, instead of coming out aggressively and having confidence in ourselves." He added: "However, Kenya has flickerings of stepping out of this mindset – they have done a lot to promote Pyrethrum, a natural insecticide – while Tanzania and Rwanda are also proving themselves in the New African economy. "One of the problems South Africa has is that it almost has too many plants so it has been hard to know where to focus all the energy."

Partnership approach

Afrinatural, which has a US office in Texas, has strong links with growers all over Africa, says Joubert. "If you want to promote South Africa, you need to present Africa." But how best to do it? Aggressively promoting a handful of higher profile African ingredients to international markets such as nutrient powerhouse baobab or marula is one approach, he says. However, a partnership approach whereby buyers looking to meet a gap in a given market or provide a fresh slant on an established market work with African suppliers to find ingredients that fit the bill would be even more effective, he adds.

"I will be delighted if baobab really makes it on the international stage, because it might make people start to look at what else Africa has to offer. But there are lots of other ingredients out there as well. If supplement firms say we're looking for something to address this health condition or that application, we can come back and suggest ingredients that specifically meets their needs and give them a real point of difference." This would enable them to tap into an "enormous wealth of plant species with ages of knowledge attached to them, rather than merely following the masses", he claims. But what ingredients are worth a closer look? It all depends what you're looking for, says Joubert, but some worth watching include:

Marula- Indigenous to southern Africa, the fruit from the marula tree contains a stone containing edible seeds that can be crushed to release oil with a similar fatty acid composition to olive oil, but with greater stability. Used for centuries as a skincare treatment, it can also be used as a culinary oil or in dietary supplements.

Baobab - Baobab fruit pulp powder is claimed to contain more fiber, vitamin C, iron, potassium and magnesium than any other fruit powder available on the market, weight for weight. It is also one of the few plant sources of calcium and contains more than 50% fiber.

Rooibos &Honeybush Teas - Sold as tea, but also as ingredients in yogurts and beverages.

Rose Hip Tea & Oil – A good source of vitamin C.

Pelargonium sidoides (Umckaloabo or South African Geranium) - Good for bronchitis, sore throats and the common cold.

Sceletiumtortuosum– A succulent herb common to South African marketed as a natural stress reliever and appetite suppressant.

Irvingia extract (African Mango) - For weight management. Recently singled out by SPINS as an ingredient to watch in 2012."This ingredient is set apart from many other natural weight loss products in that scientific research supports the claims regarding its use. African Mango has been shown to be effective in reducing body

weight in three separate clinical studies. The weight loss category is booming at the moment and African Mango is its rising star."

Thaumatin- A natural sweetener and flavor modifier from the katemfe fruit of West Africa that is heat stable, water soluble and stable under acidic conditions.

MoringaOleifera– A superfood. Immature Moringaoleifera pods are rich in amino acids, vitamins, minerals, co-enzymes, and antioxidants. Moringa leaves are also protein-dense and rich in vitamin A, calcium and vitamin C.

Sutherlandiafrutescens– For immune health and glucose control. "One of the most researched plants in South Africa," says Joubert. "This has a lot of potential."

Hypoxishermerocallidea (African Potato)– For immune health, says Joubert: "Our previous Ministers of Health have unfortunately created a lot of negative publicity on this one, but the core argument stands."

Hoodia: 'Still hanging around in the wings'

Meanwhile, hunger-busting succulent hoodia – perhaps Africa's most famous – but controversial – nutraceutical export, is "still hanging around the wings for the bold that want to re-introduce it", claims Joubert. "The problem was not so much about efficacy, but that the black market was not controlled, so we got to a stage where 85% of the hoodia on the market was not hoodia at all."

❁❁❁

Pre and Probiotics in formula could boost infant immunity

Two new studies – both published in the *Journal of Parenteral and Enteral Nutrition* – suggest that the addition of prebiotic ingredients to infant formula could help to boost growth of 'beneficial bacteria' in the gut whilst the use of probiotics may enhance immunity. Professor Kelly Tappenden of the University of Illinois, who led both studies, said: "The beneficial bacteria that live in a baby's intestine are all-important to an infant's health, growth, and ability to fight off infections." "Breast-fed babies acquire this protection naturally. Formula-fed infants get sick more easily because the bacteria in their gut are always changing," added Tappenden.

The idea, she explained, is to make infant formula more like breast milk by promoting growth of intestinal bacteria that are present in the gut of breast-fed babies'. The researchers said that the infant formula containing prebiotic oligosaccharides "was well tolerated, increased abundance and proportion of bifidobacteria, and reduced fecal pH in healthy infants," whilst the formula containing the probiotic "significantly enhanced immunity" – especially in babies delivered by Caesarian section (C-section).

Sterile environment

Tappenden noted the finding that babies delivered by C-section had an especially improved immune response, is important because C-section babies are a more vulnerable group. "Babies delivered naturally are exposed to the mother's bacteria as they travel through the birth canal, and they develop a healthier population of gut bacteria as a result," said Tappenden. "[But], babies delivered by C-section enter a sterile environment, and their gut microbiota is quite different," she explained.

Research highlights

In probiotics study, Tappenden and her team made up of researchers from five other institutions, divided 172 healthy six-week-old infants into two formula-fed groups and a breast-fed group. Beginning at six weeks of age, the formula-fed groups received either a control formula or a formula that contained Bifidobacteriumanimalissubspecies lactis(Bb12) for a period of six weeks. The team found that infants receiving the probiotic formula had increased concentrations of certain immune biomarkers – including secretory, anti-rotavirus, and anti-poliovirus-specific immunoglobulin A (IgA).

In addition to finding increased immune markers, Tappenden said fecal samples from babies receiving the probiotic formula also suggested significantly heightened immunity – especially among the Caesarian-delivered infants. In the second study, infants who consumed a formula containing the prebiotic also benefited, said Tappenden. She explained that 139 healthy babies were divided into three groups, where breast-fed infants were compared with babies fed either a control formula or a formula supplemented with galacto- and fructo-

oligosaccharides for six weeks. When fecal samples were tested, babies fed the prebiotic formula showed modest improvement in the number of beneficial bacteria and decreases in the types of bacteria that are often associated with illness, she explained.
Nutra ingredients, USA by Nathan Gray 06-Mar-2012
❁❁❁

Curcumin may have Parkinson's promise

The study – published in the Journal of Biological Chemistry – reports that the compound found in the spice turmeric could one day be effective in preventing or reducing Parkinson's by blocking the clumping (aggregation) action of proteins involved in the disease. Researchers from Michigan State University, USA, found that the spice prevents aggregation of a protein known as alpha-synuclein by forcing it to scatter.

"Our research shows that curcumin can rescue proteins from aggregation, the first steps of many debilitating diseases," said Professor Lisa Lapidus who co-authored the paper. "More specifically, curcumin binds strongly to alpha-synuclein and prevents aggregation at body temperatures," she added.

The researchers said that when curcumin binds to alpha-synuclein it not only stops clumping, but it also speeds up the protein's folding and reconfiguration. By increasing the speed, the spice compound makes protein avoid clumping with other proteins as it is prone to when it folds more slowly. However Lapidus said that the promise shown by curcumin may be short lived: "Curcumin's usefulness … may be pretty limited since it doesn't go into the brain easily where this misfolding is taking place," she said. However she said that the study does open the door for new developments as it showcases the potential for measuring and altering the reconfiguration of proteins that can lead to serious health issues. Lapidus' team said that shedding light on the process by correlating the speed at which protein folds with its tendency to clump or bind with other proteins could help future research and development activities.

