PFNDAI Bulletin December 2008

Editorial

USDA scientists and University of Georgia professors recently developed a microscopic biological sensor that detects Salmonella bacteria using nanotechnology. The sensor could be adapted to detect other foodborne pathogens as well. There are examples of biosensors in nature e.g. insects detect small amounts of pheromones in environment and use them to find their mates and fish use natural biosensors to detect barely perceptible vibrations in the surrounding water to find their prey and predators.

Such techniques using nanotechnology can be very useful in detecting extremely small quantities of samples as well as large number of samples in a relatively short time in order to evaluate the safety of foods. When the processed foods are growing at phenomenal rate especially in the developing countries with India and China leading the development, the safety concerns are foremost not just for the domestic consumers but also for export markets which keep growing.

Recently there have been cases of Salmonella poisoning in peanut butter in the US. Even when the processed food industry is well developed with all cares are taken to install safety and quality systems, there are such occasional problems resulting in human tragedies. Hence, the importance of safety cannot be overemphasised. The melamine issue has shaken the whole world and woken them up to safety issues. There have also been other incidents in the US, wherein unpasteurised milk was used for making cheese and this too led to some cases of food poisoning by Campylobacter.

China has started food safety campaign to weed out illegal or excessive chemicals in foods. The drive is being conducted targets food manufacturers and additive producers across the country. Chemicals being focused are those that have been issues in past food scares such as illegal food colours and more recently melamine. Such a drive will need to analyse a large number of samples in a short possible time with less resources including scarce trained human resource. Such modern and rapid methods using techniques like nanotechnology will certainly come very handy.

Traditional methods that are used by food analysts in government labs are not very sensitive and take a long time. When large number of samples needs to be analysed before the statutory time period then the only way is rapid and highly sensitive methods. Since our exports have increased rapidly, there is also a need to have Export Inspection agencies to be alert about the safety aspects. In the foreign markets once the reputation of companies or even for that matter the reputation of countries will be damaged and they will be blacklisted for exporting unsafe foods. There has to be utmost care in this regards.

We must not only start encouraging development of such methods but also train public analysts in handling these methods. There is also a need to accept these methods as recognised methods for regulatory purposes. We sincerely hope that Indian food industry grows by leaps and bound and produces foods of quality and safety no less than any other country.

We welcome into our membership two new members **Pushpam Health Care Products** and **Ranbaxy Laboratories** who have recently joined and hope that they have long and highly useful interaction with us and our other members. With season's greetings to all,

Dr. Jagadish Pai
Executive Director
executivedirector@pfndai.org

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Chocolate: Food of the Gods

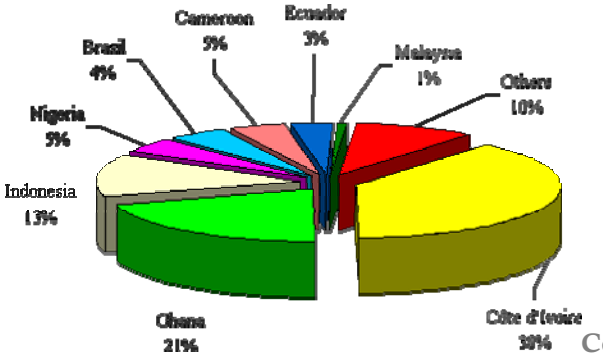
by Dr. J.S. Pai

Chocolate is one of the most popular sweets and also one of the most popular flavours for a variety of foods including beverages, ice creams, etc. It has even entered many ethnic foods like burfi, shrikhand etc. Chocolate has a history of almost 3400 years and was consumed as beverage by Central American people including Maya and Aztecs. Ancient Mayans and Aztecs associated chocolate with their gods and goddesses of fertility and so they called it Food of the Gods. Early chocolate products were beverages rather than solid sweets. Even fermented alcoholic drinks prepared from it were consumed. After the Spanish conquest of Aztecs, chocolate was brought to Europe and the rich started drinking chocolate beverage.

Famous British physician Hans Sloane in Jamaica came across a drink made of cocoa enjoyed by locals. He made it more palatable by mixing it with milk, thus making the first milk chocolate beverage. This recipe was eventually acquired by Cadbury Brothers who then started manufacture in the 19th century. The industrial revolution enabled separation of cocoa butter and cocoa powder, so various different products including the most popular chocolate candy were made from the various ingredients. As cocoa plantation was possible in other parts of the world besides Central and South American places, especially in Africa, and large manufacturing units started producing chocolate based products, these were then affordable by common people too.

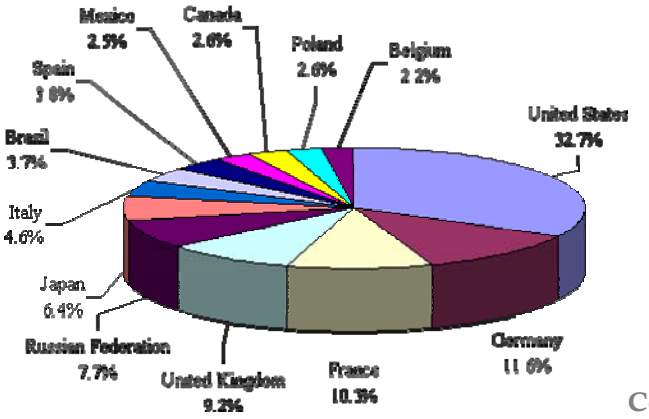
Production of Cocoa Beans and Chocolate Products

Cocoa beans are grown mainly in West Africa, Central and South America and Asia with Côte d'Ivoire (Ivory Coast, 38%), Ghana (21%) and Indonesia (13%) being top producers out of the world cocoa bean production of over 3.5 million tones in 2005-06.



Cocoa Bean Production 2005-06 (UNCTAD)

Whereas cocoa is grown mostly in developing countries, consumption is mostly in industrialised countries. Cocoa beans are procured by processors and chocolate manufacturers in consuming countries. Following chart gives consumption by different countries.



