PFNDAI Bulletin (Feb 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

Editorial

Chinese food was exotic some time ago. Even Indians relished the Chinese food very much and they even Indianised by some of the spices not used by authentic Chinese cuisine. Everywhere one would find Chinese noodles and spring rolls and fried rice. Some of the other Asian cuisines became popular to some extent including Japanese and Thai. But now is the turn of Indian cuisine.

Indian cuisine is getting international recognition. A few decades ago, there was no single identity for Indian recipes. There were Mughlai, Goan, South Indian, Andhraite, Gujarati, Malvani, Bengali and many more but mostly regionally restricted. However, over the years Indians have been exploring new foods so there was exchange or more precisely amalgamation of different styles and we are now slowly evolving an Indian cooking style.

Electronic media have really catalysed the change that is taking place. As Indians have been travelling and settling abroad they are taking their taste preferences also along with them to these foreign places. Thus in Europe and in the Americas, the neighbours of Indians would be curious about the cuisine and would try them and although initially would be a little apprehensive about the pungency of the spicy foods, they would get used to them and would like them too.

Americans would say that Indian cuisine is similar to Mexican because of spices and pungency of both. However, there are many differences in the spices being used as well as the use of vegetables and pulses that are used. Mexican cuisines use corn or maize a lot along with rice. Although there are similarities in use of chillies, paprika, cinnamon, garlic etc. the varieties of spices in Indian cuisine is phenomenal. Mexican chilli beans are quite popular.

Although there are some similarities, the varieties used in Indian cooking are mind-boggling because of the spices, vegetables, fruits, pulses and grains. When one has a large number of ingredients, the combinations one can use is also extremely large. However, one must understand the compatibility of ingredients. One cannot just use any combination of spices that would beenjoyable. One can just make a different blend but trying to make it delectable is a challenge. This is both an art and the science.

Also certain spices go well with meats while they may not be quite suitable for a vegetable or rice preparation. Proper understanding is necessary for developing a recipe. There is also another advantage of use of multitude of these spices. Most of them have phytochemicals that are good for health. Our traditional recipes were developed not only for satisfying the stomach but also for providing protection against many ailments. Indian cuisine has potential even greater than other popular cuisines for this reason.

Even western fast foods have recognised this advantage and incorporated Indian spices in their recipes. Pretty soon every corner of the world will be enjoying Indian cuisines in various ways and there are opportunities for our researchers and developers. Rather than only concentrating on working on western foods, there should be research efforts not just in recipes but various other aspects that go into making it food science and nutrition.
With season's greetings,

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

Coming Events

Ahar Chennai 2012
25-27 August 2012
Chennai Trade Centre, Chennai
India Trade Promotion Organisation
T: 044 28415416

India Foodex 2012
25, 26, 27 August 2012
Palace Ground, GayathriVihar, Bangalore
Media Today
T: 011-2668 2045
W: www.indiafoodex.com

Fi India 2012
6-7, September 2012
CMP (United Business Media)
T: +91 22 66122600
W: www.ingredientsnetwork.com

Food Tech India 2012
Bakery Tech & Hotel Tech 11th International Exhibition for Food Processing, Bakery & Food Service Industry
September 7-9, 2012
Milan Mela Exhibition Complex, Kolkata
T: 011-4314 8888 & 033-2335 6130

International FoodTec India
Intl Exhi Food Processing & Packaging Tech
September 11-13, 2012
Bombay Exhibition Centre, NSE, Mumbai
Koelnmesse
T: +91 40 6570 7722
W: www.foodtecindia.com

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

PFNDAI Feb 2012 issue

Conference 'Carbohydrates for Healthy Future; Lifestyle to Product Development'

By Dr. J. I. Lewis, Chairman, Regulatory Affairs Committee, PFNDAI

The conference organized by PFNDAI and Roquette India, in Mumbai, Friday, 10th February 2012 received an overwhelming response from the industry, academia and regulatory authority. Dr SanjogSurve, Chairman, Dr. J S Pai Executive Director, PFNDAI and Ms. Marie HelenzSanier, Director-Nutrition, RoquetteFreres, France decided to centre stage carbohydrate for a healthy future - the most abundant macro nutrient in the Indian diet.

While earlier considered a disease of affluent western societies, diabetes is now increasing rapidly in developing countries according to Dr.Venkat Narayan, Prof. of Epidemiology &Prof. of Medicine, Emory Univ. Atlanta, while delivering his keynote address. What is more complicated is that India is facing the double burden of under and over- nutrition between rural and urban populations.

The burden of non communicable diseases becomes prevalent from birth due to maternal malnutrition; more than 20 million low birth weight infants are born every year in developing countries with 7.8million being born in India according to Dr.Bhaskararchary Scientist, National Institute of Nutrition, Hyderabad, which finally leads to lifestyle diseases. With changing lifestyle and dietary habits the right kind of carbohydrate intake such as whole grains, daily five servings of fruits and vegetables is essential for a healthy lifestyle. Carbohydrate nutrition therefore is critical in developing countries.

While we have a wide choice of carbohydrate foods – we may not know which are good carbohydrates A good carbohydrate food is known by its Glycaemic Index – a measure of the sugar surge after a meal, according to Professor Jeya Henry, Director Functional Food Center, Oxford. Glycemic index ranks foods according to its sugar surge. The provision of low GI foods is a useful strategy to reduce food intake and thereby reduce the risk of obesity. The databases on the GI value of Indian foods should be made more widely available to all health practitioners.

Globally there is trend of innovation in the food markets and so the inclusion of novel and new food ingredients in foods to reduce their GI will emerge as a growing market. The development of low GI foods in the management and treatment of diabetes will soon become a major intervention worldwide. Dr.AlberBär, Toothfriendly International, Switzerland provided another insight into dental health through use of innovative ingredients. Dental caries among children is a global concern and an emerging one in developing countries. " Toothfriendly" products are now easily measured for the anti cariogenic claim. Similarly it is possible to develop healthy products by replacing sugar and other digestible carbohydrates through new dietary fibres and polyols, according to Ms.Laetitia Guerin – Deremaux, of RoquetteFreres. Unlike sugars, polyols are non cariogenic as they are not fermented by microorganisms in the oral cavity. Mr. Sunil Adsule, Coca Cola talked about the opportunity in the beverage sector for using functional ingredients that include a whole range from fruit juices, tea and coffee based beverages, etc.

A separate session focussed on how food regulations could enable innovative health products. Dr Daniel Wils, of RoquetteFreres, France elaborated how the European Food Safety Authority (EFSA) is using risk analysis for consumer protection and evaluation of health claims for various products such as polyols, sugar free products and dietary fibre. Similar regulatory principles of risk analysis will underpin consumer safety and fair trade practices with the implementation of The Food Safety & Standards Act 2006, according to Dr. J.I Lewis, Chairman Regulatory Affairs, PFNDAI. The Food Authority is structured to enable development of innovative foods that promote healthy lifestyles through formulation and labelling. In well laid out roles and functions, the Scientific Panels and Committee is assigned risk assessment whereas risk management is functionally separated and the role of the Food Authority only. With these systems in place we now need to move forward with engaging all the stake holders. Freedom to choose healthy food is a prerogative for consumers and the role of labelling in enabling healthy choice is a key input from a regulatory perspective according to Dr.Sivakumar of Hindustan Unilever Ltd. Thus it is industry's responsibility to provide clear and accurate information on the functional benefits and the claims regime should be open and transparent in the approval process to enable speed to market. A risk based system based on the scientific basis of risk analysis for evaluating food safety as envisaged in the Act is critical rather than apprehension based hazard approach.

While nutrition and health concerns initiate new product development, consumer tastes and preferences play a crucial role for new product successes in the marketplace. For example, Dr. Neil Patel, Leatherhead Food Research, UK showed that while there is a universal endeavour to reduce sugar, salt and fat intakes, sensory evaluation studies demonstrate that reducing or substituting sugar raises other sensorial issues apart from sweetness, such as texture, shelf life and visual appeal – factors that cue consumer acceptance.

In a survey, it was found that consumers are not much concerned with the reduction of sugar in chocolates and energy drinks as they feel it is rarely consumed whereas in fruit drinks and carbonated beverages it is much important as it is felt that these are consumed more often. Thus to bring a sugar replacer, it is important to understand consumer perceptions on safety and quality.

While the prevalence of diabetes is higher with urban populations – an increasing trend is being observed in rural populations as well and hence the question always arises what should a person with diabetes eat. The short answer is a balanced diet recommended for a healthy lifestyle. Easier said than done as consumers want modern food formats that deliver health as an integral part of the freedom to choose foods unaffected population consumes. Hence bridging the gap between science and consumer acceptance is essential to product development, said Ms AnuradhaNarashimhan, Category Director, Britannia Industries.

The conference concluded with recommendation emerging from various national and international speakers, Chairpersons Dr.Jasvir Singh, Kraft Foods, Dr.ShobhaUdipi, SNDT College, Dr. Vilas Adhikari, Mr.Kelkar, Mr Shenoy and eminent panellist - Ms.Rinka Banerjee, Hindustan Unilever, Ms MadhaviTrivedi, Kelloggs, Mr. S Kathuria, FSSAI, Dr. CJK Henry and Dr. S. Bhalkar, Abbot and delegates attending the conference.

1. Recognition by all stakeholders that *carbohydrate nutrition management* is a key health objective for India as this is a major nutrient in the Indian diet. The immediate term strategy could be towards:
    a. Developing consumer education packages to raise consumer awareness.
    b. Lifestyle modifications that include a **balanced diet and physical activity** can result in significant benefits in alleviation of the problem.
    c. The need for long term studies on the Total Diet Study of Indians at urban and rural levels considering the diverse nutrient intake. This data is critical for developing appropriate health promotional strategies on non communicable diseases (NCD).
2. Enabling role of regulations toward stimulating development of food products that deliver specific health benefit through innovative ingredients in modern food formats.
3. The need for a national policy (5 year plan) towards achieving a public health goal on reducing the burden of disease as envisioned by United Nations viz:
    a. The need for a multipronged campaign pronged campaign by governments, industry and civil society to set up by 2013 the plans needed to curb the risk factors behind the four groups of NCDs – cardiovascular diseases, cancers, chronic respiratory diseases and diabetes as called upon by United Nations in acknowledgement of the global burden.
    b. Develop and integrated approach that links all stakeholders in achieving this objective.

THE INCREDIBLE MILK PROTEIN: CASEINATES

Ms.NehaBhutani, M.Sc. –Foods & Nutrition, MBA (Marketing)
Sr Manager- Nutrition Science
Mahaan Proteins Limited

Milk proteins have long been known for their nutritional and technological value. The high nutritional value compared to other proteins is because of their relatively high content of essential amino acids and good digestibility.

Caseinates are spray dried milk protein, type fresh curd, derived from fresh pasteurized skimmed milk. Caseinate protein is extracted through acidification, followed by neutralization and drying, which in turn provides with a slow digesting protein.

Although available for some time, Caseinate is referred to as a late "rising star" in the protein supplement arena. Caseinates help decrease protein breakdown, thus are referred to as having anticatabolic properties. Caseinate proteins are PH sensitive and gel in the acidic environment of the stomach. As a result, it can take more than twice as long for caseinates to be broken down into their amino acid subcomponents than whey and other proteins. Because of these unique ”time released” qualities, Caseinates are aptly described as being anticatabolic, or muscle protecting proteins. As Caseinate protein moves through the digestive tract more slowly than whey protein, it’s more likely that the body will be able to absorb and use the protein in a more efficient manner.

APPLICATIONS OF CASEINATES

Caseinates are one of the principal types of functional proteins used by food industry.
Caseinates have good functional properties as emulsifiers and stabilizers. This makes them extremely suitable for use in dairy products, soups and sauces, cheese spreads and meat products.

Applications
BAKERY PRODUCTS
Nutritional Enhancer: Breakfast cereals, high protein biscuits
Texture improver & emulsifier: Frozen cakes
DAIRY PRODUCTS
Protein Base: Cheese Analogues
Protein Base: Coffee Whiteners
Stabilizer: Yoghurt
Flavor Enhancer & Emulsifier: Cheese Spreads
BEVERAGES
Stabilizer and foaming agent: Carbonated Drinks
Stabilizer: Drinking Chocolate
Emulsifier: Cream Liqueurs and Wine Aperitifs
Clarifying Agents: Beer & Wine
NUTRITION SUPPLEMENTS
Protein Source: Performance Nutrition, Nutritional Drinks & Weight Management
DESSERTS
Stabilizer & Whipping Improver: Frozen Desserts & Instant Pudding
Stabilizer, Whipping Improver, Emulsifier & film former: Whipped Topping
CONFECTIONERY
Texture Improver: Hard Toffee & Fudge
MEAT PRODUCTS
Emulsifier, Texture Improver & water binding: Comminuted Meats

Table 1: Applications of Caseinates

DAIRY PRODUCTS

Caseinate is used as an emulsifier and stabilizer in cream liqueurs containing cream, sodium Caseinate, added sugar, ethanol, andtrisodium citrate to prevent calcium induced gelation.