Curcumin promise

Curcumin, the natural pigment that gives the spice turmeric its yellow colour, has increasingly come under the scientific spotlight in recent years, with studies investigating its potential health benefits. As a result, curcumin has been linked to a range of health benefits, including potential protection against prostate cancer, Alzheimer's, protection against heart failure, diabetes, and arthritis. However curcumin was among a host of herbs claiming joint health benefits to be delivered negative article 13.1 opinions by the European Food Safety Authority (EFSA) in February 2010. The new study adds weight to the purported benefits of the yellow pigment by suggesting the compound may help to slow down the folding of proteins involved in the first step of diseases such as Parkinson's.
Nutra Ingredients by Nathan Gray, 23-Mar-2012
❁❁❁

Consuming fruit high in fiber may promote dental health in older men

A study published in the *Journal of the American Geriatrics Society* shows that men who eat more high-fiber fruits may improve their dental health later in life. The study led by Elizabeth Krall Kaye, an epidemiologist at the Boston University School of Dental Medicine, followed 625 healthy men from the Boston, Mass., area for an average of 15 years. Researchers first assessed participants' dental health in 1984 and every three to five years after that. Before each examination, men filled out a questionnaire about their daily intake of certain high-fiber foods—those that contained more than 2.5 g of dietary fiber per serving. That list includes bananas, apples, oranges, blueberries, broccoli, Brussels sprouts, sweet potatoes, spinach, peanuts, oatmeal, and other grains.

In men aged 65 and older, the researchers found that each additional serving of high-fiber fruit was associated with a 14% lower risk of erosion of the part of the jaw bone that supports the teeth, a 5% lower risk of gum recession, and a 12% lower likelihood of tooth loss. Eating high-fiber vegetables and grains did not significantly reduce the men's risk of gum disease.

Kaye's team is not yet clear about why high-fiber foods, especially fruits, would lead to less gum disease, if they are playing a role. One possibility is that foods high in fiber, which often require more chewing, could increase saliva production, which would remove harmful bacteria from the mouth.

IFT Weekly February 29, 2012

❁❁❁

Fish Oil Added to Yogurt May Help Consumers Meet Daily Nutritional Requirements

Science Daily (Mar. 28, 2012) — Many consumers want to increase their intake of heart-healthy n-3 fatty acids, found naturally in fish and fish products, but find it difficult to consume the levels recommended by the American Heart Association. Scientists at Virginia Tech have demonstrated that it may be possible to achieve the suggested daily intake in a single serving of a savory-flavored yogurt, providing an easily incorporated dietary source for these valuable fatty acids. Their work is detailed in the April issue of the *Journal of Dairy Science®*.

"The international popularity of yogurt and the health-promoting properties associated with probiotics, minerals, vitamins, and milk proteins suggest yogurt could be an excellent vehicle for the delivery of n-3 fatty acids," says lead author Susan E. Duncan, PhD, Professor and Director of the Macromolecular Interfaces with Life Sciences Program, Food Science and Technology, Virginia Tech. "Recent innovations in exotic yogurt flavors provide innovation opportunities. We tested different levels of fish oil in a savory chili and lime flavored yogurt, and found that a 1% concentration of fish oil, which provides more than the suggested daily intake, could be acceptable to a large proportion of the general population, and have a potential market among health- and nutrition-conscious consumers."

In a preliminary study, tasters could not differentiate between low levels of fish and butter oils in unflavored yogurt, but they could discern yogurt flavored with oxidized fish oil, which has a strong fishy taste. A second panel underwent 6 hours of training so that they could accurately describe and measure lime, sweet, heat, acid, and oxidized flavor attributes. They found the fish flavor more pronounced than the lime and acid characteristics in a chili-lime flavored yogurt fortified with 1% oxidized fish oil, compared with yogurts containing .43% or 1% fresh fish oil. The oxidized flavor was higher in chili-lime yogurts containing oxidized fish oil and a high level (1%) of fresh fish oil.

In a second study, 100 untrained consumers who were generally nutritionally motivated and aware of the health benefits of n-3 fatty acids evaluated the overall acceptance and flavor acceptance of chili lime yogurt enriched with butter oil or fish oil. Fifty percent of the tested group rated chili-lime flavored yogurt fortified with 1% butter oil or fish oil in the positive end of the scale ("liked extremely" to "neither liked nor disliked"). Thirty-nine percent reported they would be highly likely or likely to consume the chili-lime flavored yogurt on a regular basis. The low overall acceptance of the product by the remaining 50% of the tested group may be attributed to the chili-lime flavor or the lack of sweetness in the product.

These studies demonstrate the potential for consumption of the entire suggested daily intake of n-3 fatty acids in a single serving of savory-flavored yogurt, providing an alternative and easily incorporated dietary source of these heart-healthy fatty acids.

"Innovation of unsweetened, savory flavoring in combination with the powerful health functionality of n-3 fatty acids and dairy components is of interest to a large segment of the health- or nutrition-aware population. A potential market exists for this population," Dr. Duncan concludes.

❁❁❁

Compound in Soy Products May Help Lower Blood Pressure

Science Daily (Mar. 25, 2012) — Soy-based food products have taken grocery store shelves by storm, and the benefits of soy are steadily beginning to emerge. Eating foods that contain isoflavones -- a key compound in soy milk, tofu, green tea and even peanuts -- every day may help young adults lower their blood pressure. Moreover, and for the first time, there appears to be a particular benefit for African Americans, who have hypertension prevalence rates near 42 percent, according to research presented March 25 at the American College of Cardiology's 61st Annual Scientific Session.

"What's unique about this study is that the results are very applicable to the general population. Our results strongly suggest a blood pressure benefit for moderate amounts of dietary isoflavone intake in young black and white adults," said Safiya Richardson, a graduating medical student at Columbia University's College of Physicians and Surgeons and the study's lead investigator. "Our study is the first to show a benefit in African Americans, who have a higher incidence of high blood pressure, with an earlier onset and more severe end-organ damage."

Compared to those consuming less than 0.33 mg of isoflavones per day, those reporting the most isoflavone intake (more than 2.5 mg per day) had a significantly lower systolic blood pressure (-5.5 mmHg lower on average). To help put this into context, an 8 ounce glass of soy milk has about 22 mg of isoflavones, and 100 g of roasted soybeans have as much as 130 mg.

"This could mean that consuming soy protein, for example, in combination with a DASH diet -- one that is high in fruits and vegetables, low-fat dairy and whole grains -- could lead to as much as a 10 mmHg drop in systolic blood pressure for pre-hypertensives, greatly improving their chances of not progressing to hypertension," said Richardson. "Any dietary or lifestyle modification people can easily make that doesn't require a daily medication is exciting, especially considering recent figures estimating that only about one third of American hypertensives have their blood pressure under control."

Isoflavones are thought to work by increasing the production of enzymes that create nitric oxide (NO), a substance that helps to dilate or widen blood vessels, thereby reducing the pressure created by blood against the vessel walls. Richardson said this mechanism may partially explain why the study was able to find an association with smaller amounts of isoflavone intake than examined previously. The relatively pronounced results in the overall biracial cohort may be driven by a more intense effect of isoflavones in African Americans, Richardson said. This is because endothelial dysfunction, a condition in which the blood vessels have a hard time either producing or using NO, plays a bigger role in hypertension in African Americans than it does in whites.