Consumption pattern in 2004-05 (UNCTAD)

Global chocolate sales in 2006 were US $ 74 billion according to the International Cocoa Organisation representing a 20% increase over 5 years. Of the total, 27% sales were for chocolate covered snack bars, 23% for solid moulded bars or tablets, and 20% for boxed chocolates often sold as gifts. About 14% were sold as bagged or boxed products like M&Ms or Gems, 11% for seasonal theme items like Easter eggs, 3% for chocolate with toys and 2% for regional specialities. Western Europe consumed maximum chocolate products (45%) compared to the US (20%). Following table gives idea of how much chocolate is consumed per capita in different countries in 2005.

- Germany … 11.12 kg
- Belgium … 11.03 kg
- Switzerland … 10.74 kg
- United Kingdom … 10.22 kg
- Austria … 9.43 kg
- Norway … 8.53 kg
- Denmark … 7.74 kg
- France … 6.78 kg
- Finland … 6.77 kg
- Sweden … 6.76 kg
- United States … 5.58 kg
- Australia … 5.31 kg
- Italy … 4.26 kg
- Canada … 3.90 kg
- Poland … 3.67 kg

Although per capita consumption in the US is not very high compared to Europeans, it is the largest chocolate market. Here the gourmet chocolate products have increased by 28% as consumers are increasingly buying premium chocolates, including dark chocolate bars, chocolate covered strawberries, cherries, nuts and pretzels. Current per capita Russian consumption is only 2kg with preference for dark and bitter-sweet, it has strong potential for growth in gourmet products. Countries like China and India are showing huge international market potential especially for gourmet chocolate.

According to a study by AC Nielson, chocolate market in India is estimated at Rs. 1500 crores and growing at 18-20%. Per capita consumption is just 300gram but over 70% consumption is in urban markets. Euromonitor estimated Indian candy market to be currently at US $ 664 million of which 70% (US $ 461) is sugar confectionary and the remaining US $ 203 million is chocolate confectionery. Traditional Indian sweets, mithai, is getting substituted by chocolates among well-to-do. Range and variety of chocolates is growing with designer chocolates becoming status symbols. Indian palate is

now accepting dark chocolates which had negligible market in the past. India also started cocoa cultivation in south and produced 8000 Tonnes cocoa valued at over 6 million dollars in 2005.

Processing Cocoa Beans

Cocoa trees (more correctly cacao trees) are small and grow naturally in areas near the equator because of their fastidious requirements of plenty of rains and warm temperature. There are two main varieties of beans used in chocolate namely Criollo and Forastero. Criollo beans are rare and very expensive and account for a very small portion of total bean production. They are mostly grown in Central and South America. They have a fine, mild and rich aroma and are used in high quality chocolate and for blending. Most common bean is Forastero which is hardier and giving higher yield. African beans are almost all Forastero. Trinitario is a hybrid of Criollo and Forastero originated in Trinidad and may be considered as the third variety also producing lower grade beans.

Cacao pods, the multicoloured fruits with woody exterior, are harvested and the beans with the surrounding pulp are removed from the pods and fermented in piles or in bins using naturally present microbes. Although beans are fermented to remove the adhering pulp and to prepare beans for drying, fermentation produces acid and heat that promote changes in taste and colour within the beans that are essential in proper development of chocolate flavour and colour during roasting. After fermentation beans are dried in sun for about a week before sending to processing unit.

Chocolate manufacture begins by cleaning the beans to remove stones, string, chaff, broken or hollow beans and shell by using air stream to remove lighter particles from beans. The beans are then roasted to develop flavour and colour of chocolate and to remove moisture. Roasting is carried out in roasters that are commonly rotating drum type at temperatures around 130 - 150°C. After roasting the shell becomes brittle and can be easily separated from nibs inside when beans are broken. Again air separation is used to remove lighter shell particles from heavier nibs. Nibs contain 51 to 56% fat or cocoa butter contained in cellular structure in nibs. When the nibs are ground the structure disrupts and heat of the grinding melts fat resulting in chocolate liquor. The liquor is ground fine enough to release the fat but coarse enough to easily separate fat from the cocoa solids. Chocolate liquor can be used to make various chocolate products or it is separated into cocoa butter and cocoa solids to vary the proportion of these in different products. Dutching or alkalizing is a process given to chocolate liquor or cocoa to darken colour and make the flavour milder. Cocoa butter and powder are separated using large steel filter screen presses. Dutched cocoa butter needs deodourisation.

Chocolate Manufacture

Chocolate liquor is mixed with cocoa butter in different amounts to make different types of chocolates. Dark or semi-sweet chocolates contain sugar, cocoa butter and chocolate liquor and may be vanilla. For milk chocolate milk or milk powder may be used in addition while white chocolate contains all ingredients for milk chocolate except chocolate liquor. Higher proportion of chocolate liquor gives darker and more expensive chocolates. Some cost reduction may also be done by using cocoa butter substitutes. Various ingredients are blended using mixing and grinding to produce a homogeneous mass coating all solid particles with fat. This may require melangeurs with heavy rollers to do adequate mixing and grinding when nibs are used.

Refining is the next operation after mixing that obtains proper particle size. This operation uses rolls between which the chocolate mass passes through. Both sugar and chocolate liquor particles are reduced in this operation to desired sizes. Conching is the next process in which develops final chocolate flavour and also gives a smooth texture by reducing the particle size so small that tongue cannot detect it and fully coating each particle with fat.

The chocolate mass is then subjected to tempering. If it is cooled rapidly to low temperature, then many different forms of crystals form including some unstable ones. These would then slowly form more stable crystals during storage changing to uneven, mottled and matte appearance rather than smooth and shiny. This defect is called food bloom. To avoid this, chocolate mass is first heated to about 45°C to melt all types of crystals and then cooled to about 27 or 28°C which allows only stable crystals to form. The mass is agitated to promote many desirable crystals to form at this temperature. There is likelihood of some unstable forms of crystals forming so it is reheated to around 31 to 32°C to melt them. Thus tempered chocolate is ready.