Caseinate is used in ice creams substitutes and frozen desserts to improve whipping properties, body and texture and to act as a stabilizer and also find uses in mousses, instant puddings and whipped toppings for similar reasons and because it acts as an emulsifier and film former. Sodium Caseinate is used to reduce syneresis and increase gel firmness in yoghurts

PROCESSED MEAT, FISH & POULTRY

Caseinates are used to stabilize the physical (often emulsion like) structure during processing and storage stages. Caseinate is found to be better texture enhancing protein than other dairy proteins in processed meat although this is not through gelation mechanism. Caseinate has been approved as a purge controller in cooked pork products. In finely comminuted such as Frankfurters, Caseinate is used to emulsify fat, leaving the meat proteins free to bind water. In coarsely comminuted meats such as hamburgers and sausages, Caseinate can be used in the formation of pre-emulsion, which when chopped into meat, improves the texture and succulence of the meat.

PROCEESED CHEESE/ANALOGUE CHEESE

Caseinates are used in processed Cheese for their emulsifying and structuring properties. Imitation Cheese, Caseinate is used or emulsification and structure formation. By careful selection of the Caseinate type, melting and PH regulating salts and the right processing conditions, tailored imitation cheese function and melting point can be achieved.

PERFORMANCE NUTRITION, NUTRITIONAL DRINKS & WEIGHTMANAGEMENT

Caseinates slow releasing rate and its ability to maintain blood amino acid level for a longer period of time will help in keeping positive nitrogen balance between meals. They are used in various Geriatric Food Formulations, Pediatric Foods, Convalense Food Formulations and supplements for burn patients. The importance of Casein supplementation is critical to any individual looking forward to retaining and building muscle mass as it helps :

- Spare muscle mass during intense training
- Provide an excellent source of high-quality protein to support muscle growth and recovery
- Supply essential amino acids, including high concentrations of the potent anti-catabolic, glutamine

AMINO ACID PROFILE

Caseinates are especially rich source of the immune-boosting and muscle-protein-sparing amino acid glutamine. It has a potent 20.5% glutamine content — higher than whey, soy or egg albumen protein sources. It's also a great source of arginine, the well-known "growth-hormone-releasing" amino acid.

And because casein has one of the highest tyrosine-to-tryptophan amino acid ratios of any protein (almost 5 to 1), it's also considered one of the most stimulating and may even help suppress appetite after consumption. This is because tyrosine is considered the "pick-me-up" amino acid that increases levels of excitatory chemical signals in the brain and, therefore, creates a sense of overall satisfaction and "fullness.

Essential Amino Acid	Wheat	Rice	Soya	Egg	Casein
Iso-Leucine	14	15	21	28	46
Leucine	27	32	31	34	91
Lysine	11	15	26	29	77
Methionine	6	10	5	14	29
Phenylalanine	18	18	19	23	51
Threonine	12	15	16	21	43
Tryptophan	5	5	5	6	12
Valine	18	25	24	29	57

Table 2: Essential Amino Acid profile of Casein, Soya, Wheat, Rice and Egg

A worthy protein choice

During intense training phases, our bodies require more protein to help reduce muscle protein breakdown and supply the needed amino acids to help our muscles rebuild bigger and stronger. In fact, studies show protein may be especially important to consume about an hour after a workout for optimal uptake of these muscle-building aminos. Because caseinate is found in many of the protein supplement drinks is less expensive than many whole-food proteins, many active people find it helps them meet their increased needs for protein in a convenient drink mix.

Caseinates are ideal protein to consume immediately before bed. It digests more slowly than many other protein choices (such as whey, which absorbs very quickly) and could almost be considered a "time-released" protein because it forms a "gel-like" substance in the gut, which slows its absorption rate. So late into the night — for hours longer — our muscle cells continue to be supplied with muscle-building protein and amino acids, lessening the time our bodies are "fasting" and increasing the likelihood of prolonged muscle-building activity and improved nitrogen retention.

Caseinates containing products are widely used in the food industry because of their contribution to desirable flavor and emulsifying, whipping and hydrating properties that impart desirable characteristics.

Table 3: Nutritional Parameters for Egg, Casein, Whey, Soy and Wheat

Protein	PER	BV	PDCAAS	AAS
Egg	**3.8**	**100**	**1**	**1.21**
Casein	**2.6**	**88**	**1**	**1.24**
Whey	**3.6**	**104**	**1**	**1.16**
Soy	**2.1**	**59**	**0.91**	**0.96**
Wheat	**1.0**	**54**	**0.42**	**0.47**

The Story of Millet: Poor Man's Rich Food

By Prof.JagadishPai

As per Professor Daniel of MS University of Baroda, Bajra – the poor man's staple food in India is nutritionally rich. The tasty 'bajra no rotlo' (millet bread) has compounds like tricin, luteolin and acacetin that can help prevent cancer.

Millets are a group of small-seeded grains widely grown around the world. Millets are important food grain particularly in semi-arid tropics of Asia and Africa. They do not form a taxonomic group but rather a functional or agronomic one. Their similarities are that they are small seeded and grown in difficult environments at risk of drought. They grow in harsh conditions where other crops do not grow well.

Millets can grow on the most marginalised soils without irrigation and very little or no external inputs such as pesticides. Also millets are pivot around which a vibrant agro-biodiversity survives, wherever it is allowed. Unfortunately over the decades, the state policies have progressively eroded both the millets and the farming system they represented according to National Consultation on Millets held in National Institute of Rural Development, Hyderabad in 2008. Consequently hundreds of thousands of hectares dedicated to growing millets have degenerated into cultivable fallow and millet acreage has shrunk from 18 million hectares to 9 million hectares depriving the poor of their nutritional food, livelihood, security and control over their farming. Farming practices are changing from traditional seed varieties to high yielding varieties and to monocultures.

The most important amongst millets are the pearl millet (bajra or bajri) and the finger millet (ragi or nachni). World production of millets in 2010 was over 29 million tonnes as per FAO statistics of which India produced almost 11 million tonnes followed by Nigeria with over 4 million tonnes. Other major producing countries are Niger (3.84 MT), Mali (1.37 MT), China (1.26 MT) and Burkina Faso (1.14 MT). Among other countries producing millets are Uganda, Senegal, Chad, Sudan and Ethiopia.

India is the largest producer of pearl millet. According to ICRISAT data the acreage has declined but production has increased due to 75% increase in productivity to about 930 kg/ha in 2008-10. A large number of hybrids have been released since 1980s by ICRISAT which not only produce more but are also resistant to downy mildew epidemic.

Besides main rainy season crop, farmers are now growing pearl millet as irrigated summer season crop in Gujarat, Rajasthan and Uttar Pradesh where hybrids that tolerate above 42°C temperature during flowering and give high yields.

Although the Green Revolution promoted rice and wheat at the expense of a variety of crops including millets which did not have to depend on vagaries of rains nor use of pesticides, recently there are signs of revival of millet cultivation that can fight hunger even during drought keeping farmers debt-free in Andhra Pradesh. NGOs working with poor farmers especially women helped revive the cultivation of this grain. Grain stores have been preserved through traditional methods like use of dried neem leaves to keep insects away.

In many areas of Andhra Pradesh, millet was the staple food. Besides green revolution, government schemes gave rice and wheat at highly subsidised rates to poor so farmers did not grow millets which almost disappeared. People started eating rice instead of millet which had to be cleaned, pounded, kneaded and rolled into rotis and eaten with dal and vegetables while rice needed just boiling and could be eaten as such. Thus nutrients they were getting through millets, dal and vegetables were lacking in their diets. Revival has not only made them less hungry but also their diets became nutritious. According to NGOs like Deccan Development Society, millets should be introduced in government schemes including ICDS (Integrated Child Development Scheme).

Millet Varieties

Millets include species in several genera mostly in the *Panicoideae* subfamily of grass family *Poaseae*, with the exception of finger millet and tess that belong to *Chloridoideae* subfamily. Most widely grown species are as follows

Pearl millet (*Pennisetumglaucum*) or bajra
Foxtail millet (*Setariaitalica*)
Proso millet (*Panicummiliaceus*) or broom corm millet, hog millet etc.
Finger millet (*Eleusinecoracana*) or ragi, nachani or mandwa
Indian barnyard millet (*Echinochloafrumentacea*) or sawa millet

Japanese barnyard millet (*Echinochloaesculenta*)

Kodo millet (*Paspalumscrobiculatum*)

Little millet (*Panicumsumatrense*)

Besides many other varieties tess (*Eragrostistef*) and sometime sorghum (*Sorghum spp*) are also included in millets.

Processing

Millets are processed by steaming, popping, roasting or preparing wet or dry flour from which many products are prepared. Processing is laborious involving hand pounding, sifting, wetting, grinding and milling. At times millets are parboiled. Hand pounding is most common primary step for most millets. Pearl millet, sorghum and finger millet are manually ground to make flour for flat bread or roti or bhakri.Kodo millet is a difficult grain to dehusk as it has several seed coats but is considered tastiest and worth the effort. Millets are parboiled in some regions of Tamil Nadu and sun dried prior to dehusking the hard grains making removal of husk easier and enhances storage properties.

Although hand pounding is superior to mechanical milling because of better taste, nutritional status and keeping quality, ragi, bajra and jowar are processed in local flour mills. This also results in higher losses than dehusking by hand pounding and milling by hand rotated stone grinder.

Table: Nutritive Values of Millets (per 100g)

Cereal	Moisture g	Protein g	Fat G	Mineral g	Dietary fibreg	Carbohy-drate g	Energy kcal	Calcium mg	Iron mg
Bajra	12.4	11.6	5	2.3	14.20#	67.5	361	42	8
Foxtail millet	11.2	12.3	4.3	3.3	24.71	60.9	331	31	2.8
Jowar	11.9	10.4	1.9	1.6	12.69	72.6	349	25	4.1
Proso millet	11.9	12.5	1.1	1.9	30.48	70.4	341	14	0.8
Ragi	13.1	7.3	1.3	2.7	19.08	72.0	328	344	3.9
Sawa millet	11.9	6.2	2.2	4.4	38.93	65.5	307	20	5.0
Kodo millet	12.8	8.3	1.4	2.6	37.76	65.9	309	27	0.5

Ref: Nutritional Values of Indian Foods: Gopalan et al. & # from Millet Mela by Univ. Agri. Sci., Dharwad

Millets like sorghum, are mostly starchy. Their protein content is comparable to that of wheat. Pearl, little and foxtail millets are higher in fat, while finger millet (ragi) has lowest fat. Foxtail millet also has lowest carbohydrate. Millets are relatively rich in iron and phosphorus. Bran layers of millets are good source of B vitamins and dietary fibre. However, in order to make various products bran layers are removed and there is loss of nutrients unless hand pounding is adopted which retains much of bran while removing husk. Phytates are fairly high in millets so availability of minerals is limited unless germinated.

Health Benefits of Millets

Foxtail millet, common in India showed health benefits in diabetic rats. Millets showed significant fall (70%) in blood glucose while having no such effect in normal rats. Diabetic rats also showed lower levels of triglycerides, total/LDL/VLDL cholesterol while an increase in HDL cholesterol.

Millets have good amounts of phytate reducing the bioavailability of iron, although a very good source of iron. Malting or sprouting of grains is a common method used for preparing weaning foods and it was found that malting of finger millet (ragi) increased bioavailability of iron by over 300% while manganese and calcium increased significantly and marginally.

A team of scientists in a Canadian university investigated the antioxidant activity and phenolic contents of several varieties of millets including kodo, finger, foxtail, proso, pearl and little millets. Kodo showed the highest phenolic content while proso the lease. Antioxidant activity was high in all varieties. NIN scientists in Hyderabad also found that finger millets had highest antioxidant and phenolic content among common Indian foods.

Some people are allergic to gluten so they cannot consume bread and other baked goods from wheat and rye. Millets are naturally gluten-free. Polish scientists analysed many products labelled gluten-free and found that many products contained gluten in the range about 5 to 57 ppm. A US nutrition consultant also found several products labelled gluten-free contained 20 to 3000 ppm gluten. Millets could be used for making gluten-free products as they naturally are gluten-free.

Scientists in South Korea fed high-fat diet to rats to induce hyperlipidemia. They were fed either white rice, sorghum, foxtail millet or proso millet for 4 weeks. Triglycerides were significantly lower in millet groups while C-reactive protein, a useful indicator of cardiovascular disease, was lowest in foxtail millet group.