"It's possible that these foods may help compensate for this," she said. "Based on our results and those of previous studies, we would encourage the average adult to consider including moderate amounts of soy products in a healthy, well-balanced diet to reduce the chances of developing high blood pressure. For people with hypertension, it's important that they talk with their doctor about isoflavones as a possible addition to a low sodium DASH diet that could reduce the need for medication."

Richardson added that different soy products have different concentrations of isoflavones, so it is important for consumers to do their homework.

Researchers analyzed data from year-20 of the Coronary Artery Risk Development in Young Adults (CARDIA) study, which is an NIH-funded study created to examine the development and determinants of cardiovascular disease. This study began in 1985 with 5,115 African American and white Americans aged 18-30 years old who have been followed and reexamined at various intervals. Year-20 was the first year that participants completed an extensive dietary survey. Multivariable linear regression models evaluated the relation between daily isoflavone intake and systolic BP (SBP) after dividing patients across quartiles according to self-reported isoflavone intake. Even after controlling for age, sex, BMI, smoking, alcohol, physical activity and total caloric intake, the relationship between daily isoflavones and lower systolic blood pressure remained.

Richardson says this study helps lay the groundwork for randomized controlled trials to help better understand the association between isoflavones and blood pressure.

❁❁❁

Snacking On Raisins May Offer a Heart-Healthy Way to Lower Blood Pressure

Science Daily (Mar. 25, 2012) — If you have slightly higher than normal blood pressure -- known as prehypertension -- consider eating a handful of raisins. New data suggest that, among individuals with mild increases in blood pressure, the routine consumption of raisins (three times a day) may significantly lower blood pressure, especially when compared to eating other common snacks, according to research presented today at

the American College of Cardiology's 61st Annual Scientific Session. The Scientific Session, the premier cardiovascular medical meeting, brings cardiovascular professionals together to further advances in the field.

Even though raisins are popularly cited to lower blood pressure on various websites and are known to have intrinsic properties that could benefit heart and vascular health, researchers believe this is the first controlled study to scientifically support raisins' blood pressure-lowering effects compared to alternative snacks.

"It is often stated as a known fact that raisins lower blood pressure. But we could not find much objective evidence in the medical literature to support such a claim," said Harold Bays, MD, medical director and president of Louisville Metabolic and Atherosclerosis Research Center (L-MARC) and the study's lead investigator. "However, our study suggests if you have a choice between eating raisins or other snacks like crackers and chocolate chip cookies, you may be better off snacking on raisins at least with respect to blood pressure."

In this investigation, Dr. Bays and his team conducted a randomized controlled clinical trial to compare the blood pressure effect of eating raisins versus other snacks in 46 men and women with prehypertension. Participants were randomly assigned to snack on raisins or prepackaged commercial snacks that did not contain raisins, other fruits or vegetables but had the same number of calories per serving three times a day for 12 weeks. The study controlled for individual differences in nutrition and physical activity.

Data analyses found that compared to other snacks, raisins significantly reduced systolic blood pressure at weeks 4, 8, and 12, ranging from -4.8 to -7.2% or -6.0 to -10.2 mmHg (p values <0.05). Within group analysis demonstrated that raisins significantly reduced mean diastolic blood pressure at all study visits, with changes ranging from -2.4 to -- 5.2 mmHg (p values < 0.05). Pre-packaged snacks (including crackers and cookies) did not significantly reduce systolic or diastolic blood pressure at any study visit.

"Overall, these findings support what many people intrinsically believe: that natural foods often have greater health benefits than processed foods," Dr. Bays said. The study did not identify how raisins lower blood pressure. However, raisins are high in potassium, and have fiber, polyphenols, phenolic acid, tannins and antioxidants.

"Raisins are packed with potassium, which is known to lower blood pressure," Dr. Bays said. "They are also a good source of antioxidant dietary fiber that may favorably alter the biochemistry of blood vessels, causing them to be less stiff, which in turn, may reduce blood pressure."

Although this study was not designed or powered to evaluate for outcomes benefits, other studies support that in patients with prehypertension, mild lowering of blood pressure with medications may have clinical benefits in reducing cardiovascular events.

According to the Centers for Disease Control and Prevention, nearly one in three (28 percent) American adults have prehypertension -- defined as a systolic pressure from 120 to 139 millimeters of mercury (mm Hg) or a diastolic pressure from 80 to 89 mm Hg. This study's findings help validate some current nutritional recommendations. For example, 60 raisins -- about a handful -- contain 1 gram of fiber and 212 milligrams of potassium, which are both recommended in the Dietary Approaches to Stop Hypertension (DASH) diet.

Dr. Bays cautions that this was a single site study; larger trials are needed to confirm the blood pressure-regulating effect of raisins. Nonetheless, he says work in this area is particularly exciting because applying similar scientific methods to natural products, as required for drug development, provides consumers with objective data about which foods may or may not benefit heart health.

❁❁❁

Can Our Genes Be Making Us Fat?

Science Daily (Mar. 22, 2012) — While high-fat foods are thought to be of universal appeal, there is actually a lot of variation in the extent to which people like and consume fat. A new study in the March issue of the *Journal of Food Science*, published by the Institute of Food Technologists, reported that two specific genes

(TAS2R38-a bitter taste receptor and CD36-a possible fat receptor), may play a role in some people's ability to taste and enjoy dietary fat. By understanding the role of these two genes, food scientists may be able to help people who have trouble controlling how much fat they eat.

Most food scientists acknowledge the texture of fat plays a big role in how fat is perceived in the mouth. For example, ice cream is typically "rich, smooth and creamy." And certain fats, scientists have determined, can be detected by smell. Only recently have food scientists explored that most fats have a taste too. Researchers are now investigating the gene (CD360) that is responsible for detecting the taste of fats (fatty acids) in the mouth.

In the recent *Journal of Food Science* study, investigators focused on one ethnic group to limit genetic variation that could reduce the ability to detect associations with the gene of interest. They determined the fat preferences and CD36 status of more than 300 African-American adults. The investigators from the New York Obesity Research Center identified a genetic variant present in 21 percent of the African-Americans that was associated with higher preferences for added fats and oils (e.g. salad dressings, cooking oils, etc). They also found study participants with this genetic variance ranked Italian salad dressings creamier than those who have other genotypes.

The other gene explored by these investigators, TAS2R38, is the receptor for bitter taste compounds. About 70 percent of U.S. adults and children are "tasters" of these compounds, while the remaining 30 percent are "nontasters." Results indicate that nontasters of these compounds tend to be poor at discriminating fat in foods; therefore individuals who can't detect fat's presence may consume higher fat foods to compensate. This is in part due to the fact that nontasters have fewer taste buds than tasters. While researchers recognize that the cause of obesity is multifaceted, they continue to examine the role of these genotypes in weight management.

Genetic testing within the food industry may not be too far off. Once studies like these are more fully developed, there may be a role for genotyping study participants when it comes to testing a new product. For example, a company wanting to test out a dressing may include people with different genes relating to fat perception in order to get a more accurate opinion. In addition, the food industry will be able to create different kinds of foods for certain populations.

❁❁❁

Most Weight Loss Supplements Are Not Effective

Science Daily (Mar. 6, 2012) — An Oregon State University researcher has reviewed the body of evidence around weight loss supplements and has bad news for those trying to find a magic pill to lose weight and keep it off -- it doesn't exist. Melinda Manore reviewed the evidence surrounding hundreds of weight loss supplements, a $2.4 billion industry in the United States, and said no research evidence exists that any single product results in significant weight loss -- and many have detrimental health benefits. The study is online in the *International Journal of Sport Nutrition and Exercise Metabolism.*

A few products, including green tea, fiber and low-fat dairy supplements, can have a modest weight loss benefit of 3-4 pounds (2 kilos), but it is important to know that most of these supplements were tested as part of a reduced calorie diet. "For most people, unless you alter your diet and get daily exercise, no supplement is going to have a big impact," Manore said.