Chocolate may be moulded into various shapes or sizes and further cooled. If the during subsequent period of processing or storage it gets too hot, the temper may be lost and again tempering may have to be carried out. Holding the chocolate mass at correct temperature is critical as it should be warm enough to be soft and pliable to be moulded but temperature should not be too high to lose the temper. After moulding the chocolate must also be stored at lower temperature or else crystals will melt together with loss of temper and cooling again may cause fat bloom.

Types of Chocolate	
Baking Chocolate	Pure cocoa liquor with nothing added
Semisweet Chocolate	Pure cocoa liquor with extra cocoa butter and some sugar
Milk Chocolate	Pure cocoa liquor with extra cocoa butter, sugar and milk solids; more milk than chocolate liquor
White Chocolate	Cocoa butter with sugar and milk; no cocoa bean solids

Composition of Chocolate

Nutrition Facts
The presented values are based on a selection of brands. Variations outside the given ranges can be expected. (Numbers are % by weight, not % of daily value).

Ingredient	Cocoa - low fat (European type)	Cocoa - high fat (Breakfast cocoa)	Unsweetened chocolate	Bittersweet chocolate	Semisweet chocolate and baking chocolate
Fat	10-15%	20-25%	45-55%	33-45%	20-35%
Carbohydrates	45-60%	45-60%	30-35%	20-50%	50-70%
Sugars	0-2%	0-2%	0-2%	13-45%	45-65%
Dietary fibre	20-35%	30-35%	15-20%	5-8%	3-8%
Protein	17-22%	15-20%	10-15%	5-10%	3-8%
Calories per 100 g	ca 200	ca 300	470-500	500-550	450-550

From: Cocoa Web (http://www.cacaoweb.net/nutrition.html)

Milk Chocolate – Nutrition Facts

Serving Size 1 bar (43 g)	
Amount Per Serving	**%DV ***
Total Calories 210	
Calories from Fat 110	
Total Fat 13 g	20%
Saturated Fat 8 g	40%
Cholesterol 10 mg	3%
Sodium 35 mg	1%
Total Carbohydrate 26 g	9%
Dietary Fiber 1 g	4%
Sugars 24 g	
Protein 3 g	6%
Vitamin C	0%
Calcium	8%
Iron	2%

From: http://www.hersheys.com/products/

Chocolate & Health

While chocolate is consumed for pleasure, there are potential health benefits of eating chocolates. There are reports that cocoa or dark chocolate benefits the circulatory system because of the substance epicatechin. This flavonoid has strong antioxidant property and helps modestly lower blood pressure. However, this benefit is very less in milk chocolate and none in white chocolate.

Health benefits of chocolate

Studies have suggested that cocoa or dark chocolate may have beneficial effects on human health. Cocoa contains flavonoid epicatechin having a significant antioxidant action. Studies have shown a modest reduction in blood pressure after daily consumption of dark chocolate. Milk or white chocolate does not possess this ability. Dutch process or alkalization reduces flavonoids and also reduces this beneficial effect. Cocoa butter does not seem to elevate the LDL cholesterol in blood, thus dark chocolate consumption seems to be beneficial.

In a study using ultrasound, eating a bar of dark chocolate seems to improve flexibility of blood vessels which helps prevent hardening of arteries leading to heart attacks. The effect was temporary and it is not known whether regular consumption of dark chocolate would result in reduction of cardiovascular disease. Also experts caution that eating too many chocolates would cancel out the apparent benefit due to sugar and other fat in them.

Recent studies conducted in the US and Europe seem to support chocolate's beneficial effects on cardiovascular system encouraging chocolate manufacturers to develop proprietary methods of processing cocoa beans aimed at preserving flavonoid content as traditional methods of fermentation and roasting seem to destroy ¾ of these compounds. New chocolate products containing such beans with higher flavonols have been shown to lower total and LDL cholesterol are offering chocoholics a healthier, low-fat alternative to high fat chocolate bars.

Chocolates are often associated with mood elevation and sensual feeling. Sweet and fatty nature may stimulate hypothalamus inducing pleasurable sensations which is also due to some increase in serotonin levels. Cocoa also has alkaloid theobromine, partly responsible for mood-elevating effect. Chocolates also contain unsaturated N-acyl-ethanolamines that might give heightened sensitivity. However, there is no firm proof of their being aphrodisiac although chocolates are common in courtship ritual.

Among other benefits, cocoa flavonoids may possess anticarcinogenic mechanism reducing the risk of cancer. Preliminary studies also suggest that chocolate may boost memory, attention span, reaction time and problem-solving skills by increasing blood flow to the brain. Some studies have also suggested that specially formulated cocoa may delay brain function decline in elderly people. Recently a small study also showed that cyclist drinking chocolate milk scored better on fatigue and endurance tests showing that chocolate may help recover after a hard workout.

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Report on AGM of PFNDAI & Patent Seminar

by Ms. Ummeayman Rangwala, Nutritionist, PFNDAI

Annual General Meeting is one of the yearly activities of PFNDAI and all our members look forward to attend this. This year we received an overwhelming response from all our members. On 15th Nov'08 at Hotel Atithi, there were more than 50 nominees for the meeting and seminar following thereafter. This was the 40th AGM of the Association and elections for the post of Chairman, Vice Chairman and 8 elected members were carried out. PFNDAI members were very thankful to Chairman, Vice chairman and the elected members to have shown interest in continuing to support the association and all have happily accepted to be on the Board for next two years too.

Chairman-Dr Tewari, in his welcome address emphasized on the good response of the members. He informed all that the Nutrition week activity and seminars organized by PFNDAI, also the Fi- India conferences co-organized by PFNDAI are very well attended by all and the membership of association has been increasing with leaps and bounces and today we stand strong with membership strength of more than137 members. Dr. Pai further briefed all the members about the activities of association like Product Endorsement Activity, which has received a good response and many companies are coming up with the request to endorse their products. This surely reflects the popularity of the Association not only among Food industry but also the consumers and government authorities. PFNDAI monthly bulletin also has received many comments from members and well wishers receiving the bulletins and is well appreciated. The sponsors for the bulletins are thanked and we wish to get such support from all our members in future too. Dr. Surve appreciated the services of PFNDAI to industry, educational institutes and society. The Association has been doing a good job by organizing Nutrition week and seminars, providing loan scholarships to students; also it has been handling conferences and reasoning with government on issues relating to food industry, all this has helped association to reach more and involve more members.