Diabetes is rising sharply in India as in many other countries. In a medical college in Tamaka, India investigated the awareness and prevalence of diabetes in rural areas. While people were not aware of long term effects of diabetes and its care, common perception favoured consumption of ragi, bajra and whole wheat instead of rice, sweets and fruit.

Consuming fruits, veggies may not be enough to prevent weight gain

A study published in the American Journal of Clinical Nutrition shows that solely consuming a lot of fruits and vegetables may not be enough to prevent weight gain.

The researchers examined the diet and weight information collected from 373,803 adults from 10 European countries participating in the European Prospective Investigation into Cancer and Nutrition study. Over five years, the study participants, ages 25–70, gained about one pound per year, on average. Among men, weight gain generally dipped somewhat as their fruit and vegetable intake rose. But that link disappeared when the researchers accounted for other factors, like the men's daily calories, exercise habits, and education levels.

Among overweight women, those who said they ate the most vegetables tended to gain more weight over the next five years. That, the researchers speculate, could be because some of those women were on weight-loss diets that encourage eating a lot of vegetables. Many people who go on special diets notoriously see their weight yo-yo over time.

The only group for whom higher fruit and vegetable intake was linked to less weight gain was for people who quit smoking during the study period. The researchers speculate that healthy eating habits may help prevent the weight gain that many smokers experience when they try to kick the habit.

The researchers concluded that higher baseline fruit and vegetable intakes, while maintaining total energy intakes constant, did not substantially influence midterm weight change overall but could help to reduce risk of weight gain in persons who stop smoking. The current findings do point to the importance of overall lifestyle in maintaining weight as one ages.

IFT Weekly January 4, 2012

❁❁❁

Berry wines may reduce risk of age-related diseases

A study published in the *Journal of Food Science* shows that moderate wine consumption may reduce the frequency of certain age-related diseases such a heart disease, hypertension, metabolic disease, and neurodegenerative disease. The researchers evaluated blueberry and blackberry wines commercially available in Illinois for chemical and quality components relevant to consumers in order to study their potential health benefits.

Total polyphenolic content was measured by the Folin-Ciocalteu method, total anthocyanin content by the pH differential test, and *in vitro* antioxidant capacity (AC) by the oxygen radical absorbance capacity (ORAC) method. The researchers found that the blackberry wines had an average total polyphenolic content of 2212.5 ± 1090.3 mg ellagic acid equivalents per liter, total anthocyanin content of 75.56 ± 70.44 mg/L, and AC of 26.39 ± 17.95 mmoltrolox equivalents per liter. The blueberry wines had an average total polyphenolic content of 1623.3 ± 645.5 mg ellagic acid equivalents per liter, total anthocyanin content of 20.82 ± 12.14 mg/L, and AC of 21.21 ± 7.71 mmoltrolox equivalents per liter. The results suggest that fruit wines made from blueberries and blackberries may have potential health applications and therefore could contribute to the economy of the wine industry.
IFT Weekly 25 January 2012

❁❁❁

Consuming calcium-rich foods may lower prostate cancer risk

A study published in the Centers for Disease Control and Prevention's (CDC) *Preventing Chronic Disease* shows that calcium from food may lower men's risk for prostate cancer.

The researchers used data from a case-control study conducted among veterans between 2007 and 2010 at the Durham Veterans Affairs Medical Center. The study consisted of 108 biopsy-positive prostate cancer cases, 161 biopsy-negative controls, and 237 healthy controls. They determined whether these associations differed for African Americans and Caucasians or for low-grade and high-grade prostate cancer. A food frequency questionnaire was used to assess diet and estimate calcium intake.

The researchers found that intake of calcium from food was inversely related to risk for prostate cancer among all races in a comparison of cases and biopsy-negative controls and cases and healthy controls. Total calcium was associated with lower prostate cancer risk among African American men but not among Caucasian men in analyses of healthy controls. The highest tertile of calcium from food was associated with lower risk for high-grade prostate cancer in a comparison of high-grade cases and biopsy-negative controls and high-grade cases and healthy controls.

The researchers concluded: “Our findings suggest that, among men with diets that have moderate to low calcium intake, adequate calcium intake may reduce the risk for prostate cancer, particularly among [African American] men, and reduce the risk for high-grade prostate cancer among all men.”

IFT Weekly 25 January 2012

❁❁❁

How Poor Maternal Diet Can Increase Risk of Diabetes: New Mechanism Discovered

Researchers funded by the Biotechnology and Biological Sciences Research Council have shown one way in which poor nutrition in the womb can put a person at greater risk of developing type 2 diabetes and other age-related diseases in later life. This finding could lead to new ways of identifying people who are at a higher risk of developing these diseases and might open up targets for treatment.

The team, from the University of Cambridge and the Medical Research Council (MRC) Toxicology Unit at the University of Leicester, publish their findings on January 6 in the journal *Cell Death and Differentiation*.
The research shows that, in both rats and humans, individuals who experience a poor diet in the womb are less able to store fats correctly in later life. Storing fats in the right areas of the body is important because otherwise they can accumulate in places like the liver and muscle where they are more likely to lead to disease.

Professor Anne Willis of the MRC Toxicology Unit at the University of Leicester explains "One of the ways that our bodies cope with a rich modern western diet is by storing excess calories in fat cells. When these cells aren't able to absorb the excess then fats get deposited in other places, like the liver, where they are much more dangerous and can lead to type 2 diabetes."

The team found that this process is controlled by a molecule called miR-483-3p. They found that miR-483-3p was produced at higher levels in individuals who had experienced a poor diet in their mother's wombs than those who were better nourished.
When pregnant rats were fed low protein diets their offspring had higher levels of miR-483-3p. This led to them developing smaller fat cells and left them less able to store fats in adulthood. These rats were less likely to get fat when fed a high calorie diet but were at a higher risk of developing diabetes. Rats are known to be a good model for studying human dietary diseases and the team also found that miR-483-3p was present in elevated levels in a group of people who were born with a low birth weight.
Dr Susan Ozanne, a British Heart Foundation Senior Fellow, who led the work at the University of Cambridge, adds "It has been known for a while that your mother's diet during pregnancy plays an important role in your adult health, but the mechanisms in the body that underlie this aren't well understood. We have shown in detail how one mechanism links poor maternal diet to diabetes and other diseases that develop as we age."

Dr Ozanne and Professor Willis and their team found that miR-483-3p works by suppressing a protein called GDF3. When they studied a group of adult humans who were born with a low birth weight, they found that GDF3 protein was present at around only thirty percent of the levels found in people born at a normal weight.

Professor Willis, Director of the MRC Toxicology Unit, adds "Improving people's diets and encouraging exercise is clearly the best way to combat the epidemic of diabetes and diet-related disease which is sweeping through our society. However some people are at particular risk of these diseases, despite not looking visibly overweight. This research will hopefully allow us to help these people to take precautionary steps to reduce their likelihood of developing type 2 diabetes."

Professor Douglas Kell, Chief Executive of BBSRC said "People are continuing to live ever longer and healthier lives thanks to improvements in nutrition and healthcare. However modern diets and lifestyles are posing new challenges to which our bodies sometimes seem poorly adapted -- and this has caused unforeseen health problems.

"If we are to remain healthy throughout our lives and into old age it is vital that scientists work to understand our fundamental biology in the context of social and environmental changes. By identifying a mechanism that links maternal diet to diabetes this research has made an important contribution to the fight against a growing epidemic of metabolic diseases."
ScienceDaily (Jan. 6, 2012) —

❁❁❁

Would You Stop Eating out to Lose Weight?

Going out to eat has become a major part of our culture. Frequently eating out and consuming high-calorie foods in large portions at restaurants can contribute to excess calorie intake and weight gain. However, a study in the January/February 2012 issue of the *Journal of Nutrition Education and Behavior* demonstrates that individuals can eat out and still lose weight.

Investigators from The University of Texas at Austin enrolled 35 healthy, perimenopausal women aged 40 to 59 years who eat out frequently. Participants took part in a 6-week program called *Mindful Restaurant Eating*, a weight-gain prevention intervention that helps develop the skills needed to reduce caloric and fat intake when eating out. The focus of the program was on preventing weight gain in this population, not weight loss. It is important to prevent weight gain in this population as increasing abdominal waist circumference from weight gain is greater during the perimenopausal years, which in turn increases the risk for cardiovascular disease and diabetes. Even though the focus was on weight maintenance, the researchers found that participants in the intervention group lost significantly more weight, had lower average daily caloric and fat intake, had increased diet related self-efficacy, and had fewer barriers to weight management when eating out.

Dr. Gayle M. Timmerman, PhD, RN, the principal investigator of this study states, "Although the intention of the intervention was weight maintenance and the majority of participants were not dieting with the intent to lose weight at the start of the study (69%), on average the intervention group lost 1.7 kg during 6 weeks. The number of times that participants ate out, as captured in the 3-day 24-hour recalls, did not significantly decrease from time 1 to time 2, indicating that participants were able to successfully manage their weight while continuing their usual, frequent eating-out patterns. Overall, the participants in the intervention group reduced their daily caloric intake by about 297 calories after completing the intervention, which would explain their weight loss. Only part of the calorie reduction (about 124 calories) can be accounted for during eating out, indicating that fewer calories were also consumed at home."

"Based on what we learned from this study, for those individuals who eat out frequently, developing the skills needed to eat out without gaining weight from the excess calories typically consumed at restaurants may be essential to long-term health," Dr. Timmerman concludes.

This study addresses the importance of developing creative solutions in preventing weight gain; developing restaurant eating skills to manage intake in the high risk restaurant food environment may be one of those solutions.
ScienceDaily (Jan. 10, 2012) —

❁❁❁

Increase Dietary Fiber, Decrease Disease

We should all be eating more dietary fiber to improve our health -- that's the message from a health review by scientists in India. The team has looked at research conducted into dietary fiber during the last few decades across the globe and now suggests that to avoid initial problems, such as intestinal gas and loose stool, it is best to increase intake gradually and to spread high-fiber foods out throughout the day, at meals and snacks. Writing in the *International Journal of Food Safety, Nutrition and Public Health*, the team offers fruit, vegetables, whole-grain foods, such as muesli and porridge, beans and pulses, as readily available foods rich in dietary fiber.

Dietary fiber, also known as roughage, is the general term of the non-digestible parts of the fruit and vegetable products we eat. There are two forms soluble and insoluble. Soluble (prebiotic, viscous) fiber that is readily broken down or fermented in the colon into physiologically active byproducts and gases. The second form is insoluble fiber, which is metabolically inert, but absorbs water as it passes through the digestive system, providing bulk for the intestinal muscles to work against and easing defecation.
VikasRana of the Rain Forest Research Institute, in Assam, India, and colleagues point out that research has shown that modern food habits have, it seems, led to an increase in the incidence of obesity, cardiovascular diseases, and type 2 diabetes. These are growing more common even in developing nations where a "western" diet of highly processed foods, high in sugars and saturated fats, beef and dairy products and low in dietary fiber is displacing more traditional options. The team suggests that evidence points to a loss of dietary fiber in the diet as being a major risk factor for health problems but one of the simplest to remedy without recourse to major changes in diet or the addition of supplements or so-called functional foods and nutraceuticals to the diet.
Given that dietary fiber has physiological actions such as reducing cholesterol and attenuating blood glucose, maintaining gastrointestinal health, and positively affecting calcium bioavailability and immune function, it is important for the current generation and future generations that this component of our diets be reasserted through education and information.

"Consuming adequate quantities of DF can lead to improvements in gastrointestinal health, and reduction in susceptibility to diseases such as diverticular disease, heart disease, colon cancer, and diabetes. Increased consumption has also been associated with increased satiety and weight loss," the team concludes. Given the ready availability particularly in the West and in the relatively richer parts of the developing world of vegetables, fruit and other foods high in dietary fiber it is a matter of recommending that people eat more dietary fiber rather than consistently taking the unhealthy low-fiber option throughout their lives.
ScienceDaily (Jan. 11, 2012) —

❁❁❁

Novel Iron Source: Newly Identified Iron
Absorption Mechanism Suggests That Legumes Could Provide Key to Treating Iron Deficiency Worldwide
A groundbreaking study conducted by Children's Hospital Oakland Research Institute (CHORI) Senior Scientist Elizabeth Theil, PhD, is the first to reveal the existence of at least two independent mechanisms for iron absorption from non-meat sources-and a potential treatment for iron deficiency, the most common nutrient deficiency worldwide. Dr.Theil's discovery of an alternative mechanism for iron absorption from vegetables and legumes may provide the key to helping solve iron deficiency by providing an alternative, affordable, and readily available source of iron. In an upcoming publication in *The Journal of Nutrition* (published online January 18, 2012), Dr.Theil and her international colleagues demonstrate that there is an alternative mechanism for the absorption of ferritin, a large, protein-coated iron mineral rich in legumes, in addition to the more well-known mechanism for iron absorption of small iron complexes like those found in iron supplements.