Manore looked at supplements that fell into four categories: products such as chitosan that block absorption of fat or carbohydrates, stimulants such as caffeine or ephedra that increase metabolism, products such as conjugated linoleic acid that claim to change the body composition by decreasing fat, and appetite suppressants such as soluble fibers.

She found that many products had no randomized clinical trials examining their effectiveness, and most of the research studies did not include exercise. Most of the products showed less than a two-pound weight loss benefit compared to the placebo groups. "I don't know how you eliminate exercise from the equation," Manore said. "The data is very strong that exercise is crucial to not only losing weight and preserving muscle mass, but keeping the weight off."

Manore, professor of nutrition and exercise sciences at OSU, is on the Science Board for the President's Council on Fitness, Sports and Nutrition. Her research is focused on the interaction of nutrition and exercise on health and performance. "What people want is to lose weight and maintain or increase lean tissue mass," Manore said. "There is no evidence that any one supplement does this. And some have side effects ranging from the unpleasant, such as bloating and gas, to very serious issues such as strokes and heart problems."

As a dietician and researcher, Manore said the key to weight loss is to eat whole grains, fruits, vegetables and lean meats, reduce calorie intake of high-fat foods, and to keep moving. Depending on the individual, increasing protein may be beneficial (especially for those trying to not lose lean tissue), but the only way to lose weight is to make a lifestyle change. "Adding fiber, calcium, protein and drinking green tea can help," Manore said. "But none of these will have much effect unless you exercise and eat fruits and vegetables."

Manore's general guidelines for a healthy lifestyle include:

- Do not leave the house in the morning without having a plan for dinner. Spontaneous eating often results in poorer food choices.
- If you do eat out, start your meal with a large salad with low-calorie dressing or a broth-based soup. You will feel much fuller and are less likely to eat your entire entrée. Better yet: split your entrée with a dining companion or just order an appetizer in addition to your soup or salad.
- Find ways to keep moving, especially if you have a sedentary job. Manore said she tries to put calls on speaker phone so she can walk around while talking. During long meetings, ask if you can stand or pace for periods so you don't remain seated the entire time
- Put vegetables into every meal possible. Shred vegetables into your pasta sauce, add them into meat or just buy lots of bags of fruits/vegetables for on-the-go eating.
- Increase your fiber. Most Americans don't get nearly enough fiber. When possible, eat "wet" sources of fiber rather than dry -- cooked oatmeal makes you feel fuller than a fiber cracker.
- Make sure to eat whole fruits and vegetables instead of drinking your calories. Eat an apple rather than drink apple juice. Look at items that seem similar and eat the one that physically takes up more space. For example, eating 100 calories of grapes rather than 100 calories of raisins will make you feel fuller.
- Eliminate processed foods. Manore said research increasingly shows that foods that are harder to digest (such as high fiber foods) have a greater "thermic effect" -- or the way to boost your metabolism.

❁❁❁

Vitamin D Intake May Be Associated With Lower Stress Fracture Risk in Girls

Science Daily (Mar. 5, 2012) — Vitamin D may be associated with a lower risk of developing stress fractures in preadolescent and adolescent girls, especially among those very active in high-impact activities, according to a report published Online First by *Archives of Pediatrics & Adolescent Medicine*, one of the *JAMA/Archives* journals.

Stress fractures, a relatively common sports-related injury, occur when stresses on a bone exceed its capacity to withstand and heal from those forces. But while consumption of calcium and calcium-rich dairy products is routinely encouraged for optimal bone health, researchers note in their study background that the evidence for this recommendation has been challenged. Kendrin R. Sonneville, Sc.D., R.D., of Children's Hospital Boston, and colleagues conducted a study to identify whether calcium, vitamin D and/or the intake of dairy were prospectively associated with stress fracture risk among girls. The study included 6,712 preadolescent and adolescent girls (age 9 to 15 at baseline) in the Growing Up Today Study.

During seven years of follow-up, 3.9 percent of the girls developed a stress fracture. Dairy and calcium intakes were unrelated to risk of developing a stress fracture. However, vitamin D intake was associated with a lower risk of developing a stress fracture, particularly among those girls who participate in at least one hour a day of high-impact activity.

"In contrast, there was no evidence that calcium and dairy intakes were protective against developing a stress fracture or that soda intake was predictive of an increased risk of stress fracture or confounded the association between dairy, calcium or vitamin D intakes and fracture risk," the authors comment. The authors also note that

in a stratified analysis that high calcium intake was associated with a greater risk of developing a stress fracture, although they suggest that "unexpected finding" warrants more study.

The authors conclude their findings support the Institute of Medicine's recent increase in the recommended dietary allowance for vitamin D for adolescents from 400 IU/d to 600 IU/d. "Further studies are needed to ascertain whether vitamin D intake from supplements confers a similarly protective effect as vitamin D consumed through dietary intake," they comment.

❁❁❁

Improving Heart Health with Hot Pepper Compound

Medical News Today: 29 Mar 2012 - 1:00 PDT

The food that inspires wariness is on course for inspiring even more wonder from a medical standpoint as scientists report the latest evidence that chili peppers are a heart-healthy food with potential to protect against the No. 1 cause of death in the developed world. The report was part of the 243rd National Meeting and Exposition of the American Chemical Society (ACS), the world's largest scientific society, being held here this week.

The study focused on capsaicin and its fiery-hot relatives, a piquant family of substances termed "capsaicinoids." The stuff that gives cayennes, jalapenos, habaneros and other chili peppers their heat, capsaicin already has an established role in medicine in rub-on-the-skin creams to treat arthritis and certain forms of pain. Past research suggested that spicing food with chilies can lower blood pressure in people with that condition, reduce blood cholesterol and ease the tendency for dangerous blood clots to form.

"Our research has reinforced and expanded knowledge about how these substances in chilies work in improving heart health," said Zhen-Yu Chen, Ph.D., who presented the study. "We now have a clearer and more detailed portrait of their innermost effects on genes and other mechanisms that influence cholesterol and the health of blood vessels. It is among the first research to provide that information."

The team found, for instance, that capsaicin and a close chemical relative boost heart health in two ways. They lower cholesterol levels by reducing accumulation of cholesterol in the body and increasing its breakdown and excretion in the feces. They also block action of a gene that makes arteries contract, restricting the flow of blood to the heart and other organs. The blocking action allows more blood to flow through blood vessels.

"We concluded that capsaicinoids were beneficial in improving a range of factors related to heart and blood vessel health," said Chen, a professor of food and nutritional science at the Chinese University of Hong Kong. "But we certainly do not recommend that people start consuming chilies to an excess. A good diet is a matter of balance. And remember, chilies are no substitute for the prescription medications proven to be beneficial. They may be a nice supplement, however, for people who find the hot flavor pleasant."

Chen and his colleagues turned to hamsters for the study, animals that serve as stand-ins for humans in research that cannot be done in people. They gave the hamsters high-cholesterol diets, divided them into groups, and supplemented each group's food with either no capsaicinoids (the control group) or various amounts of capsaicinoids. The scientists then analyzed the effects.