Looking at the current needs of industry a seminar on Patents was organized following the 40th AGM. Eminent speakers were Dr. Ravindra Shetty (Patent Attorney & PFNDAI member) and Dr. Gopakumar Nair (Patent & Trademark Attorney, CEO- Gopakumar Nair Associates).

Dr. Shetty spoke on all the aspects of Patenting, right from the framing of laws for patenting to the most innovative patents and all the requirements for patenting. Explaining why the need for patenting was felt, he put forth the words of Abraham Lincoln, "Next came the patent laws. These began in England in 1624, and in this country with the adoption of our Constitution. Before then, any man might instantly use what another man had invented, so that the inventor had no special advantage from his invention. The patent system changed this; it secured to the inventor for a limited the exclusive use of his invention and thereby added the fuel of interest to the fire of genius in discovery and production of new and useful things."

Patents are important as they fuel the progress of a nation by bringing in technological progress, industrial development and economic progress. Patent protection is available for any product, process or design that meets certain requirements of novelty, non-obviousness and utility. To further expand on this, Dr. Shetty presented some of the examples of novel, non-obvious and utilizable patents such

as lamp of Thomas Addison, shaver of Gillette, hat of Nicholas. Also a brief review of the specifications required for filing a patent application was provided.

Further continuing with the topic of the seminar Dr. Gopakumar Nair, in his presentation of "Food Related Patent Regulations and their impact in India" spoke about the legal aspects of patenting. He dwelt with the different laws applicable for patenting such as TRIPs (Trade Related Aspects of Intellectual Property Rights),The Patents Act, 1970 (as amended) and Rules thereunder, The Biodiversity Act & Rules, Plant Varieties Protection Act (The Plant Varieties Protection and Farmers Rights Act, 2001) etc.

During filing of patents, what all points should be emphasized and a description of patent application with few examples of how the claims should be placed in the application was also provided. This was very much useful for patents from food industry and also from pharma industry as it gave a cautious note on filing of patents. Twenty years ago patents weren't very valuable in the sense that they were not upheld in court that often. Today as a result of changes in the patent laws, inventors are more often prevailing in multi-million dollar lawsuits.

This seminar was very well appreciated as it was organized at a time when more and more, obtaining and protecting intellectual property rights is becoming a strategic necessity for businesses.

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Congratulations

Maharashtra Chamber of Commerce, Industry & Agriculture's **M.L. Dahanukar Entrepreneurs Award's First Prize** was won by **Mr. Arun Kelkar**, **Managing Director of Hexagon Nutrition** for the year 2008. The award was presented to him by **Dr. Narendra Jadhav**, **Vice Chancellor of Pune University** in December 2008. Mr. Kelkar is an active Governing Board Member of PFNDAI.

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Surprise! That Food is now a Drug

By now, you may have heard murmurs about a new law in the United States referred to as section 912. Perhaps you attended the presentation on section 912 at the recent IFT Annual Meeting & Food Expo in New Orleans, or participated in the subsequent IFT webcast on the subject.

In brief, section 912 of the FDA Amendments Act of 2007 added section 301(II) to the Federal Food, Drug, and Cosmetic Act (FDC Act), which prohibits the addition to food of an approved drug, a licensed biological product, or a drug or biological product for which substantial clinical investigations have been instituted and their existence made public. From a historical perspective, this marks a significant change in the regulation of food and drugs.

Prior to the advent of section 301 (II), there was considerable flexibility in the regulatory categorisation of a substance as a food, a drug or both. Section 301 (II) greatly reduces that flexibility. Under section 301 (II), if there is no evidence of prior marketing of a substance in food, and the substance is approved as a drug or licensed as a biological product, then it cannot be added to food, except in very limited circumstances. We will leave it to others to judge whether this loss of flexibility represents an advance or a retreat in the protection and promotion of public health – perhaps only time will tell. Suffice it to say that it is a significant departure from the status quo. In addition to marking a historic shift in the regulation of food and drugs, section 301(II) introduces significant uncertainty into the food ingredient development and supply sectors. This is because the section 301 (II) prohibition extends not just to an "approved drug" and a "licensed biological product", but also to a "drug" and a "biological product" (for which substantial clinical investigations have been instituted and their existence made public).

Unfortunately, the precise meaning and scope of "drug" and "biological product" as used in section 301 (II) are not clear. It is possible that section 301(II) could apply to any substance that has merely been the subject of publicised clinical investigations for a therapeutic use. Given the general shift within the food industry toward the use of clinical studies, and the high level of interest among academic researchers in exploring the potential therapeutic uses of food constituents, section 301(II) could harbour some unpleasant surprises for food ingredient developers and suppliers. Surprises of this nature typically are not welcome in either the business or investment communities.

Recent activity by pharmaceutical companies that targets the dietary supplement industry suggests that section 301(II) may quickly be put to use. The dietary supplement exclusionary clause in section 201(ff)(3)(b)(ii) of the FDA Act bears many similarities to section 301(II). Essentially, this clause forbids the marketing as a dietary supplement of an approved drug, a licensed biologic, or an article authorised for investigation as a new drug or biological for which substantial clinical investigations have been instituted and their existence made public (unless there is evidence of prior marketing). Relying on the dietary supplement exclusionary clause, a pharmaceutical company submitted a citizen petition to FDA in November 2008 asserting that all dietary supplements containing pyridoxal 5'-phosphate (P5P, a form of vitamin B6) are unlawful because that company has been authorised to investigate as a new drug a product that contains P5P as its active ingredient. The petition further contends that all P5P dietary supplements on the market are being marketed illegally, and therefore evidence of that marketing cannot be relied on to defeat the dietary supplement exclusionary clause. Among other things, the petition asks FDA to remove all P5P dietary supplements from the market. Regardless of whether the petition succeeds, it would not be surprising to see similar arguments being made under section 301(II), given its similarities to the dietary supplement exclusionary clause.