"Our study shows that this different mechanism of iron absorption from plant ferritin is more efficient and gives the intestinal cells more control. It can be a new way to help solve global iron deficiency," says Dr.Theil.
Iron deficiency is the most common nutrient deficiency in both developing and non-developing nations. Traditional treatments include iron supplements and increased meat consumption. Both of these approaches have proven to have significant limitations, however.

Iron supplements frequently cause uncomfortable side effects, including gas and bloating, which lead to inconsistent consumption. In some cultures where iron deficiency is endemic, meat is scarce; frequently, the limited meat available is reserved for men, even though growing children and women of child-bearing age are the most susceptible to iron deficiency. The discovery of an alternative and highly efficient mechanism for iron absorption from legumes, however, could provide the key to helping solve worldwide iron deficiency by providing a readily available and affordable source of iron.

The new study combines the results of two different experiments, one conducted in humans and the other using rats to model humans. In the rat model, portions of the rat intestines were bathed with solutions of traceable iron, either as a typical type of iron supplement or as ferritin (protein-coated iron mineral). Measurements showed that both the large ferritin and the smaller iron complex were absorbed through the intestine.

In the human study, traceable iron in ferritin was consumed by volunteers with a 9:1 ratio of unlabelled, non-meat iron dietary supplement, or with hemoglobin, with the type of heme iron in meat, to see if the two types of iron competed with ferritin iron for the same absorption mechanism. In each case, the iron competitor had no effect on the iron absorption from ferritin.
"What these studies show together is that during digestion, ferritin is not converted from its large, mineral complex, which contains a thousand iron atoms, to individual iron atoms like those found in many iron supplements," explains Dr.Theil. "Instead, ferritin iron is absorbed in its protein-coated, iron mineral form by a different, independent mechanism; iron absorbed as ferritin, leaves the intestine more slowly, but may, provide greater safety to the intestines than iron supplements."

In addition to potentially being safer, causing less irritation to the intestines, absorption of iron as ferritin is easier for the intestine. The iron found in meat and non-meat iron supplements enters the intestine from food one iron atom at a time. Each entry step requires the intestinal cells to use up energy. When the intestine takes in a single molecule of ferritin, however, it gets a thousand atoms inside that one ferritin molecule, making iron absorption that much more efficient.

While further studies are needed to elucidate the exact mechanism of ferritin absorption, in the mean time, the results demonstrate that ferritin-rich foods such as legumes can provide a significant source of dietary iron for those in the greatest need of increasing their iron consumption.

ScienceDaily (Jan. 20, 2012) —

❁❁❁

Children With ADHD Benefit from Healthy Lifestyle Options as First-Line Treatment

Every year between 3 and 10 percent of school-age children in this country are diagnosed with attention deficit hyperactivity disorder (ADHD). Increasingly, families are using natural or complementary therapies to improve their child's attention or behavior, and often seek advice from an integrative pediatrician, according to a new study by researchers at Wake Forest Baptist Medical Center.

"Many parents are reluctant to put their children on medication for ADHD, and instead want to first try healthy lifestyle options to help promote optimal focus and attention," said Kathi Kemper, M.D., professor of public health sciences and pediatrics at Wake Forest Baptist, and lead author of the study.

Published in the January issue of the journal *Focus on Alternative and Complementary Therapies*, the research is the first to study what parents who seek natural remedies for their child's ADHD are actually using or interested in learning about from an integrative pediatrician. The growing field of integrative pediatrics covers not only complementary therapies, but also focuses on health promotion, disease prevention, lifestyle coaching and coordinated team care.

In the study, the researchers reviewed intake forms, physician reports and laboratory studies for 75 new patients seen in an integrative pediatric clinic over a year and a half. Most of the patients (87 percent) were referred by their primary care physicians and the rest were referred by specialists. Among the patients, 31 percent of the families had concerns about ADHD, but only 13 percent of the children were taking medicine for the condition.

The data suggest that these children often suffer from several chronic health conditions, receive care from multiple, diverse specialists as well as primary care clinicians, and take a variety of medications and supplements while avoiding ADHD medications. "Although it was a small study from one practice, we believe that it reflects an emerging trend among pediatricians and primary care providers," Kemper said.

The Wake Forest Baptist researchers showed that most families with ADHD children were interested in information about diet, exercise, stress management and sleep. Physician recommendations focused on health promotion information, dietary supplements, such as multivitamins/minerals and omega-3 fatty acids, and referrals to specialists.

"For example, if your child has trouble concentrating in his mid-morning math class, be sure he eats a really good breakfast, or try having him go to bed an hour earlier to see if that helps," Kemper said. "If your child can't sit still to do homework when he gets home from school, have him go outside to shoot some hoops and then try doing homework. I recommend using low-risk, healthy lifestyle approaches first before resorting to medication."

For parents interested in finding an integrative pediatrician, Kemper recommends the American Academy of Pediatrics' website under the Section on Complementary and Integrative Medicine for a list of board-certified integrative pediatricians.

ScienceDaily (Jan. 24, 2012) —

❁❁❁

High Levels of Fructose Consumption by Adolescents May Put Them at Cardiovascular Risk, Evidence Suggests

Evidence of cardiovascular disease and diabetes risk is present in the blood of adolescents who consume a lot of fructose, a scenario that worsens in the face of excess belly fat, researchers report.

An analysis of 559 adolescents age 14-18 correlated high-fructose diets with higher blood pressure, fasting glucose, insulin resistance and inflammatory factors that contribute to heart and vascular disease.

Heavy consumers of the mega-sweetener also tend to have lower levels of cardiovascular protectors such as such as HDL cholesterol and adiponectin, according to researchers at the Medical College of Georgia at Georgia Health Sciences University.

These dangerous trends are exacerbated by fat around their midsection, called visceral adiposity, another known risk factor for cardiovascular disease and diabetes. The association did not hold up for adolescents with more generalized, subcutaneous fat.

"It is so very important to provide a healthy balance of high-quality food to our children and to really pay close attention to the fructose and sucrose they are consuming at their home or anyone else's," said Dr. Vanessa Bundy, an MCG pediatric resident. Drs. Bundy and Norman Pollock, bone biologist at MCG's Georgia Prevention Institute are co-first authors on the study published in *The Journal of Nutrition.*

"The nutrition that caregivers provide their children will either contribute to their overall health and development or potentially contribute to cardiovascular disease at an early age," Bundy said. The best way caregivers can support healthy nutrition is to be good role models, she said. A healthy diet with plenty of physical activity -- not dieting -- is the best prescription for growing children.

"Adolescents consume the most fructose so it's really important to not only measure the levels of fructose but to look at what it might be doing to their bodies currently and, hopefully, to look at cardiovascular disease outcomes as they grow," Pollock said.
While animal studies have had similar findings, evidence in children is needed to support dramatic steps to curb consumption, such as asking schools to remove soda and other vending machines or, at least, to limit access, Pollock said. The researchers noted that more study is needed to flesh out the relationship between high fructose consumption and cardiovascular risk and whether these early associations forebode adult disease.

Fructose, or fruit sugar, is found in fruits and veggies but also in high fructose corn syrup, the sweetener used liberally in processed foods and beverages. Researchers suspect growing bodies crave the cheap, strong sweetener and companies often target young consumers in ads.

"Fructose itself is metabolized differently than other sugars and has some byproducts that are believed to be bad for us," Bundy said. "The overall amount of fructose that is in high fructose corn syrup is not much different than the amount in table sugar but it's believed there's something in the syrup processing that plays a role in the bad byproducts of metabolism."
The study took a "snapshot" of the adolescents' lives, looking at overall fructose consumption, general diet history and body fat.
"A unique aspect of our study design is that we took into account the fructose released from sucrose during digestion along with the fructose found in foods and beverages," Pollock said. "Because sucrose is broken down into fructose and glucose before it arrives at the liver for metabolism, it is important to consider the additional fructose from sucrose when determining the overall health effect of fructose."
ScienceDaily (Jan. 24, 2012) —

❁❁❁

High Animal Fat Diet Increases Gestational Diabetes Risk, Study Finds
Women who consumed a diet high in animal fat and cholesterol before pregnancy were at higher risk for gestational diabetes than women whose diets were lower in animal fat and cholesterol, according to researchers at the National Institutes of Health and Harvard University.

Gestational diabetes is a form of diabetes seen during pregnancy. Gestational diabetes increases the risk for certain pregnancy complications and health problems in the newborn.
Women whose diets were high in total fat or other kinds of fats -- but not in animal fat or cholesterol -- did not have an increased risk.

Moreover, the increased risk for gestational diabetes seen with animal fat and cholesterol appeared to be independent of other, dietary and non-dietary, risk factors for gestational diabetes. For example, exercise is known to reduce the risk of gestational diabetes. Among women who exercised, however, those who consumed higher amounts of animal fat and cholesterol had a higher risk than those whose diets were lower in these types of fat.

"Our findings indicate that women who reduce the proportion of animal fat and cholesterol in their diets before pregnancy may lower their risk for gestational diabetes during pregnancy," said senior author Cuilin Zhang, M.D., M.P.H., Ph.D., of the Epidemiology Branch at the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development (NICHD), one of three NIH institutes supporting the study.
The researchers concluded that changing the source of 5 percent of dietary calories from animal fat to plant-derived sources could decrease a woman's risk for gestational diabetes by 7 percent.

The U.S. Department of Agriculture website,ChooseMyPlate.gov, contains information on healthy eating for children and adults, as well as health and nutrition information for pregnant and breast feeding women.

First author Katherine Bowers, Ph.D., conducted the research with NICHD colleagues Dr. Zhang and Edwina Yeung, Ph.D., and with Deirdre K. Tobias and Frank B. Hu, M.D., M.P.H., Ph.D., of Harvard University, in Boston. Their findings appear online in the *American Journal of Clinical Nutrition*.

The research was also funded by the National Cancer Institute and the National Institute of Diabetes and Digestive and Kidney Diseases.

The researchers utilized information from more than 13,000 women participating in the Nurses' Health Study II. The women were 22 to 45 years old when they enrolled in the study. Every two years they responded to questions on their general health, pregnancy status, and lifestyle habits, such as consuming alcohol or smoking. In addition, every four years they completed a comprehensive survey about the kinds of food and drink they consumed.

About 6 percent of the participants reported having been diagnosed with gestational diabetes. The researchers calculated the amount of animal fat in participants' diets as a percentage of total calories and divided participants into five groups, or quintiles, based on those percentages. Then the researchers compared the risk for developing gestational diabetes for each group. Women in the highest quintile of intake had almost double the risk for gestational diabetes compared to women in the lowest quintile.
They also observed that women in the highest quintile for cholesterol consumption were 45 percent more likely to develop gestational diabetes than were women in the lowest quintile.

"This is the largest study to date of the effects of a pre-pregnancy diet on gestational diabetes," Dr. Bowers said. "Additional research may lead to increased understanding of how a mother's diet before and during pregnancy influences her metabolism during pregnancy, which may have important implications for the baby's health at birth and later in life."
ScienceDaily (Jan. 25, 2012) —

❁❁❁

Head And Neck Cancer Cells Destroyed By Grape Seed Extract, But Healthy Cells Are Unharmed

30 Jan 2012 Medical News Today

Nearly 12,000 people will die of head and neck cancer in the United States this year and worldwide cases will exceed half a million. A study published in the journal *Carcinogenesis*shows that in both cell lines and mouse models, grape seed extract (GSE) kills head and neck squamous cell carcinoma cells, while leaving healthy cells unharmed. "It's a rather dramatic effect," says Rajesh Agarwal, PhD, investigator at the University of Colorado Cancer Center and professor at the Skaggs School of Pharmaceutical Sciences. It depends in large part, says Agarwal, on a healthy cell's ability to wait out damage. "Cancer cells are fast-growing cells," Agarwal says. "Not only that, but they are necessarily fast growing. When conditions exist in which they can't grow, they die."

Grape seed extract creates these conditions that are unfavorable to growth. Specifically, the paper shows that grape seed extract both damages cancer cells' DNA (via increased reactive oxygen species) and stops the pathways that allow repair (as seen by decreased levels of the DNA repair molecules Brca1 and Rad51 and DNA repair foci). "Yet we saw absolutely no toxicity to the mice, themselves," Agarwal says. Again, the grape seed extract killed the cancer cells but not the healthy cells.

"I think the whole point is that cancer cells have a lot of defective pathways and they are very vulnerable if you target those pathways. The same is not true of healthy cells," Agarwal says. The Agarwal Lab hopes to move in the direction of clinical trials of grape seed extract, potentially as an addition to second-line therapies that target head and neck squamous cell carcinoma that has failed a first treatment.