In addition to reducing total cholesterol levels in the blood, capsaicinoids reduced levels of the so-called "bad" cholesterol (which deposits into blood vessels), but did not affect levels of so-called "good" cholesterol. The team found indications that capsaicinoids may reduce the size of deposits that already have formed in blood vessels, narrowing arteries in ways that can lead to heart attacks or strokes.

Capsaicinoids also blocked the activity of a gene that produces cyclooxygenase-2, a substance that makes the

muscles around blood vessels constrict. By blocking it, muscles can relax and widen, allowing more blood to flow.

❁❁❁

How Vitamin D May Help Clear Amyloid Plaques Found In Alzheimer's

Medical News Today: 08 Mar 2012

A team of academic researchers has identified the intracellular mechanisms regulated by vitamin D3 that may help the body clear the brain of amyloid beta, the main component of plaques associated with Alzheimer's disease.
Published in the *Journal of Alzheimer's Disease*, the early findings show that vitamin D3 may activate key genes and cellular signaling networks to help stimulate the immune system to clear the amyloid-beta protein.

Previous laboratory work by the team demonstrated that specific types of immune cells in Alzheimer's patients may respond to therapy with vitamin D3 and curcumin, a chemical found in turmeric spice, by stimulating the innate immune system to clear amyloid beta. But the researchers didn't know how it worked.
"This new study helped clarify the key mechanisms involved, which will help us better understand the usefulness of vitamin D3 and curcumin as possible therapies for Alzheimer's disease," said study author Dr. Milan Fiala, a researcher at the David Geffen School of Medicine at UCLA and the Veterans Affairs Greater Los Angeles Healthcare System.

For the study, scientists drew blood samples from Alzheimer's patients and healthy controls and then isolated critical immune cells from the blood called macrophages, which are responsible for gobbling up amyloid beta and other waste products in the brain and body. The team incubated the immune cells overnight with amyloid beta. An active form of vitamin D3 called 1a,25-dihydroxyvitamin D3, which is made in the body by enzymatic conversion in the liver and kidneys, was added to some of the cells to gauge the effect it had on amyloid beta absorption.

Previous work by the team, based on the function of Alzheimer's patients' macrophages, showed that there are at least two types of patients and macrophages: Type I macrophages are improved by addition of 1a,25-dihydroxyvitamin D3 and curcuminoids (a synthetic form of curcumin), while Type II macrophages are improved only by adding 1a,25-dihydroxyvitamin D3.

Researchers found that in both Type I and Type II macrophages, the added 1a,25-dihydroxyvitamin D3 played a key role in opening a specific chloride channel called "chloride channel 3 (CLC3)," which is important in supporting the uptake of amyloid beta through the process known as phagocytosis. Curcuminoids activated this chloride channel only in Type I macrophages.

The scientists also found that 1a,25-dihydroxyvitamin D3 strongly helped trigger the genetic transcription of the chloride channel and the receptor for 1a,25-dihydroxyvitamin D3 in Type II macrophages. Transcription is the first step leading to gene expression.

The mechanisms behind the effects of 1a,25-dihydroxyvitamin D3 on phagocytosis were complex and dependent on calcium and signaling by the "MAPK" pathway, which helps communicate a signal from the vitamin D3 receptor located on the surface of a cell to the DNA in the cell's nucleus.

The pivotal effect of 1a,25-dihydroxyvitamin D3 was shown in a collaboration between Dr. Patrick R. Griffin from the Scripps Research Institute and Dr. Mathew T. Mizwicki from UC Riverside. They utilized a technique based on mass spectrometry, which showed that 1a,25-dihydroxyvitamin D3 stabilized many more critical sites on the vitamin D receptor than did the curcuminoids.

"Our findings demonstrate that active forms of vitamin D3 may be an important regulator of immune activities of macrophages in helping to clear amyloid plaques by directly regulating the expression of genes, as well as the structural physical workings of the cells," said study author Mizwicki, who was an assistant research biochemist in the department of biochemistry at UC Riverside when the study was conducted.

According to the team, one of the next stages of research would be a clinical trial with vitamin D3 to assess the impact on Alzheimer's disease patients. Previous studies by other teams have shown that a low serum level of 25-hydroxyvitamin D3 may be associated with cognitive decline. It is too early to recommend a definitive dosage of vitamin D3 to help with Alzheimer's disease and brain health, the researchers said. They add that ongoing studies are showing that vitamin D3 may be beneficial in reducing the incidence of a growing number of human diseases.

❁❁❁

Babies' Immunity Boosted by Adding Prebiotics to Infant Formula That Feeds Their Gut Bacteria

Medical News Today: 02 Mar 2012

Adding prebiotic ingredients to infant formula helps colonize the newborn's gut with a stable population of beneficial bacteria, and probiotics enhance immunity in formula-fed infants, two University of Illinois studies report. "The beneficial bacteria that live in a baby's intestine are all-important to an infant's health, growth, and ability to fight off infections," said Kelly Tappenden, a U of I professor of nutrition and gastrointestinal physiology. "Breast-fed babies acquire this protection naturally. Formula-fed infants get sick more easily because the bacteria in their gut are always changing."

The idea is to make formula more like breast milk by promoting the sorts of intestinal bacteria that live in breast-fed babies' intestines, she added. Prebiotics are carbohydrates that resist digestion by human enzymes and stimulate the growth and activity of beneficial bacteria in the gastrointestinal tract. Probiotics are actual live bacteria that are beneficial to intestinal health, she said.

Infants have a special need for stimulation of their gut microbiota because they are born with a sterile intestine, Tappenden said. "A strong, robust population of microbes in the gut provides colonization resistance, and pathogens can't invade and infect an infant who has that resistance as easily," she added.

The researchers compared the effects of feeding pre- and probiotics with infants fed breast milk and control formulas. They also compared the enhanced formulas' effects in both vaginally and Caesarean-delivered babies. "The probiotic formula significantly enhanced immunity in formula-fed infants," Tappenden said. Also, babies delivered by C-section had an especially improved immune response, an important finding because C-section babies are a more vulnerable group, she said.

Why? "Babies delivered naturally are exposed to the mother's bacteria as they travel through the birth canal, and they develop a healthier population of gut bacteria as a result. Babies delivered by C-section enter a sterile environment, and their gut microbiota is quite different," Tappenden noted.

In the probiotics study, scientists at five sites divided 172 healthy six-week-old infants into two formula-fed groups and a breast-fed group. Beginning at six weeks of age, the formula-fed groups received either a control formula or a formula that contained the beneficial bacteria Bifidobacteriumanimalis subspecies lactis (Bb12) for a six-week period. The infants receiving the probiotic formula had increased concentrations of secretory, anti-rotavirus, and anti-poliovirus-specific immunoglobulin A (IgA).

Fecal samples from babies receiving the probiotic formula revealed significantly heightened immunity, especially among Caesarian-delivered infants, Tappenden said. Infants who consumed the formula containing the prebiotic ingredients also benefited. In that study, 139 healthy babies were divided into three groups. Breast-

fed infants were compared with babies fed either a control formula or a formula supplemented with galacto- and fructo-oligosaccharides for six weeks.

Oligosaccharides, found in breast milk, contribute to the healthy population of bacteria found in the guts of breast-fed infants. When fecal samples were tested, babies fed the prebiotic formula showed modest improvement in the number of beneficial bacteria and decreases in the types of bacteria that are often associated with illness.