The FDC Act does not provide a private right of action, and thus parties cannot seek to implement section 301(II) directly through litigation. However, FDA has made clear that it will not ignore section 301(II). FDA recently published a Federal Register notice asking for comment on a number of issues related to implementation of section 301(II). FDA has signalled that it believes it has the legal prerogative to interpret section 301(II) in any reasonable manner, but wants to know what the

potential effects of different interpretations might be. Among the many interpretations available to FDA, some could be more favourable to the food industry, and others to the pharmaceutical industry.

As counsel to both food and pharmaceutical clients we are strongly encouraging participation in the public consultation that FDA has initiated so that the agency's implementation of the section 301(II) is well informed.

Article by Ricardo Carvajal in Food Technology October 2008

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Traceability in Food Industry

This article prepared by Ms. Ummeayman Rangwala, is based on presentation by Ms.Shashi Sareen (Head Quality-Aditya Birla Retail Ltd.) at Fi -India 2008

"Supply increases with Demand" – This is very well known by all and is true with traceability of food products too. Since the consumers are demanding for more information regarding the food product that they consume, the industry is compelled to have better standards and system to provide information demanded by the consumer right from the source of raw material to the point of consumption. Collecting information becomes much easier by having traceability and it is true the other way too, i.e. when they trace their food products, they collect a lot of information too.

Importance of Traceability:

The label claims are made to let the consumers make an informed choice. This is an important tool which provides information to the consumers; this information is to support the authenticity of the label claims. When a label claims the product to be organic, GMO, home made food, veg/non veg, the product can be traced to the farm, to genetically modified organism, to the home where it has been made and to the source of the ingredients. Accurate product description facilitates trade, which in turn provides useful to business development & expansion. Accurate product description and label claims create an identity of the product (Organic, Home Made, etc), and traceability helps to preserve this identity

Another very important function of this system is that it enables the company to trace back unsafe food trough the food chain so that source of problem can be identified and dealt with. Traceability systems help firms isolate the source and extent of safety or quality control problems. This helps reduce the production and distribution of unsafe or poor-quality products, which in turn reduces the potential for bad publicity, liability and recalls. The better and more precise the tracing system, the faster a producer can identify and resolve food safety or quality problems. A firm's traceability systems not only helps minimize potential damages for individual firms- it also helps minimize damages to the whole industry and to upstream and downstream industries.

Within the business too, it provides information which assists in process control and management. Traceability improves the supply management and decreases the expenses of the company towards supply-related activities, including the movement, storage, and control of products across the supply chain. The ability to reduce these costs often marks the difference between successful and failed firms. In the food industry, where margins are thin, supply management, including traceability, is an increasingly important area of competition.

Definition:

The definition adopted by Codex in 2004 at 27th CAC defines traceability as the ability to follow the movement of food through **specified** stages of production, process and distribution and E.C (178/2002) defines traceability as the ability to trace and follow a food or feed, through **all** stages of production, processing and distribution.

Codex mentions traceability as only one of a tool. A system without traceability may meet **same objective & produce same outcomes** (e.g. food safety, level of protection) as one with traceability. The traceability system of the exporting country need not replicate importing country's traceability; it takes into account the capabilities of developing countries. The system for traceability should be designed such that it is practical, technically feasible and economically viable. It should be able to identify at any specified stage of the food chain **one step back & one step forward**, as appropriate to objectives and should not be more trade restrictive than necessary.

Traceability in retail sector:

The ultimate aim of all business is to achieve excellence in customer service and for this the traceability needs to starts from the farm level and takes into account the producer of raw materials, suppliers/agents of raw materials & ingredients and also the manufacturer and packer, ware house, retail stores and customer information. Traceability is specifically important in 'Own Brand', fruits & vegetables, maintaining supply chain, removal of expired stocks.

Characteristics of Traceability System:

The characteristics of a firm's traceability system depend on the firm's objectives and the costs and benefits of traceability. Firms balance costs and benefits to determine the breadth, depth, and precision of their individual traceability systems.

Breadth: Breadth is the amount of information the traceability system records. There is a lot to know about the food we eat, and firms must decide which information is of value. A recordkeeping system cataloging food's entire attributes would be enormous and unnecessary. Given the huge number of attributes that could describe any food product, full traceability is an unreachable goal.

Depth: The depth of a traceability system is how far back or forward the system tracks. Most businesses have one-up, one-back traceability. Firms must know who their suppliers are and who their buyers are. Whether product tracing goes beyond buyers and sellers depends on the objective of the system- and the attributes of interest to the producer or consumer. For food safety, depth of the traceability system depends on where hazards and remedies can enter the food production chain.

When a product claims farm fresh, it needs to be traced back through the semi processing unit, to importer, cold storage facility, various farms and mandis right upto the farm where the raw material was procured from. Major areas of concern in traceability are the agents or middle man as that cause breaks in traceability system and small size of farms which make way for getting the raw material from multiple farms.

Precision: Precision reflects the degree of assurance with which the tracing system can pinpoint a particular food products movement. A precise traceability system would only trace an apple, to its orchard with high assurance, while a less precise system would only trace a crate of apples to two or three orchards with lower assurance.

The first decision a firm makes with respect to precision involves the acceptable error rate. Error-rate specifications will determine the strictness of the segregation system with which the traceability system is paired. Low tolerance limit will require strict segregation systems and accurate bookkeeping systems. The second decision a firm makes with respect to precision is regarding the unit of analysis-container, truck, and crate, day of production or shifts? Firms that choose large units for tracking purpose will have poor precision in isolating safety or quality problems. A smaller unit of analysis will allow greater precision.

Implementation of Traceability:

When a company pays its bills and deposits cheques, it has a record of all the incoming and outgoing things .Traceability is nothing but joining up the record keeping system. It is bringing together the information collected at key stages in production and supply process. There needs to be the

information of deliveries from suppliers, each step of process or manufacturing & combining ingredients into new products and records of deliveries out to consumers.