❁❁❁

More Black Tea Lowers Blood Pressure

26 Jan 2012 Medical News Today

Tea, the second most consumed drink after water, may help lower blood pressure. Scientists at The University Of Western Australia and Unilever, state in *Archives of Internal Medicine*, that drinking black tea three times a day may drastically lower a person's systolic and diastolic blood pressure.Leading the research, Jonathan Hodgson, professor at UWA's School Of Medicine and Pharmacology says: *There is already mounting evidence that tea is good for your heart health, but this is an important discovery, because it demonstrates a link between tea and a major risk factor for heart disease.*

During their study, the researchers examined 95 Australians, ages 35 to 75. A portion of the participants were asked to drink black tea, three times daily, while the others were given a placebo that tasted identical and contained the same caffeine content, but did not originate from tea.

Black tea appears to have cardiovascular benefits

Six months later, the researchers examined the findings. They concluded that the people who drank the black tea were found to have lower 24-hour systolic and diastolic blood pressure; between 2 and 3 mmHg lower.

Professor Hodgson states: *Blood pressure measurement consists of two numbers. The First is the systolic and measures blood pressure when the heart beats, or contracts to push blood through the body. The second number is the diastolic and measures the amount of pressure in between beats when the person is at rest.*

Hodgson also says: *More research is required to better understand how tea may reduce blood pressure, although earlier studies reported a link between tea drinking and the improved health of people's blood vessels.*

❁❁❁

Magnesium-Rich Diet Lowers Stroke Risk

January 17, 2012 Food Product Design

STOCKHOLM—Consuming a diet high in magnesium-rich foods, such as green leafy vegetables, beans and seeds, may reduce the risk of ischemic stroke by 8%, according to a new study published in the *American Journal of Clinical Nutrition*.Researchers at KarolinskaInstitutet conducted a dose-response meta-analysis to summarize the evidence regarding the association between magnesium intake and stroke risk. Relevant studies were identified by searching PubMed and EMBASE from January 1966 through September 2011 and reviewing reference lists of retrieved articles. Seven prospective studies, with 6,477 cases of stroke and 241,378 participants were eligible for inclusion in the meta-analysis.

A modest, but statistically significant, inverse association was found between magnesium intake and risk of stroke. An intake increment of 100 mg Mg/d was associated with an 8% reduction in risk of total stroke. Magnesium intake was inversely associated with risk of ischemic stroke but not intracerebral hemorrhage.

❁❁❁

Eating Foods Fried In Olive Or Sunflower Oil Not Tied To Heart Disease Or Earlier Death, BMJ Study

25 Jan 2012 Medical News Today

In a new study published in *BMJ* on Tuesday, researchers find that consuming fried food is not linked to heart disease or earlier death, as long as the frying is done in in olive or sunflower oil. But they also note that the people they studied live in Spain, where like other Mediterranean countries they use olive or sunflower oil for frying, so this result would most likely be different in countries where people fry with solid and re-used oils.

Professor PilarGuallar-Castillón from Autonomous University of Madrid, and colleagues set out to do the study because while high consumption of fried food has been tied to higher risk factors for heart disease, such as high blood pressure, high cholesterol and obesity, the link to heart disease itself had not been fully investigated.

People in Western countries use frying more than any other way of cooking food. Frying changes the nutritional

content of food: it loses water and takes up fat, increasing its calorie content. Another thing that happens is that frying degrades oils, especially when re-used, creating more unhealthy trans fats and losing the healthier unsaturated fats. These unhealthier fats end up in the food that is eaten.For the study, Guallar-Castillón and colleagues used data covering 40,757 adults aged 29 to 69 in the Spanish cohort of EPIC study.

EPIC (the European Prospective Investigation into Cancer and Nutrition study) is a large study of diet, health and lifestyle that has recruited in total about half a million participants in ten European countries.

None of the participants they studied had heart disease at the start of the study. Through trained interviewers, the participants gave information about their diet and cooking methods. Fried food was defined as being where frying was the only method used to prepare the food, and the participants were also asked whether the food was fried, battered, crumbed or sautéed.

Data about coronary heart disease events and deaths came from hospital discharge registers, population based registers of heart attacks and death registers.

When they analyzed the data, Guallar-Castillón and colleagues found that over the median follow-up of 11 years (up to 2004), there were 606 coronary heart disease events and 1,135 deaths (from all causes).They then sorted the participants according to how much fried food was in their diet, so the ones who ate the least fried food were at the bottom of the list and the ones who ate the most were at the top.

They then compared the results in quartiles, for instance comparing the 25% who ate the least fried food (the first, or bottom quartile) with the next 25%, (the second quartile) and the third 25%, and lastly the fourth 25% (the ones who ate the most fried food).When they did this they found, after adjusting for energy intake, BMI, high blood pressure and other risk factors, that the risk of coronary heart disease events was not significantly higher in the second, third and fourth quartiles compared to the first. (Eg the the multivariate hazard ratio of coronary heart disease in the fourth quartile was 1.08 (95% confidence interval 0.82 to 1.43; P for trend 0.74) compared to the first).

They also found the results did not vary between those who used olive oil and those who used sunflower oil to fry their food. And there was no link between fried food consumption and death (from any cause).

The authors conclude:"In a Mediterranean country where olive and sunflower oils are the most commonly used fats for frying, and where large amounts of fried foods are consumed both at and away from home, no association was observed between fried food consumption and the risk of coronary heart disease or death."

In an accompanying editorial, Michael Leitzmann, a professor from the University of Regensburg in Germany, and Tobias Kurth, director of research at the Université Bordeaux in France, write that the study dispels the myth that "frying food is generally bad for the heart". However, they also caution this "does not mean that frequent meals of fish and chips will have no health consequences". They also note, as do the authors, that specific aspects of frying food, such as the type of oil used, could make a difference.

❁❁❁

Key Role Grandmothers Play In Mother And Child Nutrition And Health Highlighted By Research

22 Jan 2012 Medical News Today

Grandmothers and other senior female family members should play a key role in nutrition and health programmes for children and women in non-Western societies. However, they are often overlooked by health organisations that don't understand the importance of their role or see them as an obstacle to promoting good nutrition and health practices. Those are the key finding of an extensive literature review published in the January issue of *Maternal and Child Nutrition.*

Community health specialist Dr Judi Aubel reviewed literature covering 60 different cultural contexts in 35 Asian,

African and Latin American countries between 1995 and 2010. These included published studies in academic journals, together with unpublished material from non-governmental organisations, international development agencies and universities. The literature, in English, French and Spanish, came from a broad range of fields, including anthropology, nursing and public health.

"My review revealed that few non-Western programmes have actively engaged grandmothers in child and mother nutrition and health programmes, despite the fact that their involvement and influence in such matters is much more significant than conventionally assumed by policy makers and programme planners" says Dr Aubel.

"The extensive research findings I studied from rural and urban areas of Africa, Asia and Latin America reveal the decisive role of grandmothers, at both household and community levels, in all matters related to mother and child nutrition and health" adds Dr Aubel, co-founder of The Grandmothers Project, a not-for-profit agency that promotes the health and development of communities in the three regions.

"The literature also reveals that, contrary to popular belief, grandmothers are not always set in their ways when it comes to nutrition and health. A few nutrition and health programmes have actively engaged grandmothers and shown them to be a valuable resource."

The term grandmother is used in Dr Aubel's review as a generic term to refer to maternal and paternal grandmothers, aunts, elder co-wives and other senior women in the family who are involved in providing support and care for children and their mothers.

The three key findings of her review of non-Western societies of Africa, Asia and Latin America are that:

1. Grandmothers play a central role in providing care for women and children and in advising younger women and male family members on nutrition and health matters, especially during pregnancy, childbirth and when children are infants or still young.
2. Social networks of senior women provide a collective influence on maternal and child nutrition-related practices, especially when women are pregnant or have recently given birth.
3. Fathers and grandfathers usually play secondary, supportive roles in non-emergency situations when it comes to maternal and infant nutrition, but their involvement generally increases in crisis situations, when special logistical and/or financial support are required.

"Despite the fact that grandmothers and other senior women are very involved in the nutrition and health of women and children, national and international policies and programmes rarely target or involve them" says Dr Aubel.

"My review clearly shows that there is a large gap between how those planning public health campaigns for non-Western settings view family dynamics and how they actually work in practice."

As a result of her review, Dr Aubel makes four key recommendations:

1. Further research should be carried out in non-Western cultural settings in order to understand the roles, norms, communication networks and decision-making patterns in household and community settings.
2. Health professionals and community workers need to re-examine their perceptions of both culture and grandmothers, so that they view grandmothers as resources rather than obstacles.
3. Health training curricula should be revised to provide more focus on how local families and cultural systems promote health and nutrition.
4. Additional research is needed to validate or reject the key findings of this review in specific non-Western cultures.

❁❁❁

Red Wine Versus White Wine - Comparison Of Effects On Hormones Related To Breast Cancer Risk

22 Jan 2012 Medical News Today

Aromatase inhibitors (AIs) prevent the conversion of androgens to estrogens, and could play a role in the development of breast cancer. This study of 36 pre-menopausal women consisted of a cross-over intervention trial to determine if there were differences between red wine and white wine in their effects on AIs. Subjects sequentially consumed eight ounces of red wine, followed by white wine (or vice versa), each beverage for a one-month period. The investigators concluded that red wine, but not white wine, was associated with significant effects on some indices of estrogen metabolism; free testosterone and luteinizing hormone were increased, but no significant differences were noted in estrogen levels.

Forum reviewers considered the results interesting and that they contribute to our understanding of the relation of wine to hormonal levels. On the other hand, they were concerned about methodological problems, including a lack of baseline data and variations in the timing during the menstrual period of blood sampling (which could affect estrogen levels). Also, no significant effect of the interventions was seen on blood levels of estradiol.

Further, the Forum thought that it should be pointed out that data are inconsistent on the relation of red wine consumption to the risk of breast cancer; many studies do not show beverage-specific effects on risk. More research will be needed to determine if the polyphenols in red wine can play a role in lowering the risk of breast cancer.

❁❁❁

Junk Food Linked To Weight Gain In Schools? Apparently Not

19 Jan 2012 Medical News Today

Despite a tripling of obesity rates in US schools over the last forty years, and an increase in junk foods, candy and sugary drinks availability in schools, a new study claims to demonstrate that the two are not linked - put simply, the study researchers say that junk food at school does not appear to be associated with higher obesity and overweight rates. The study has been published in *Sociology in Education*, and was authored by Jennifer Van Hook, a Professor of Sociology and Demography, and doctoral student Claire Altman.

Prof. Hook said:

"We were really surprised by that result and, in fact, we held back from publishing our study for roughly two years because we kept looking for a connection that just wasn't there."

Prof. Hook and Claire E. Altman gathered data from the Early Childhood Longitudinal Study, Kindergarten Class of 1998-1999. The large study tracked the children all the way up to eighth grade. The researchers focused on a sample of 19,450 kids during the years 2003-2004 (fifth graders) and 2006-2007 (eighth graders).

Junk food was available in 86.3% of the eighth graders' schools and 59.2% of the fifth graders'.

Even though the percentage rise in junk food availability and accessibility from fifth to eighth grade was significant, the obesity/overweight rates in the two age groups remained pretty much the same. In fact, (obesity/overweight) rates dropped as the children got older - from 39.1% in fifth graders to 35.4% in eighth graders.

Van Hook said:

"There has been a great deal of focus in the media on how schools make a lot of money from the sale of junk food to students, and on how schools have the ability to help reduce childhood obesity. In that light, we expected to find a definitive connection between the sale of junk food in middle schools and weight gain among children between fifth and eighth grades.

But, our study suggests that - when it comes to weight issues - we need to be looking far beyond schools and, more specifically, junk food sales in schools, to make a difference."

The authors believe that authorities need to focus on the home and family environments, plus other broader non-school environments, if they want to tackle childhood obesity effectively.

Van Hook explained:*"Schools only represent a small portion of children's food environment. They can get food at home, they can get food in their neighborhoods, and they can go across the street from the school to buy food. Additionally, kids are actually very busy at school.*

When they're not in class, they have to get from one class to another and they have certain fixed times when they can eat. So, there really isn't a lot of opportunity for children to eat while they're in school, or at least eat endlessly, compared to when they're at home. As a result, whether or not junk food is available to them at school may not have much bearing on how much junk food they eat."

According to the findings in this study, combating childhood obesity/overweight is most effective when younger children are targeted.