❁❁❁

White Rice Raises Diabetes Risk

March 16, 2012 **Food Product Design**

BOSTON—Individuals who eat white rice regularly have a significantly elevated risk of type 2 diabetes, especially among Asian populations, according to a new study published in the ***British Medical Journal***. The findings suggest the diabetes risk increases 10% with each serving of white rice consumed daily.

Researchers at the Harvard School of Public Health conduced a meta-review of four studies involving 352,384 non-diabetic participants from China, Japan, Australia and the United States, with follow-up periods ranging from four to 22 years. Asian (Chinese and Japanese) populations had much higher white rice consumption levels than did Western populations (average intake levels were 3 to 4 servings/day versus 1 to 2 servings/week). Those who ate the highest amounts of white rice had a 27% higher risk of diabetes than those who ate the least, and the risk was most pronounced in Asian people. For each serving per day increment of white rice intake, the relative risk of type 2 diabetes was increased by 10%.

❁❁❁

Food Science & Industry News

Selling Processed Foods in a Whole Food World? Authenticity is Key

Consumers increasingly are choosing whole and unprocessed foods – so is it the end of the line for processed food manufacturers? Not if they move with the times, say ingredient suppliers.

Many consumers have become wary of processed foods – especially those in the middle aisles of the grocery store – but food manufacturers have a number of options available to appeal to the health-conscious consumer. It's all about quality ingredients, authenticity, and crucially, how you communicate that to consumers. President and CEO of Blue Pacific Flavors Donald Wilkes told Food Navigator-USA: "I think there has been some movement toward this for several years. You have seen a lot of companies trying to reinvent their snack food products…bringing some nutritional validity to the products."

First of all, that included cutting out trans fat, he said, and then many companies looked to introduce positive ingredients, such as whole grain and fiber. These elements should be "top of the list" for food companies looking to appeal more to health-conscious shoppers, he said. "I think the first step is to understand how the consumer understands the products. Making foods more authentic is a great way to appeal to consumers," Wilkes said.

'Romancing the ingredients'

Kim Holman, vice president of marketing at flavors and ingredients company Wixon, agrees. She says she thinks manufacturers will continue to highlight the ingredients that are absent from their products, like artificial colors or preservatives, but increasingly they are calling out specialty ingredients to highlight their authenticity. "I think romancing the ingredients is important. If you have seven different spices in your product, why not call those out, or talk about the origin of those ingredients?" she said.

Instead of listing ‘apples’ on the ingredient label, a company could call out ‘granny smiths’, for example, or mention specific chili peppers, beyond old favorites like jalapenos. “For the people who are supplying what’s going into processed foods, you might hear more about the quality of their products,” she said.

Time to evolve

Wilkes added that some food makers have found it difficult to evolve as their core market has changed, such as Twinkies and Wonder Bread maker Hostess Brands, which filed for Chapter 11 bankruptcy last month. “Hostess is a good example where they didn’t evolve with their consumers,” he said. “They may have been great when we were growing up as kids, but when we got older we wanted something that was more nutritious. “…They have realized that their consumer is changing and they now realize that their brands are not relevant to this new consumer.” He said that the food industry should also look very closely at food labels, and do all they can to simplify them, while ingredient companies should offer “simplified and authentic platforms” for their customers. “Credibility is important and if the label is confusing there’s going to be doubt. Doubt is not a good thing for a brand manager.”
Holman added that manufacturers could even clarify why certain ingredients are present, such as explaining on-pack that “potassium sorbate is there to preserve freshness”. But even as consumers shun certain foods and ingredients, processed foods are likely to still find a place in many shopping carts. “I don’t think processed foods will ever be eliminated because of the cost structure and the convenience factor,” Wilkes said.

Holman takes this idea a step further, saying that companies need to understand why consumers buy their products – and highlight those reasons. “One of the major benefits of processed foods is convenience, and I think that needs to be played up,” she said.
From: Food Navigator USA by Caroline Scott-Thomas, 24-Feb-2012
❁❁❁

‘Authenticity’ Key to Consumer Taste in Ethnic Foods

Nutraceuticals World March 2, 2012

Ethnic food preparation and consumption has been on the rise over the past several years and, according to Mintel’s latest research, it will continue its growth. But what’s most important to consumers when it comes to their favorite ethnic fare? Authenticity. Two-thirds of Mintel respondents who eat ethnic food at home said authentic or traditional flavors are the most important factor when buying or eating ethnic food.

“If flavor fanatics are going to spend their hard earned money and time visiting an ethnic restaurant or buying international foods to prepare at home, increasingly, they want it to be the real deal,” said David Browne, senior analyst at Mintel. “Therefore, products positioned as such have a greater likelihood of finding favor with consumers.”

Aside from an authentic flavor, ethnic foodies also place importance on all-natural (49%), premium/gourmet or artisanal (49%) and reduced fat (48%) positional claims, which round out the top characteristics overall that matter in the purchase decision.

"This interest in genuine ethnic fare aligns with a broader consumer trend, ‘The Real Thing,’ where we see consumers continually set a higher bar for what they consider authentic,” said Alexandra Smith, director of consumer trends, Mintel. “Today's American has much greater exposure to diverse cultures than an American 20 years ago. And as once-exotic things like sushi or yoga become mainstream, we seek new, more niche markers of cultural authenticity."

When making ethnic fare at home, 70% of Mintel respondents said they made Italian food in the past 30 days. However, Italian food has become so common place in the U.S., it is hardly considered ethnic anymore. Nearly two-thirds (63%) of people have made Mexican food, followed by 46% who whipped up a Chinese creation. Twenty-nine percent of home cooks felt like one type of food wasn’t enough and decided to go “fusion”…mixing elements from various culinary traditions while not fitting specifically into any.

Meanwhile, a full 81% of respondents say they ate ethnic food away from home in the month leading up to the survey, a six percentage point increase from 2010. According to Mintel Menu Insights, the five most popular ethnic cuisine menu items in restaurants at the end of Q3 2011 were Italian, Mexican, Chinese, Pan-Asian and

Japanese.

Mediterranean and Middle Eastern food saw robust growth in the past year and both are expected to continue to gain in popularity in the future, likely due to food provider Sabra, as well as a healthy and convenient positioning.

“Consumer interest in healthy eating and convenience food contributes to the growth seen in the Mediterranean and Middle Eastern categories,” added Mr. Browne. “The growing popularity of pre-packaged hummus and Greek-style yogurt mixed with the deli salad case offering chickpea, tabbouleh and orzo salads, is giving this cuisine a healthful and easy edge on the competition.”

❁❁❁

Foods Contribute More ‘Added Sugars’ than Beverages

Nutraceuticals World February 29, 2012

Foods contribute more to the total number of calories from added sugars among children and adolescents compared to beverages, according to a recently published data brief from the National Center for Health Statistics (NCHS) at the U.S. Centers for Disease Control and Prevention (CDC).

About 16% of children and adolescents' total caloric intake come from added sugars, according to data from the National Health and Nutrition Examination Survey (NHNES), 2005–2008. Fifty-nine percent of added sugar calories came from foods compared with 41% that came from beverages.

The consumption of added sugars, which are sweeteners added to processed and prepared foods, has been associated with measures of cardiovascular disease risk among adolescents, including adverse cholesterol concentrations. Although the percent of daily calories derived from added sugars declined between 1999–2000 and 2007–2008, consumption of added sugars remains high in the diets of Americans.