The data collected should be such that it is possible to identify units or batches of all ingredients and products, have information on when and where they are moved or transformed and ultimately there should be a system linking this data.

Some important aspects should be considered while compiling the record. There should be accuracy in the records of ingredient usage, production and dispatch. Record keeping should fit into normal working practice and not be complex and complicated. There should be identification of ingredients, intermediate and products with clear link to production history. Records should provide a complete supply chain and suppliers should be able to link to the raw material supplier and to whom the products passed on .

When there is a claim for organic, the company needs to have the certification of the premises and updated documents. The records of organic material to be traced to the original source need to be retained for 3 years. Also a record of seeds and transplants with origin has to be maintained along with the record of fertilizing material / manure brought, pesticide applied, management inputs, livestock purchase and sale, crop sales with amount and destinations, vet products purchased and used on annual basis. Maintain a livestock feed and feeding regime in records.

Traceability in US:

In US traceability is covered under the bio terrorism act .The law requires all foreign facilities that manufacture/process, pack, or hold food/ food products for human and animal consumption in the US to have registration with the FDA , have complete records of traceability of different ingredients through the supply chain and provide a prior notification of the food products .

Implications for India:

India has not yet been able to catch up with many of the developed nations and still there are rejections of exports from various regions. European Union rejects Indian exported food items due to antibiotic residues, cadmium and vibrios. We thus need to have our controls at fishing boats, farms and landing centers. Japan has very strong traceability systems; it can be taken as role model for the development of our exports. Many countries have their own traceability systems and to export to these countries we require to fulfill certain additional criteria. Australia insists on IRA (import risk analysis) where in testing viruses at importing end is carried out
.US requires registration of all facilities and complete records of traceability. Russia requires pesticide usage details (groundnut, sesame, rice).

Current Systems in India:

India has increased its exports by putting many of its systems into place and working efficiently as a result India exports its grapes to many parts of world. Aquacultures from West Bengal, dairy products, and egg products have also entered export market. Dairy products are the ones which require stringent traceability systems as these are highly perishable products and to trace the source of milk from which the product has been made is also very difficult. Not only industry but government has also benefited from traceability. Government has been able to look after the public health efficiently by making the withdrawals, prevent frauds in cases where claims cannot be determined by testing, control zoonotic diseases e.g. TB, avian influenza, etc.

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Fast, Forkless Food

The steady growth and substantial size of the handheld food market is hardly surprising when thinking of the convenient way in which they satisfy hunger pangs of busy kids and adults swamped in activities.

The category of handheld or on-the-go foods includes items distributed and retailed in a variety of ways (frozen, refrigerated, and shelf-stable). It also incorporates an almost-endless assortment of product types positioned for consumption occasions extending from early morning to late night.

Making it easier to track sales in this complex market, Information Resources Inc. breaks out three categories:

1. Handheld frozen breakfast products,
2. Handheld frozen non-breakfast entrees, and
3. Handheld refrigerated non-breakfast entrees

According to IRI FDMx data, for the calendar year to date (YTD) as of 07/13/08:

- Sales of handheld frozen non-breakfast entrees were up 7.8%
- Handheld frozen breakfast sales were down 0.1%
- Sales of handheld refrigerated non-breakfast entrees were off by nearly 4.9%

Mintel put 2007 US sales of frozen snacks (including frozen appetizers, frozen handheld entrees, and frozen pretzels) in FDMx at nearly $2.3 billion (Mintel, 2007). Mintel Global New Products tracked 146 US product introductions for the first seven months of 2008 making an 'on the go' claim.

Handheld and Healthful

A major driver of the handheld foods market is addressing consumer demand for more-healthful products.

Consumer interest in more-convenient breakfast items coupled with the frozen breakfast category's performance earlier this decade spurred on the development of a line of breakfast paninis. These paninis are targeted to those seeking all-natural products without artificial sweeteners, colors, and flavors.

Other client/consumer demands include:

- The 'clean label' concept – label without a long list of ingredients perceived as unhealthful
- More opportunities for nutritional messages from on-the-go products apart from more flavor, color, and variety with the right formulation
- More interest in amaranth, quinoa, millet, sorghum, and teff, according to Elizabeth Arndt from Con Agra Mills
    - Customers are looking to increase the amount of whole grain and a variety of grains

A new handheld pocket sandwich product is formulated with a blend of seven whole grains and sesame plus flax seed. It also provides 21 grams of whole grains. Additionally they are, according to the manufacturing company's brand manager, high in protein and fiber with 400 mg of ALA omega-3 fatty acids not commonly found in the frozen aisle.

In the shelf-stable category, nuts have enjoyed a healthy halo in recent years. To make them an even more healthful offering, a Californian brand developed a line of fortified nuts and a dried fruit and nut mix enhanced with fiber (inulin) and calcium (calcium citrate malate). The company is also coming up with a multi-pack featuring either 12 or 24 1-oz packets. This is aimed at making it easier for consumers to use it as a lunch-box item.

The granola bar is among the quintessential shelf-stable handheld foods. It is enjoying added health attributes in a new iteration with probiotic cultures and added fiber.

Adding a Dash of Ethnicity

Results of a review on recent handheld rollouts:

- Emphasis on health benefits
- Ethnic flavor – with additional offerings in this vein expected in the near future

Latin American Ideas

The empanada – a traditional Latin American pastry turnover with savory or sweet fillings – is being revisited. Companies are adopting the stuffed, handheld sandwich concept of the empanada without being overtly ethnic about the application, according to Tom Vierhile, Director, Datamonitor's ProductScan Online.

Indian Cuisine

The CCD report also points to Indian cuisine as an excellent source of inspiration for new handheld foods.

- Indian street food or "chaat", the report notes, is "portable, varied, full-flavored, and features plenty of vegetables.
- The report cites the "dosa" – a South Indian pancake made from lentils and rice – as a handheld up-and-comer surfacing on a growing number of college campuses

Ethnic Appeal

Many ethnic foods deliver health appeal along with a dash of the exotic.