The authors wrote:*"There has been a lot of research showing that many children develop eating habits and tastes for certain types of foods when they are of preschool age, and that those habits and tastes may stay with them for their whole lives," Van Hook said. "So, their middle school environments might not matter a lot."*

❁❁❁

Vitamin D Could Help Combat The Effects Of Aging In Eyes

18 Jan 2012 Medical News Today

Researchers funded by the Biotechnology and Biological Sciences Research Council (BBSRC) have found that vitamin D reduces the effects of ageing in mouse eyes and improves the vision of older mice significantly. The researchers hope that this might mean that vitamin D supplements could provide a simple and effective way to combat age-related eye diseases, such as macular degeneration (AMD), in people.

The research was carried out by a team from the Institute of Ophthalmology at University College London and is published in the current issue of the journal*Neurobiology of Ageing*.

Professor Glen Jeffery, who led the work, explains "In the back of the eyes of mammals, like mice and humans, is a layer of tissue called the retina. Cells in the retina detect light as it comes into the eyes and then send messages to the brain, which is how we see. This is a demanding job, and the retina actually requires proportionally more energy than any other tissue in the body, so it has to have a good supply of blood. However, with ageing the high energy demand produces debris and there is progressive inflammation even in normal animals. In humans this can result in a decline of up to 30% in the numbers of light receptive cells in the eye by the time we are 70 and so lead to poorer vision."

The researchers found that when old mice were given vitamin D for just six weeks, inflammation was reduced, the debris partially removed, and tests showed that their vision was improved.

The researchers identified two changes taking place in the eyes of the mice that they think accounted for this improvement. Firstly, the number of potentially damaging cells, called macrophages, were reduced considerably in the eyes of the mice given vitamin D. Macrophages are an important component of our immune systems where they work to fight off infections. However in combating threats to the aged body they can sometimes bring about damage and inflammation. Giving mice vitamin D not only led to reduced numbers of macrophages in the eye, but also triggered the remaining macrophages to change to a different configuration. Rather than damaging the eye the researchers think that in their new configuration macrophages actively worked to reduce inflammation and clear up debris.

The second change the researchers saw in the eyes of mice given vitamin D was a reduction in deposits of a toxic molecule called amyloid beta that accumulates with age. Inflammation and the accumulation of amyloid beta are

known to contribute, in humans, to an increased risk of age-related macular degeneration (AMD), the largest cause of blindness in people over 50 in the developed world. The researchers think that, based on their findings in mice, giving vitamin D supplements to people who are at risk of AMD might be a simple way of helping to prevent the disease.

Professor Jeffery said "When we gave older mice the vitamin D we found that deposits of amyloid beta were reduced in their eyes and the mice showed an associated improvement of vision. People might have heard of amyloid beta as being linked to Alzheimer's disease and new evidence suggests that vitamin D could have a role in reducing its build up in the brain. So, when we saw this effect in the eyes as well, we immediately wondered where else these deposits might be being reduced."

Professor Jeffery and his team then went on to study some of the blood vessels of their mice. They found that the mice that had been given the vitamin D supplement also had significantly less amyloid beta built up in their blood vessels, including in the aorta.

Professor Jeffery continues "Finding that amyloid deposits were reduced in the blood vessels of mice that had been given vitamin D supplements suggests that vitamin D could be useful in helping to prevent a range of age-related health problems, from deteriorating vision to heart disease."

Professor Jeffery thinks that this link between vitamin D and a range of age-related diseases might be linked to our evolutionary history. For much of human history our ancestors lived in Africa, probably without clothes, and so were exposed to strong sunlight all year round. This would have triggered vitamin D production in the skin. Humans have only moved to less sunny parts of the world and adopted clothing relatively recently and so might not be well adapted to reduced exposure to the sun. Secondly, life expectancy in the developed world has increased greatly over the past few centuries, so reduced exposure to vitamin D is now coupled with exceptionally long lifespan.

Professor Jeffery said "Researchers need to run full clinical trials in humans before we can say confidently that older people should start taking vitamin D supplements, but there is growing evidence that many of us in the Western world are deficient in vitamin D and this could be having significant health implications."

Professor Douglas Kell, BBSRC Chief Executive said "Many people are living to an unprecedented old age in the developed world. All too often though, a long life does not mean a healthy one and the lives of many older people are blighted by ill health as parts of their bodies start to malfunction.

"If we are to have any hope of ensuring that more people can enjoy a healthy, productive retirement then we must learn more about the changes that take place as animals age. This research shows how close study of one part of the body can lead scientists to discover new knowledge that is more widely applicable. By studying the fundamental biology of one organ scientists can begin to draw links between a number of diseases in the hope of developing preventive strategies."

❁❁❁

Well-Informed People Eat Better

16 Jan 2012 Medical News Today

A study by Italian researchers shows that the more people are informed by newspapers, television and the Internet, the more they stick to the Mediterranean diet, the healthiest eating pattern in the world. It is time to leave behind the belief that mass media are always a source of bad habits. Television, newspaper and the Internet, when used to get information, may turn out to be of help for health.

It is the conclusion of a study conducted by the Research Laboratories at the Fondazione di Ricerca e Cura "Giovanni Paolo II" in Campobasso which analyzed data from a sample of more than 1,000 people from the largest Moli-sani Project, the epidemiological study that recruited 25,000 subjects in Molise, a southern region of Italy.

The report, published on line in the *International Journal of Public Health*, is one of the first research considering the mass media information as a whole by taking into account the sources of information most used by people to get informed on several issues. So far scientists analyzed just the effects of television viewing on health, coming to negative conclusions.

"Scientific literature has mainly focused on television viewing, considered a risk factor for health mainly because it represents a measure of physical inactivity - says MarialauraBonaccio, first author of the study and member of the Science communication unit at the Research Laboratories - Basically, watching TV is often linked to physical inactivity and snacking, with negative effects on obesity, a major cardiovascular risk factor. In our study we paid attention to the capacity of people to get informed by using mass media, including the Internet and newspapers or magazines. We sought to see whether most informed people had better eating habits than those less exposed to information".

Researchers from Campobasso conducted their study (called Moli-news) on more than 1,000 adult subjects randomly recruited from the general population. who participated to the epidemiological study Moli-sani. In addition to different information collected for the main project (medical information, lifestyle, dietary habits, etc) the participants to Moli-news also completed a specific questionnaire on mass media usage, from TV viewing to newspaper and magazine reading and surfing the Internet. Researchers had in the meantime created a score of mass media information exposure.

"Exposition to several media - explains AmericoBonanni, head of the Science communication unit of the Research Laboratories - has then been associated to lifestyle. We focused on eating habits, mainly on Mediterranean diet. Results have shown that people most exposed to information delivered by any mass media source, reported higher adherence to the Mediterranean-like eating patterns. The latter are considered as the most effective eating model for reducing the risk of chronic and neurodegenerative diseases. In particular, people resulting more informed reported higher consumption of some key foods of the Mediterranean diet pyramid, such as fruits and fresh fish, and a lower consumption of less healthy food such as animal fats".

"Information delivered by mass media - claims Giovanni de Gaetano director of the Research Laboratories - may appear fragmented or imprecise, especially when we talk about health and prevention. Our study has however provided data which may turn out to be very useful in a period in which to combat obesity increase, unhealthy dietary habits and diffused laziness we are urged to find new ways to communicate health. We should stop being suspicious of mass media. The next step will be to evaluate the single sources of information and to study the changes that the internet is introducing in the way people, mainly the youngest, get informed on health topics".

The Moli-sani Project is conducted by the Research Laboratories of the Fondazione di Ricerca e Cura "Giovanni Paolo II" in Campobasso, Italy. Started in March 2005, the study has recruited 25,000 citizens living in the Molise region, in order to investigate environmental and genetic factors responsible for cardiovascular disease and tumors. The Moli-sani study is changing the face of a whole Italian region by turning it into a large scientific laboratory.

❁❁❁

Type Of Fat Matters: Dispelling The Low-Fat-Is-Healthy Myth; And The Muffin Makeover

13 Jan 2012 Medical News Today

Dozens of studies, many from Harvard School of Public Health (HSPH) researchers, have shown that low-fat diets are no better for health than moderate- or high-fat diets - and for many people, may be worse. To combat this "low fat is best" myth, nutrition experts at HSPH and chefs and registered dietitians at The Culinary Institute of America (CIA) have developed five new muffin recipes that incorporate healthy fats and whole grains, and use a lighter hand on the salt and sugar. Their goal? To "make over" the ubiquitous low-fat muffin, touted as a "better-for-you" choice when in fact low-fat muffins often have reduced amounts of heart-healthy fats, such as liquid plant oils, but boast plenty of harmful carbohydrates in the form of white flour and sugar.

Other low-fat processed foods are not much better, and are often higher in sugar, carbohydrates, or salt than their full-fat counterparts. For good health, type of fat matters more than amount. Diets high in heavily processed carbohydrates can lead to weight gain and an increased risk of type 2 diabetes and heart disease.

"It's time to end the low-fat myth," said Walter Willett, professor of epidemiology and nutrition and chair of the Department of Nutrition at HSPH. "Unfortunately, many well-motivated people have been led to believe that all fats are bad and that foods loaded with white flour and sugar are healthy choices. This has clearly contributed to the epidemic of diabetes we are experiencing and premature death for many. The lesson contained in these healthy muffins - that foods can be both tasty and good for you - can literally be life-saving."

A regular blueberry muffin from a national coffee shop chain has 450 calories on average and most of those calories come from carbohydrates, primarily white flour and sugar. However, now that national chains have eliminated trans fats, a regular muffin does have heart-healthy fat, usually from soybean or canola oil. A low-fat muffin has about the same amount of calories, but contains more carbohydrates and sugar - and about 60% more sodium (700 milligrams) - than a regular muffin.

The new Blueberry Muffin recipe offered by HSPH and the CIA is less than half the size of a coffee shop muffin and contains just 130 calories. It is made with a mixture of whole wheat, white, and almond flour and uses canola oil, a healthy fat. (See "Blueberry Muffin Battle" for a nutritional comparison of the three types of blueberry muffins(1).

"There are so many ingredients available to home bakers who want to offer their families healthful, flavorful baked goods," says Richard Coppedge, Jr., chef-instructor at the CIA and a Certified Master Baker. "These five recipes not only include a wide variety of whole grain and nut flours; they also demonstrate how more unusual ingredients like canned chickpeas and extra virgin olive oil can be used in baking."

The CIA and HSPH offer a dozen healthy baking tips that professional chefs and home cooks can use to build a healthier muffin. Here are a few of their tips:

- Downsize the portions. The mega-muffins popular in bake shops are two to three times the size of the muffins your grandmother might have baked.
- Go whole on the grains. It's easy to substitute whole wheat flour for 50% of the white flour in recipes without harming taste or texture. And with a few recipe alterations, delicious muffins can be made with 100% whole grains. See the Lemon Chickpea Breakfast Muffin and the Whole Wheat Banana Nut Muffin recipes as examples.
- Slash the sugar. You can cut 25% of the sugar from most standard muffin recipes without any negative impact on flavor or texture, and in some recipes, cut back even more.
- Pour on the oil. Liquid plant oils - canola, extra virgin olive oil, corn, sunflower, and others - help keep whole-grain muffins moist and are a healthier choice than melted butter or shortening.
- Bring out the nuts. For extra protein and an additional source of healthy fats, add chopped nuts.
- Scale back the salt. The best way to reduce salt is to make a smaller muffin and to pair muffins with foods, such as vegetables and fruits, that are sodium-free.
- Pump up the produce - and flavor! Fresh whole fruit and unsweetened dried fruit naturally contain sugar, but unlike other sweeteners, they also contain fiber and important nutrients. Using fruit in your muffins means you can have a lighter hand on the added sugar. Cooked or raw vegetables, such as caramelized onions, sliced jalapeños, and chives and other fresh herbs - together with a whole range of spices - can add interesting textures and savoryflavors to muffins.

The muffin recipes and photos, baking tips, a Q & A on why it's time to end the low-fat myth, and a handy chart showing how to find foods with healthy fats are all available on The Nutrition Source, a nutrition website from the Harvard School of Public Health(2).

"We need to make healthy fats and whole grains the new baking norm, at home and in the professional kitchen," says Greg Drescher, Vice President of Industry Leadership and Strategic Initiatives for the CIA. "We call on restaurants and other food service providers to be leaders in promoting healthy fats - and in doing away with the low-fat myth."

❁❁❁

Iron Intake In Teen Years Can Impact Brain In Later Life

13 Jan 2012 Medical News Today

Iron is a popular topic in health news. Doctors prescribe it for medical reasons, and it's available over the counter as a dietary supplement. And while it's known that too little iron can result in cognitive problems, it's also known that too much promotes neurodegenerative diseases. Now, researchers at UCLA have found that in addition to causing cognitive problems, a lack of iron early in life can affect the brain's physical structure as well.