The 2010 Dietary Guidelines recommend limiting total intake of discretionary calories, which include added sugars and solid fats, to 5–15% of daily caloric intake, yet many Americans continue to exceed these recommendations. This data brief presented results for added sugar consumption among U.S. children and adolescents for 2005–2008.

According to NHNES data, more of the added sugar calories were consumed at home rather than away from home for both beverages and foods, contrary to a previous report. These results are consistent with results for total caloric intakes. That is, 65% of the total calories that children and adolescents consumed were consumed at home.

Slightly more than one-half of the added sugar calories from beverages were consumed at home (54%), while nearly two-thirds of the added sugars consumed from foods were consumed at home (66%)

Boys consumed more added sugars than girls and preschool-aged children consumed the fewest calories from added sugars. Although girls consumed a smaller absolute amount of calories from added sugars than boys, their intakes were not that different from boys when the amounts are expressed as a percentage of total caloric intakes.

❁❁❁

Vaccinating Chickens Could Prevent Foodborne Illness

Medical News Today: 27 Mar 2012

A vaccine could be developed to prevent Campylobacter being carried in chickens. This approach could drastically cut the number of cases of food poisoning, saving the UK economy millions each year, says an American scientist presenting his work at the Society for General Microbiology's Spring Conference in Dublin.

Food-borne illness costs the UK an estimated £2 billion each year. Campylobacter is the leading cause of food-borne illness and is responsible for about 30% of cases in the UK. *Campylobacter jejuni* was responsible for

more than 371,000 estimated cases in England and Wales in 2009, resulting in more than 17,500 hospitalizations and 88 deaths.

Campylobacter jejuni is found in the gut of many animals, including chickens. If Campylobacter-contaminated poultry is not prepared and cooked properly, the micro-organism can be transmitted to humans where it may cause severe gastrointestinal disease.

Scientists at Washington State University are studying the maternal antibodies that are passed from hens to their chicks. "These antibodies protect chicks from becoming colonized by Campylobacter in the first week of life," explained Professor Michael Konkel who is leading the research. "Our group has now identified the bacterial molecules that these antibodies attack, which has given us a starting point for a vaccine against Campylobacter," he said. "We have already found that chickens injected with these specific molecules - found on the surface of *Campylobacter jejuni* - produce antibodies against the bacterium. This response partially protects them from colonization."

A vaccine could be a powerful weapon to help control food-borne illness. "Preventing contamination of poultry at slaughter has not been effective at reducing illness in humans. It has been shown that about 65% of chickens on retail sale in the UK are contaminated with Campylobacter," explained Professor Konkel. "Ideally, the best way to prevent contamination is to stop chickens on the farm from becoming colonized with this microorganism in the first place, which could be achieved by vaccination. Our goal within the next 6 months is to test a vaccine for chickens that will reduce Campylobacter colonization levels. There's still a long way to go, but I'm confident our lab and others are moving in the right direction."

Controlling food-borne illness through vaccination would have a significant impact both in the UK and globally. "A safe food supply is central to human health. If we can decrease the load of human pathogens in food animals, then we can reduce human illness. A 1% reduction in the number of cases of food-borne illness would save the UK around £20 million per year. In developing countries, where people and food animals often share the same environment, diseased animals also pose a direct public health risk; vaccination would help mitigate this risk," said Professor Konkel.

❁❁❁

Study Reveals Why Kids Choose Unhealthy Snacks

May 8, 2012 Food Product Design

CINCINNATI—When it comes to understanding why some kids choose snack foods over healthier options like fruit, attitudes, relationships, intentions and personal behavior control all factor into the answer, according to a new study published in the journal *International Quarterly of Community Health Education*.

Researchers at the University of Cincinnati investigated factors that could help predict children's snack choices. The study focused on 167 fourth-and-fifth-grade elementary schoolchildren in the Midwest over a 24-hour reporting period. Participants were asked to report all snack foods and drinks that they had eaten in a 24-hour period. The information was then entered into the USDA National Nutrient Database to calculate the consumption of high-calorie snacks as well as calories from fruits and vegetables.

They found snacking represented a large part of the children's daily calorie intake. Overall, the group reported consuming an average of approximately 300 calories from high-calorie, low-nutrition foods, such as chips, candy and cookies—nearly 17% of their daily caloric needs. They reported eating only 45 calories from fruits and vegetables combined.

The survey examined a number of behaviors in relation to snacking, such as whether the children thought that choosing lower-calorie snacks was a good idea, whether they were confident in knowing how to choose lower calorie snacks, and if they felt any social pressure from parents, teachers or friends in choosing lower calorie snack foods. The study found that intentions (stemming from attitude, social connections and behavioral control) predicted the children's direction toward healthy or unhealthy snacking.

The study found some significant differences in snack choices among gender and ethnicity. Girls reported eating more high-calorie snacks (348.3 calories) than boys (238.8 calories). Black children reported consuming the least high-calorie snacks (221.6 calories), compared with Hispanic children (297.6 calories), Caucasian children (282.3 calories) and Asian children (280.8 calories). The Hispanic and Asian children also reported consuming more of the healthier fruit and vegetable snacks than the Caucasian and black children.

According to the researchers, part of the increases in childhood snacking could stem from the growing number of children who skip breakfast. Higher calorie snacks such as chips and cookies are less filling, making it easier to over consume compared with higher-fiber fruits and vegetables.

❁❁❁

Hide the Remote: TV Viewing Linked to Poor Eating Habits

May 8, 2012 **Food Product Design**

BETHESDA, Md.—Hide the remote and your kids might start making better food choices. According to researchers from the **Eunice Kennedy Shriver National Institute of Child Health and Human Development**, television viewing (TVV) and poor eating habits appear to be linked.

Using data from the 2009-2010 Health Behavior in School-Aged Children Study, a survey of adolescents conducted every four years in the U.S., the researchers concluded that "Television viewing time was associated with lower odds of consuming fruit or vegetables daily and higher odds of consuming candy and sugar-sweetened soda daily, skipping breakfast at least one day per week and eating at a fast food restaurant at least one day per week in models adjusted for computer use, physical activity, age, sex, race/ethnicity and family affluence."

The survey included a nationally representative group of 12,642 students in grades 5 through 10, with an average age of 13.4 years.

According to the results, the odds of eating fruits and vegetables daily were higher for younger than older students, for girls compared with boys, and for white students and other groups compared with black and Hispanic youth. The odds of eating sweets daily were highest for older than younger youth, for girls compared to boys and for black youth compared with other racial/ethnic groups.

The results also indicate that the odds of drinking soda at least daily were highest for older versus younger youth, for boys versus girls and for black and Hispanic young people compared with other racial/ethnic groups. Skipping breakfast was more common for older than younger students, for girls compared with boys and for black, Hispanic and other youth compared with white students.

Full results of the study are published in the May issue of *Archives of Pediatrics& Adolescent Medicine.*

❁❁❁

Regulatory & Safety News

Packaged Facts sees rise of foods targeted to specific health conditions

Increased recognition that diet plays an important role in a range of health conditions is spurring sales in targeted foods and beverages, according to a new report from Packaged Facts. The report, "Targeted Health and Wellness Foods and Beverages: The US Market and Global Trends", says an aging population and higher healthcare costs are also driving the sector, with shoppers willing to pay more in a wider range of outlets for targeted products. But it is increased recognition among scientists, government, practitioners and consumers that diseases are linked to diet that is the key driver, the market research organization said.