What's Old Is New Again

While handheld foods set to address demands of a modern life, this concept dates back several centuries. The CCD report describes "pre-medieval" meat pies as "one of the earliest forms of food-to-go."

The report also maintained that bite-sized burgers – "Sliders" – were introduced in the 1920s by the White Castle restaurant chain, and "sliders" can now be found in the menus of casual dining chains.

Sliders are appealing, according to Kara Nielsen, author of the CCD report, because of the nostalgia angle as well as the portion-control aspect. Both these qualities are coupled with the fact that miniaturization makes them seem kind of fun and fanciful.

Beyond the *Pop Tart*

New product creativity in the area of handheld frozen breakfast items is soaring. According to Vierhile, who tracked recent handheld/on-the-go product rollouts (Datamonitor, 2008), the breakfast day part may be the hot segment at present for on-the-go products. He also observed that marketers seem to be coming up with ideas that take traditional breakfast products and make them less sloppy to eat so they can be eaten on the run.

Pancakes, for example, have been converted from a sticky breakfast choice to a grab-and-go option. An Idaho company has featured two fruit-filled 3-in pancakes that are heat-sealed together and packaged in a windowed laminate wrapper.

Another company has produced microwaveable frozen bagel sticks filled with cream cheese, taking out the need for assembly from bagel preparation.

Understanding the Psychology of On-the-Go

Dinner on-the-go may be a necessity for families whose kids participate in many after-school activities. Moms of these kids often feel guilty about not feeding their kids more healthful dinners, according to Kristen Robeson, Director of Qualitative Services, J. Reckner Associates.

Robeson says that this reality translates into an opportunity for more-healthful on-the-go meal options targeted to kids. She also points out that the company's research has shown that moms consider a nutritious and filling snack-type product instead of a full meal for such on-the-go dinner occasions.

Stress reduction is a surprising reason for which consumers turn to on-the-go foods as found out by TKG Consulting's Kimbell. It is surprising in the sense that eating on-the-go is often associated with a harried lifestyle.

Kimbell also adds that on-the-go food is often viewed as a reward—sort of a "little oasis in the day."

Going Forward with On-the-Go Products

Mintel predicts that sales of frozen snacks in FDMx will reach $2.6 billion by 2012.

CCD's Nielsen says that they definitely think on-the-go is here to stay. Interest in the market's healthful segment will be supported by the aging of the baby boomers—who are expected to continue demanding products both convenient and health-enhancing. Mintel forecasts opportunities for lower-sodium products and offerings formulated with whole grains.

If the economy flounders, consumers may be willing to sacrifice a bit of convenience (value-added—more expensive—convenience products) for cost-savings. Kimbell says that more economical multi-packs of portable products can help address this issue.

Some recommendations by Kimbell to enhance marketplace viability of handheld products irrespective of the economic climate:

- Ensure on-the-go food is easy to open
- Consider packaging options that make a product relatively spill-proof
- Keep the focus on products that can be consumed inconspicuously as they may well be eaten while the consumer is using public transportation

In other words, product developers are well advised to keep handheld products truly handy.

Condensed from an article by - Mary Ellen Kuhn in Food Technology September 08

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Food & Nutrition News

Scientia Advisors Forecasts Bright Future for "Functional Food" Market

With many industries in the doldrums, Scientia Advisors is pleased to forecast continuing robust growth in the functional foods marketplace, worldwide. In a study released today, Scientia, an international management consulting firm, predicts an annual compound growth rate of seven percent through 2012, averaged across all segments of the industry. The rapid rise will bring global sales of functional foods to $195B—a 52 percent gain over 2006 sales of $128B.

Functional foods, sometimes called "medicinal foods" or "nutraceuticals," are those fortified with naturally-occurring ingredients that provide health benefits beyond basic nutrition. Functional foods may include probiotics (microorganisms that provide health benefits), Omega 3 (fish oil) extracts, phytonutrients (substances found in plants such as soy beans, blueberries or grapes) or other natural substances. Some of these ingredients can reduce the risk of certain diseases or help manage chronic conditions such as diabetes or heart disease. Others can enhance physical and athletic performance, memory, or cognitive performance.

The study describes a constellation of factors responsible for the expected growth in various parts of the world, particularly in the US and China. It predicts that the trend will help reduce health care costs and identifies factors responsible for the commercial success of some functional food products and the disappointing sales of others.

The predicted seven percent rate essentially continues the eight percent annual compound growth rate seen in the functional foods market between 2003-2006. It is nearly twice the four percent growth rate Scientia predicts for conventional foods and pharmaceuticals through 2012. The Scientia study, led by Scientia Principal Bob Jones, was based on extensive interviews with scientists, clinicians, manufacturers and product developers, as well as on traditional market research.
http://www.soyatech.com/news_story.php?id=11702

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Nanotechnology used to detect *Salmonella*

A U.S. Dept. of Agriculture's Agricultural Research Service (ARS) scientist has developed a microscopic biological sensor that detects *Salmonella* bacteria in lab tests. ARS engineer Bosoon Park at the Quality and Safety Assessment Research Unit in Athens, Ga., and cooperators at the Univ. of Georgia used nanotechnology to develop the biosensor. The biosensors include fluorescent organic dye particles attached to *Salmonella* antibodies, which hook onto *Salmonella* bacteria and the dye lights up like a beacon, making the bacteria easier to see.

According to Park, the sensor could be adapted to detect other foodborne pathogens as well. For his research, Park recently received the first place Innovation Nano Research Award at the Sixth International Nanotech Symposium and Exhibition in Ilsan, Korea.
http://www.ars.usda.gov/is/pr/2008/081215.htm

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Next-Generation Functional Foods Offer Condition-Specific Shot in the Arm

Eat your way to health! Consumers are picking up on functional foods that differentiate themselves by targeting specific health conditions. A new market research report just released from Packaged Facts, "Food and Ingredient Trends Addressing Specific Diseases and Other Health Conditions," explains which foods benefit what conditions.