UCLA neurology professor Paul Thompson and his colleagues measured levels of transferrin, a protein that transports iron throughout the body and brain, in adolescents and discovered that these transferrin levels were related to detectable differences in both the brain's macro-structure and micro-structure when the adolescents reached young adulthood.

The researchers also identified a common set of genes that influences both transferrin levels and brain structure. The discovery may shed light on the neural mechanisms by which iron affects cognition, neurodevelopment and neurodegeneration, they said. Their findings appear in the current online edition of the journal *Proceedings of the National Academy of Sciences.*

Iron and the proteins that transport it are critically important for brain function. Iron deficiency is the most common nutritional deficiency worldwide, causing poor cognitive achievement in school-aged children. Yet later in life, iron overload is associated with damage to the brain, and abnormally high iron concentrations have been found in the brains of patients with Alzheimer's, Parkinson's and Huntington diseases.

Since both a deficiency and an excess of iron can negatively impact brain function, the body's regulation of iron transport to the brain is crucial. When iron levels are low, the liver produces more transferrin for increased iron transport. The researchers wanted to know whether brain structure in healthy adults was also dependent on transferrin levels.

"We found that healthy brain wiring in adults depended on having good iron levels in your teenage years," said Thompson, a member of UCLA's Laboratory of Neuro Imaging. "This connection was a lot stronger than we expected, especially as we were looking at people who were young and healthy - none of them would be considered iron-deficient."We also found a connection with a gene that explains why this is so. The gene itself seems to affect brain wiring, which was a big surprise," he said.

To assess brain volume and integrity, Thompson's team collected brain MRI scans on 615 healthy young-adult twins and siblings, who had an average age of 23. Of these subjects, 574 were also scanned with a type of MRI called a "diffusion scan," which maps the brain's myelin connections and their strength, or integrity. Myelin is the fatty sheath that coats the brain's nerve axons, allowing for efficient conduction of nerve impulses, and iron plays a key role in myelin production.

Eight to 12 years before the current imaging study, researchers measured the subjects' blood transferrin levels. They hoped to determine whether iron availability in the developmentally crucial period of adolescence impacted the organization of the brain later in life. "Adolescence is a period of high vulnerability to brain insults, and the brain is still very actively developing," Thompson said. By averaging the subjects' transferrin levels, which had been assessed repeatedly - at 12, 14 and 16 years of age - the researchers estimated iron availability to the brain during adolescence, he said.

The team discovered that subjects who had elevated transferrin levels - a common sign of poor iron levels in a person's diet - had structural changes in brain regions that are vulnerable to neurodegeneration. And further analyses of the twins in the study revealed that a common set of genes influences both transferrin levels and brain structure.

One of the genetic links - a specific variation in a gene called HFE, which is known to influence blood transferrin levels - was associated with reduced brain-fiber integrity, although subjects carrying this gene variant did not yet show any symptoms of disease or cognitive impairment.

"So this is one of the deep secrets of the brain," Thompson said. "You wouldn't think the iron in our diet would affect the brain so much in our teen years. But it turns out that it matters very much. Because myelin speeds your brain's communications, and iron is vital for making myelin, poor iron levels in childhood erode your brain reserves which you need later in life to protect against aging and Alzheimer's.

"This is remarkable, as we were not studying iron deficient people, just around 600 normal healthy people. It underscores the need for a balanced diet in the teenage years, when your brain's command center is still actively maturing. "

The findings, he said, may aid future studies of how iron transport affects brain function, development and the risk of neurodegeneration.

❁❁❁

Food Science & Industry News

Flavor boom continues for floral ingredients

Rising interest in naturalness and a growing awareness of the potential health benefits of botanical ingredients have combined with the desire for something more unusual to develop the demand for floral ingredients and flavorings. According to Innova Market Insights, the number of global food and drinks launches featuring floral ingredients in the first 10 months of 2011 rose 7% over the same period in 2010 to already be within striking distance of the total recorded for the whole of that calendar year and over four times the level recorded five years previously.

The use of flowers as flavorings has long been popular in Japan and other parts of the Far and Middle East, but that trend has now spread to Western markets. Innova Market Insights records that the most popular floral flavors globally in January to October 2011 were jasmine, lotus, rose, and chrysanthemum, but that there were significant differences according to geographical region and type product.

Innova Market Insights found that a wide range of sectors have seen activity in the use of floral flavors globally, led by hot beverages, primarily tea, soft drinks, and confectionery, but also including alcoholic beverages, dairy products, spreads, and seasonings. Tea, soft drinks, and confectionery accounted for a combined 70% of total launch activity featuring floral flavorings in the first 10 months of 2011, with jasmine leading in tea, rose in confectionery, and chrysanthemum in soft drinks. In the confectionery sector, rose is a traditional flavor in Turkish Delight-type products, but it now appears in a growing number of premium chocolate lines, particularly dark chocolate, alongside lavender, violet, orange blossom, geranium, and jasmine.

Lu Ann Williams, Research Manager for Innova Market Insights, reports that companies are increasingly using floral flavors to impart new and unique notes and aromas to a range of products, particularly in countries and regions where they may not traditionally be used. “This is particularly impacting the beverages sector, although confectionery is also seeing a relatively high level of activity as consumers continue to search for something combining novelty with naturalness and a healthy image,” said Williams.

IFT Weekly 25 January 2012

❁❁❁

Modified Probiotic May Decrease Listeria Infection

January 11, 2012 Food Product Design

WEST LAFAYETTE, Ind.—Purdue researchers have discovered that the same *Listeria* protein that allows the bacteria to pass through intestinal cells and into bloodstreams can help block those same paths when added to a probiotic, according to a new study published in the journal PLoS One. The findings may lead to the development of a pill or probiotic drink that could be given to at-risk patients to minimize the risk of *Listeria* infection.

The researchers earlier work showed that *Listeria* triggers intestinal cells to express heat shock protein 60 on their surfaces. That allows *Listeria* to bind to the intestinal cells using an adhesion protein and pass into them, acting as a sort of gateway to the bloodstream. The researchers found that probiotics alone were ineffective in combating *Listeria*. They added the *Listeria* adhesion protein to the probiotic *Lactobacillus paracasei* and were able to decrease the number of *Listeria* cells that passed through intestinal cells by 46%. With the adhesion protein, *Lactobacillus paracasei* interacts with heat shock protein on the surface of intestinal cells just as *Listeria* would. The probiotic then attached to the intestinal cells, crowding out *Listeria*.

❁❁❁

Sweetness intensity may not correlate to overall caloric intake

A study published in the *Journal of Food Science* shows that although taste has an important impact on dietary choice, perceived sweetness intensity alone may not have a significant influence on food behavior and dietary intake in young adults.

One hundred and thirty university students enrolled in a food and nutrition unit completed the following assessments as part of their course work: a food and diet questionnaire, two 24-hr food records, a food variety survey, and a perceived sweetness intensity measurement. All students were invited to participate in the current study and 85 provided written consent to participate. The perceived sweetness intensity measurement test consisted of the subjects being given a sucrose solution to taste and then rating how sweet they felt the solution was. Out of the 130 students that participated, no correlation was observed between perceived sweetness and total caloric intake. The researchers concluded that, "overall, perceived sweetness intensity does not appear to play a role in food behaviors relating to sugar consumption and dietary intake in adults."

This was the first study of its kind to investigate the correlation between sweetness intensity and specific food behaviors and nutrient intake and no associations were found between the two. It must be acknowledged that the study was done on a small scale and therefore caution should be taken when generalizing current findings to the broader population.

IFT Weekly January 18, 2012

❁❁❁

LED lights may extend meat's shelf life

A switch to LED lights in refrigeration units could save the retail meat industry millions of dollars each year, according to research from Kansas State University. Kyle Steele, recent master's graduate in animal sciences and industry, found that using light-emitting diode, or LED, lights in refrigeration units both saves energy for meat retailers and extends the shelf life of some beef products.

Steele compared the use of LED lights and fluorescent lights in meat refrigeration units because many meat retailers currently use fluorescent lights. During refrigerated display, the color of fresh meat changes because of its natural chemistry and exposure to oxygen. Because color is a large factor that influences customers in purchasing meat, some consumers discriminate against discolored meat. These discolored meat products must either be discounted or discarded, which has been estimated to cost the meat industry up to a billion dollars each year, Steele said.

For his research, Steele looked at five different meat products: pork loin chops, beef loin steaks, ground beef, ground turkey, and beef inside round steaks. Steele looked at several aspects of these meat products and their refrigeration units:

- Discoloration: The researchers brought in trained color panelists to score meat color changes over time while displayed under both lighting types.
- Rancidity: The researchers measured the rancidity of the meat products stored under both types of light. Light affects the oxidation of fat in meat, which can cause rancidity and a change in taste.
- Operating efficiency: The researchers studied operating efficiency of the two types of lights by measuring how many times a refrigeration unit had to cycle to keep the meat cool and how many running hours that cycle lasted.

The researchers found that LED lights scored positively in nearly all areas. Most significantly, LED lights helped reduce operating costs and prolonged the shelf life for most of the meat products.

"Most meat products displayed under LED lighting had colder internal product temperatures, which helps extend product shelf life," said Steele. "Beef loin steaks and inside round steaks that were stored under LED lights can have up to one day longer shelf life."

IFT Weekly January 18, 2012

❁❁❁

Regulatory & Safety News

USDA launches online nutrition SuperTracker

U.S. Agriculture Secretary Tom Vilsack has released the U.S. Dept. of Agriculture's (USDA) new nutrition SuperTracker. The SuperTracker is a comprehensive resource available at ChooseMyPlate.gov designed to assist individuals as they make changes in their life to reduce their risk of chronic disease and maintain a healthy weight.

Release of this new web tool comes as the USDA highlights the second in a series of themed consumer messages supporting the MyPlate icon—"Enjoy Your Food, But Eat Less"—that the USDA is promoting the next three months in conjunction with more than 5,000 organizations participating in the MyPlate Nutrition Communicators Network.

"Overcoming the health and nutrition challenges we face as a nation is critical and the SuperTracker provides consumers with an assortment of tools to do just that," said Vilsack. "This easy-to-use website will help Americans at all stages of life improve their overall health as they input dietary and physical activity choices into the tool."

Consumers can access the free SuperTracker tool at anytime and can choose a variety of features to support nutrition and physical activity goals. SuperTracker offers consumers the ability to

- **Personalize recommendations** for what and how much to eat and amount of physical activity.
- **Track foods and physical activity** from an expanded database of foods and physical activities.
- **Customize features** such as goal setting, virtual coaching, weight tracking, and journaling.
- **Measure progress** with comprehensive reports ranging from a simple meal summary to in-depth analysis of food groups and nutrient intake over time.
- **Operationalize** the 2008 Physical Activity Guidelines.
- **Support family and friends** by adding their individual profiles.

IFT Weekly January 4, 2012

❁❁❁

New FCC standards proposed for probiotic food ingredients

With strong consumer interest in probiotics—and new manufacturer innovations for incorporating these ingredients into a broader array of food products—new standards to help ensure the quality of probiotic food ingredients are being proposed for public review and comment. The draft standards, which will be included in the *Food Chemicals Codex* (*FCC*), offer comprehensive information that is essential when utilizing probiotics as food ingredients, including testing to confirm the identity upon which probiotic product safety and health claims are based. Published by the U.S. Pharmacopeial Convention (USP), *FCC* is an international compendium of quality specifications for food ingredients.

Essential quality specifications such as identification and enumeration (microbe count), as well as intended uses in food, safety, regulatory status, and purity of probiotics and other microbial food cultures, are included in the new *FCC*Appendix, titled *Microbial Food Cultures Including Probiotics*. These specifications are available in the latest *FCC Forum*, the free-access, online vehicle through which proposed *FCC* standards are published for public review and comment.

Proper identification with probiotics is important because safety studies are most often based on the genus/species or strain level, so it is critical that manufacturers know exactly which microorganism they are incorporating into their food product to ensure safety. Identification also is important in supporting purported health claims. Given that many different strains of microorganisms are cultured and have been tested and used in foods, any supporting studies for justifying health claims are at the specific strain level. For any claimed health benefit, manufacturers should be able to confirm that what they are using in a probiotic food product is indeed the strain tested. Enumeration is similarly important because any claimed health effects supported by study trial data would also be specific to the level of intake.

"Testing for identity is difficult with probiotics, and this is a key area where public standards provided in the *Food Chemicals Codex* can be of significant value across the food, nutritional, and consumer products industries," said Praveen Tyle, USP's Chief Science Officer. "These are standards that all parties can use. With more manufacturers incorporating probiotics in products beyond yogurts based on rising consumer interest, scrutiny of health claims will

grow, as will global sourcing of ingredients. We believe additional measures for determining identity and overall quality will be useful in protecting consumers and manufacturers alike."
IFT Weekly January 4, 2012

❁❁❁

Standardized methods for substantiating health claims

Over the next four years, a consortium led by researcher TNO will be developing standardized research methods for use in studies into the health effects of food. This will give manufacturers greater insight into these effects and allow them to develop new health-promoting food as well as provide better scientific substantiation for health claims.