Publisher of Packaged Facts David Sprinkle said: "Two-thirds of US grocery shoppers have purchased a food or beverage in the past year for the purpose of addressing one or more specific health and wellness conditions or concerns, with cholesterol management and digestive health of particular concern." Conditions and diseases related to diet are among the leading causes of death in the United States, and consumers are looking to their diets to ward off heart disease, high blood pressure, stroke, some types of cancer, and diabetes.

The targeted health and wellness category includes functional foods and nutraceuticals, as well as foods for special dietary use and medical foods, as defined by the Food and Drug Administration (FDA). Packaged Facts survey data found that more than half of consumers are willing to pay more for a food positioned as 'better for you', and one-quarter say health practitioners' recommendations are important in deciding which grocery items to buy to target a specific condition. "The health benefit reputation of a food, beverage, or ingredient is the most significant factor when grocery shoppers are making a purchase decision based on a specific personal or household health concern," the researcher said. "This underscores that it is important for marketers to convey health benefits credibly, clearly, consistently, and frequently."
Food Navigator USA 24-Feb-2012
❁❁❁

Packaging Labeling, Claims May Influence Consumers' Sensory Perception

A study published in *Food Quality and Preference* shows that taste may be affected by labeling and claims on the front of food packaging. The objective of the study was to investigate consumers' perceptions of the package and the expectations raised by nutritional and health claims and the nutrition panel, among other cues—and their influence on the sensory perception of enriched and reduced-calorie biscuits.

The study had 90 consumers assess 23 enriched or low-calorie biscuits (cookies) using the projective mapping technique to evaluate the similarities and differences between the biscuits in four different scenarios. Two sessions were conducted without tasting the product to ascertain how consumers perceived the nutrition information panel and nutrition and health claims, among other packaging cues, and how they use these inputs to classify the biscuits. Ten samples were then selected for tasting in two further sessions: with and without information on the nutrition information panel and claims.

The results showed that consumers were greatly influenced by the claims highlighted (color, size) on the front of the package, particularly nutrition claims. In addition, non-sugar biscuits raised negative expectations and were associated with people with sugar metabolism disorders. Comparison of the two tasting sessions found that the information clearly had a negative influence on the perception of hedonic sensory characteristics.
IFT Weekly February 29, 2012
❁❁❁

The Time Is Ripe for Salmonella

Science Daily (Mar. 25, 2012) — The ripeness of fruit could determine how food-poisoning bacteria grow on them, according to scientists who recently presented their work at the Society for General Microbiology's Spring Conference in Dublin. Their work could lead to new strategies to improve food safety, bringing many health and economic benefits.

A wide range of fresh produce has been linked to outbreaks of *Escherichia coli* and *Salmonella enterica* including melons, jalapeño and serrano peppers, basil, lettuce, horseradish sprouts and tomatoes. Researchers at Imperial College London are looking at how these bacterial pathogens latch onto fruits and vegetables and establish themselves in the first place.

They have discovered that strains of Salmonella behave differently when attached to ripe and unripe tomatoes. "Bacteria that attach to ripe tomatoes produce an extensive network of filaments, which is not seen when they attach to the surface of unripe tomatoes. This could affect how they are maintained on the surface," explained Professor Gad Frankel who is leading the research. "We are not completely sure yet why this happens; it might be due to the surface properties of the tomatoes or alternatively the expression of ripening hormones."

This is just one example of the subtle interplay between food-poisoning microbes and the fresh produce they contaminate, that determines how pathogens become established in the food chain. "Apart from *Salmonella*, strains of *E. coli* are also particularly devious in the way they interact with plant surfaces. They have hair-like appendages and flagella they can use as hooks to successfully secure themselves onto things like salad leaves."

Although fresh fruits and vegetables are recognized as important vehicles that transmit harmful bacteria, they are still important components of a healthy and balanced diet. "By and large, raw fruits and vegetables are safe to eat and provide numerous health benefits. By working out the reasons behind sporadic outbreaks of infections, we can control these better and help maintain consumer confidence. By improving food safety we would also see important economical and health benefits."

Understanding how bacteria interact with fresh produce is a crucial but only the first step, explained Professor Frankel. "Translating research into new policies or methods for decontamination is the challenge for future studies," he said.

❁❁❁

Knowing the Nutritional Content of Foods Doesn't Equate to Healthy Eating

Medical News Today: 30 Mar 2012

A study by Universite Laval's Maurice Doyon and French and American researchers shows that U.S. consumers know surprisingly more about the fat content of the foods they buy than their French counterparts. Paradoxically, the obesity rate is nearly three times higher in the United States (35%) than it is in France (12%). In light of these results, published in a recent edition of the *British Food Journal*, the researchers cast doubt on the notion that providing nutritional information is an effective way to encourage healthy eating habits.

Dr. Doyon of the Faculty of Agriculture and Food Sciences, along with his colleagues Laure Saulais, Bernard Ruffieux (France), and Harry Kaiser (United States) had over 300 French, Quebec, and American consumers answer a questionnaire designed to test what they knew about dietary fats. Questions dealt with the amount and types of fat contained in various foods and what the nutritional recommendations are regarding these fats. Participants were asked to answer "Don't know" rather than hazard a guess.

The first finding: French respondents admitted to not knowing the answer to 43% of the questions, while the equivalents for Quebec and the United States were 13% and 4% respectively. Fifty-five percent of French respondents said they did not know the percentage of fat in whole milk, compared with 5% for Quebec and 4% for the United States. The same trend was observed for butter, margarine, and vegetable oils.

The second finding: when participants tried to answer, Americans were most likely to be right, followed by Quebecers, with the French bringing up the rear. And 6% of Quebecers, 9% of Americans, and 17% of the French did not know the recommendations regarding saturated and unsaturated fats in a healthy diet.

"The difference among respondents' knowledge," said Professor Doyon, "essentially indicates that the French don't take much of an interest in the nutrients contained in the foods they eat. The information is on the package,

but they don't read it."

According to the researchers, the correlation found between extensive nutritional knowledge and high obesity rates suggests that focusing on detailed nutritional information may not be the best strategy for encouraging healthy eating habits.

"It's an approach that presents information to consumers in a broken down form," suggested Dr. Doyon. "This may lead them to think of food in terms of its fat, carbohydrate, and caloric content and lose sight of the whole picture. It might be better to focus on what constitutes a healthy, complete, and balanced meal."

❁❁❁

That Caffeine in Your Drink -- Is It Really 'Natural?'

Science Daily (Mar. 7, 2012) — That caffeine in your tea, energy drink or other beverage -- is it really natural? Scientists are reporting successful use for the first time of a simpler and faster method for answering that question. Their report appears in the American Chemical Society (ACS) journal *Analytical Chemistry*.

Maik A. Jochmann, Ph.D., and colleagues point to the growing consumer preference for foods and beverages that contain only natural ingredients. Coffee, tea, colas, energy drinks and other caffeine-containing drinks are the most popular beverages in the world. Food regulatory agencies require that caffeine be listed on package labels, but do not require an indication of whether the caffeine is from natural or synthetic sources. The scientists set out to develop a faster, simpler method for categorizing caffeine's origins.

In the study, they describe use of a technique called stable-isotope analysis to differentiate between natural and synthetic caffeine. The test makes use of differences in the kinds of carbon isotopes -- slight variations of the same element -- found in caffeine made by plants and caffeine made in labs with petroleum-derived molecular building blocks. Their analysis, which takes as little as 15 minutes, found four products that contained synthetic caffeine, despite a "natural" label.

The authors acknowledge funding from the German Federal Ministry of Economics and Technology and the German Research Foundation.

❁❁❁