To this end, TNO has established the NutriTech consortium of 23 research organizations and universities from around the world. The European Commission is backing the initiative with €6 million. In addition, a second consortium has been established with eight major European food manufacturers for €4 million in order to accelerate application within the food industry. Both projects begin in January and will last four years. TNO has a coordinating role due to its position in this conceptual innovation and experience in leading major European research projects.

"Global standardized and accepted research methods will enable manufacturers to scientifically substantiate their health claims," said Ben van Ommen, Principal Scientist and Program Director of System Biology at TNO. "Food manufacturers develop products that have a positive effect on health but the scientific substantiation of such effects can be difficult to establish. To date, many health claims have not been acknowledged by the EFSA on the grounds of insufficient scientific substantiation. This is discouraging, which is a shame because manufacturers need to be stimulated to continue developing healthy food. The new measurement methods that the consortium will develop will enable the health effect of food to be better demonstrated and so facilitate the development of new, healthy food."

IFT Weekly 25 January 2012

❁❁❁

Color-Coding, Rearranging Food Products Improves Healthy Choices in Hospital Cafeteria

A simple program involving color-coded food labeling and adjusting the way food items are positioned in display cases was successful in encouraging more healthful food choices in a large hospital cafeteria. The report from Massachusetts General Hospital (MGH) researchers will appear in the March *American Journal of Public Health* and has received early online release.
"We found that labeling all foods and beverages with a simple red, yellow and green color scheme to indicate their relative healthiness led patrons to purchase more of the healthy and fewer of the unhealthy items," says Anne Thorndike, MD, MPH, of the MGH division of General Medicine, who led the study. "We also found that moving items around to make the healthy items more convenient and visible led to further improvement in the nutritional quality of items purchased."

The study authors note that most current point-of-purchase efforts to encourage more healthful food choices focus on labeling the calorie content of food, which will soon be required for many restaurants and food service vendors as part of the Patient Protection and Affordable Care Act. However, calorie information is only useful if people read and comprehend it -- which requires understanding their own calorie needs, accurately estimating serving sizes, and having enough time to consider and act on the information provided. Studies by psychologists and behavioral economists also have noted that individuals tend to maintain their typical behavior patterns and are more motivated by actions with immediate, rather than long-term rewards.

In the MGH cafeteria, color-coded labels indicate the healthiest sandwich choices (green), along with those designated less (yellow) and least (red) healthy.

To find a simpler way to encourage more healthful food purchases, the research team -- including leaders of the MGH Nutrition and Food Service -- devised a two-phase plan. In the first phase, which began in March 2010, color-coded labels were attached to all items in the main hospital cafeteria -- green signifying the healthiest items, such as fruits, vegetables and lean meats; yellow indicating less healthy items, and red for those with little or no nutritional value. Signage in the cafeteria encouraged customers to consume green items often, yellow items less often, and to consider other choices for red items. All cafeteria cash registers were programmed to record and identify each purchased item as green, red or yellow; and additional nutritional information was made available in the cafeteria throughout the six-month study period.

For the second "choice architecture" phase, which began in June 2010, displayed food items were rearranged according to principles of behavioral economics. This phase focused on cold beverages, pre-made sandwiches and chips -- popular items likely to be purchased by customers who have little time to spend and may be more influenced by location and convenience. Cafeteria beverage refrigerators were arranged to place water, diet beverages and low-fat dairy products at eye level, while beverages with a red or yellow label were placed below eye level. The sandwich refrigerator was also arranged to put green items at eye level while red or yellow items were placed above and below. Racks of chips had yellow items at eye level and red items below, and additional baskets of bottled water were placed near stations where hot food was served.

At the end of the study period, sales of green items had increased significantly, while sales of unhealthy "red" items decreased. More specifically, during phase 1, sales of all red items decreased 9.2 percent -- with red beverage purchases dropping 16.5 percent -- while green item sales increased 4.5 percent, with a 9.6 increase in green beverages. In phase 2, red item sales dropped another 4.9 percent compared with phase 1, with beverages dropping by 11.4 percent; and while sales of green items decreased 0.8 percent in phase 2, sales of green beverages increased another 4 percent. A comparison with two satellite cafeterias where these measures had not been instituted revealed that these changes were much more pronounced in the cafeteria where the study was conducted.

"We believe this intervention was so successful because it was simple and easy to understand quickly. The labeling did not require any special skills and could be easily interpreted when a customer was in a rush," Thorndike explains. "The 'choice architecture' intervention was much more subtle and took greater advantage of the convenience factor. Any of these strategies could be easily translated to other food service environments." An assistant professor of Medicine at Harvard Medical School, Thorndike adds that all elements of the program remain in place, with the color-coded labeling extended to other MGH food service locations, and future analysis is planned to see whether the observed changes are maintained over time.
ScienceDaily (Jan. 19, 2012) —

❁❁❁

Nutrition Labels Being Ignored By Consumers

31 Jan 2012 Medical News Today

The key outcome of the FLABEL conference (*Food Labeling to Advance Better Education for Life*) in November 2011 was reported to be that even though nutrition labeling is commonly used throughout Europe, consumers pay insufficient attention and lack motivation to use them. FLABEL Scientific Advisor, Professor Klaus G. Grunert, will present the final findings of this three-and-a-half-year project in a webinar today.

Nutrition labels provide consumers with the option to choose healthier foods, however, scientific studies on using these labels in real-life shopping situations are limited. According to the FLABEL project, consumers do understand the information presented in nutrition labels and use it to opt for healthier choices. Most of the consumers were able to correctly rank foods according to its health rating, when given information on key nutrients, such as fat, saturated fat, sugar and salt, as well as energy for a variety of products.

The key finding of the FLABEL research shows that consumer's choices are affected by their lack of motivation and attention in terms of nutrition labeling. Professor Grunert says that these important hurdles need to be overcome, explaining, that: "consumers need to be motivated to engage with nutrition information - for instance, by having a health goal - in order to pay attention to nutrition labels".

Lack of attention also has a negative impact on nutrition labels' choices on healthy foods. For instance, researchers tracked consumer's eye movements in a mock grocery store experiment when people were shopping for food. According to the data, the consumers only scanned the nutrition labels for an average of between just 25 and 100 milliseconds, insufficient to process the information provided.

The attention consumers' pay to read the nutrition information provided on the labels can be improved by motivating the consumer, however, the most promising option for doing so, including using the labels to make healthy choices is to consistently provide information on key nutrients and energy on the front of the pack. According to

Grundert: *"Complementing this information with a health logo can also increase attention to, and use of, the information, especially when the consumer is under time pressure. The use of color-coding can increase attention and use in certain situations, although the effects are not strong."*

Participants in the FLABEL project reported they prefer and would like to use more complex labels, which offer the entire information of a product. The data also indicates that whether or not consumers' prefer certain products depend on previous exposure or familiarity with the label. The findings of the project evidently demonstrated a very high presence of nutrition information on food labels in Europe.

In an investigation conducted in the EU 27 and Turkey, researchers evaluated more than 37,000 products in five product categories, including sweet biscuits, breakfast cereals, chilled pre-packed ready meals, carbonated soft drinks and yoghurts, and established that the majority (85%) of food products displayed nutrition information on the back of the pack, with almost half (48%) of the products showing nutrition information on the front packaging.

A table with a list of nutrition proved to be the most common method of labeling for the back of the pack (84%) whilst Guideline Daily Amounts (GDA) labels and nutrition claims were the most frequent method on packaging fronts. Both types of labeling were found on a quarter of all products.

❁❁❁

The Effects of 2 Common Sweeteners on the Body

25 Jan 2012 Medical News Today

With growing concern that excessive levels of fructose may pose a great health risk - causing high blood pressure, kidney disease and diabetes - researchers at the University of Colorado School of Medicine, along with their colleagues at the University of Florida, set out to see if two common sweeteners in western diets differ in their effects on the body in the first few hours after ingestion. The study, recently published in the journal *Metabolism*, took a closer look at high fructose corn syrup (HFCS) and table sugar (sucrose) and was led by Dr MyPhuong Le (now a postdoctoral fellow at the University of Colorado) and Dr Julie Johnson, a Professor of Pharmacogenomics at the University of Florida.

Both HFCS and sucrose have historically been considered to have nearly identical effects on the body. But this study finds that indeed there is a difference between the two. They found that the makeup of the sugars resulted in differences in how much fructose was absorbed into the circulation, and which could have potential impact on one's health. Sucrose is 50 percent fructose and 50 percent glucose that is bonded together as a disaccharide (complex carbohydrate) and HFCS is a mixture of free fructose (55%) and free glucose (45%). It's the difference in fructose amount that appears to create the ill health effects on the body.

Their study was conducted at the University of Florida, where they evaluated 40 men and women who were given 24 ounces of HFCS- or sugar-sweetened soft drinks. Careful measurements showed that the HFCS sweetened soft drinks resulted in significantly higher fructose levels than the sugar-sweetened drinks. Fructose is also known to increase uric acid levels that have been implicated in blood pressure, and the HFCS-sweetened drinks also resulted in a higher uric acid level and a 3 mm Hg greater rise in systolic blood pressure.

Dr Richard Johnson, a coauthor in the study and Chief of the Division of Renal Diseases and Hypertension at the University of Colorado, commented "Although both sweeteners are often considered the same in terms of their biological effects, this study demonstrates that there are subtle differences. Soft drinks containing HFCS result in slightly higher blood levels of fructose than sucrose-sweetened drinks, "said Johnson. "The next step is for new studies to address whether the long-term effects of these two sweeteners are different."

❁❁❁

FDA Bans Certain Uses Of Antibiotics In Food-Producing Animals

05 Jan 2012 Medical News Today

In a bid to protect an important class of antibiotics for treating humans and reduce the development of drug resistance, the US Food and Drug Administration has banned certain uses of cephalosporins in food-producing animals. The federal agency announced on Wednesday that the prohibition order comes into effect on 5 April.

The ban is intended to stop the use of "extra label" or unapproved use, of cephalosporins in what the FDA describes as the "so-called major species of food-producing animals" such as cattle, pigs (swine), chickens and turkeys.

Use of antibiotics in food-producing animals, whether for treatment, disease prevention or growth promotion, allows resistant bacteria and resistance genes to develop and spread from those animals to humans through the food-chain.

Michael R. Taylor, the FDA's Deputy Commissioner for Foods, told the press:

"We believe this is an imperative step in preserving the effectiveness of this class of important antimicrobials that takes into account the need to protect the health of both humans and animals."

Cephalosporins are a class of antimicrobial drug commonly used to treat bacterial infections in various parts of the body such as throat, ears, lungs, sinuses and skin. They are increasingly seen as an effective alternative to penicillin for many patients.

Doctors prescribe them for the treatment of pneumonia and soft tissue infection, plus various other conditions such as pelvic inflammatory disease, diabetic foot infections, and urinary tract infections.

If cephalosporins are not effective in treating these conditions, then doctors have to resort to other drugs that are less effective and have worse side effects.

The FDA says the new ban takes into account the "substantial public comment" they have received on a similar order the agency issued in 2008 but then revoked prior to implementation. This new ban is less of a blanket ban, in that it appears to carefully specify certain exceptions that the agency says will not risk public health.

The reason for the ban is to "preserve the effectiveness of cephalosporin drugs for treating disease in humans", with the intention that such a move will "reduce the risk of cephalosporin resistance in certain bacterial pathogens".

Specifically, the order bans the use of cephalosporins in ways that have not been approved, such as:

- Unapproved dosage levels, frequencies, durations and ways of giving the drug,
- Using cephalosporin drugs in food producing animals that have not been approved for use in those animals (for instance, some cephalosporins are approved only for treating humans or companion animals), and
- To prevent disease in these food-producing animals,

Unlike the ban that was introduced and then revoked in 2008, the new ban does allow some exceptions to the extralabel use of cephalosporins in food-producing animals. These exceptions, which the FDA says "protect public health while considering animal health needs", are:

- The ban does not limit the use of an older drug, cephapirin, which the agency says is not thought to contribute significantly to the development of antibiotic resistance.
- Veterinarians will be allowed to administer or prescribe cephalosporins for "limited extra-label use" in the major food- producing animals, as long as they adhere to the "dose, frequency, duration, and route of administration" specified on the label.
- They will also be allowed to administer or prescribe cephalosporins for "extralabel uses" in minor species of food-producing animals such as ducks or rabbits.

There is an opportunity for the public to comment on the new order of prohibition. The window for this opportunity opens on 6 January and closes on 6 March, 2012. ❁❁❁