Food has come to occupy a focal position in the prevention and treatment of many chronic diseases, and consumers have become very attuned to innovative food products that offer a condition-specific shot in the arm (even if standard diet and exercise guidelines sometimes get shortchanged). Health and fitness are being commercialized and commodified into foods.

Foods and beverages with active components that bestow health and well-being benefits beyond nutrition are a global phenomenon that North Americans are now beginning to embrace. They are realizing that some foods have the power to improve their quality of life and stave off disease. Tatjana Meerman, Packaged Facts' Publisher notes, "While these foods cannot be used to cure or guarantee that one will not experience a disease or health condition, they can be consumed to help fortify the body's defenses against any number of maladies."

This brand new report looks at specific health conditions, including obesity, heart health, cancer, brain and nervous system health, and the specific foods that target them. For example, soy plays a role in maintaining healthy bones and may even help to prevent bone loss in postmenopausal women, even though it's unclear whether these benefits are due to its protein or its isoflavones daidzein and genistein.
http://www.soyatech.com/news_story.php?id=11550

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Science seeks top banana

It's not easy to keep a banana yellow.

To get it to market ripe but unblemished by brown sugar spots takes careful timing, a slight fiddling with nature's rhythms and a delivery system that is increasingly computer-driven and technical. The perfect banana used to be a rare and precious find, but technology is changing that. From the tree in the sweltering tropics to the grocery rack in the frigid north, scientists are seeking new ways to strengthen the food chain and extend the shelf life of perishables so they reach distant consumers as if freshly picked. Commercially, the goal is to satisfy a demand for quality food anywhere, any time and at maximum profit.

But the implications go further: As global population expands by half to 9 billion by mid-century, food security becomes critical. The wild rise in food prices last July, with staples doubling or tripling in cost over three years, underscored the consequences of shortages, whether real or perceived. As cities grow and wealth expands, more people eat meat, dairy and fresh produce. "That requires a totally different way of approaching agriculture. You have chains of total food systems," said Rudy Rabbinge, chairman of the Science Council Consultative Group on International Agricultural Research, an alliance of agricultural bodies worldwide. Suppliers need to move these foods longer distances, reduce spoilage and waste, and curb their climate-changing carbon emissions. It is less challenging for dry goods such as grains and rice -- survival foods for much of the world's poor.

Major Losses

In developing countries with poor infrastructure, as much as half of harvested fruits and vegetables rot in transit before they can be eaten, says food scientist Henry Boerrigter. Even in industrial countries, 10 percent to 20 percent is lost, much of it tossed away by restaurants, groceries or consumers, but the waste often starts close to the farm and worsens as the produce travels.

Perfotec, a Dutch company, produces laser machines that make microscopic perforations in plastic wrapping film, allowing packaged food to breathe at a reduced rate. That slows ripening by up to five days. It is just one technique for prolonging the shelf life long enough to open markets to farmers in Africa, Latin America or Asia. Goods can move by sea rather than by air -- in greater bulk, at lower costs and in more controlled conditions. Sea freight also produces 25 times less carbon emissions per box of fruit, according to Maersk Lines, the world's largest container shipping operator.

Changing Marketplace

As food becomes more mobile, the marketplace shifts. Mega-buyers such as Wal-Mart look for the cheapest supplier of quality goods, says Boerrigter, a post-harvest technologist at Wageningen University and Research Center in the Netherlands. "Where labor is cheap, high-scale production farms come up," he said. One example is Spain, which has begun importing Egyptian strawberries even though it also is a major producer.

Refrigerated transportation has been in use since the 1870s when Chicago's stockyards began shipping meat to the East Coast by dripping ice water through the roof of railway cars -- with frequent stops to replenish the ice. Today, 40-foot containers circulate cool air around pallets piled high with specially designed packing boxes. If necessary, nitrogen is pumped into the sealed container to lower the oxygen level. "We used to think avocados were exotic. Now you can get them every day, everywhere," says Henrik Lindhardt, a senior general manager of Maersk.

A U.S. innovation that won safety approval by the European Union in 2005 virtually puts fruit to sleep. Marketed as SmartFresh, the active ingredient 1-MCP inhibits the effect of ethylene, the chemical agent that causes ripening. A tablespoon of the white powder dissolved in tap water inside a storage room or sealed refrigerator can keep three million apples crisp and fresh for up to two weeks, says Yvonne Harz-Pitre, the European communications manager for AgroFresh, which makes the product.

Dutch flower growers have begun shipping some hardy varieties by sea to New York, kept fresh in containers with "controlled atmosphere," says Lindhardt. Shellfish are being shipped live in vats of water from Canada to Europe in 30 days rather than being frozen and airfreighted. Tuna and other sushi specialties are being sent to Japan in super-freezers reaching minus 75 Fahrenheit. Lindhardt was watching bananas from the Dominican Republic being unloaded at a Rotterdam warehouse. Cellphone-sized monitoring units were clipped to some fruit boxes to record the conditions of the 15-day journey. The data was downloaded to a computer. Within an hour the fruit was moved into a cold storage room, where the temperature was adjusted according to the delivery schedule. "These bananas are still alive," said Lindhardt. They breathe, they generate heat and they mature. ``What we do is slow the process, not stop it."

MiamiHerald.com by Arthur Max November 10, 2008

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Unpasteurized Milk Poses Health Risks Without Benefits

With disease outbreaks linked to unpasteurized milk rising in the United States, a review published in the January 1, 2009 issue of Clinical Infectious Diseases examines the dangers of drinking raw milk.

Milk and dairy products are cornerstones of a healthy diet. However, if those products are consumed unpasteurized, they can present a serious health hazard because of possible contamination with pathogenic bacteria. An average of 5.2 outbreaks per year linked to raw milk have occurred in the United States between 1993 and 2006—more than double the rate in the previous 19 years, according to co-authors Jeffrey T. LeJeune and Päivi J. Rajala-Schultz of the College of Veterinary Medicine in Columbus, Ohio.

Contamination can occur at the time of collection, processing, distribution, or storage of milk, the authors write. Many pathogens can be found in the dairy farm environment, which can contaminate the teat skin of dairy cows and consequently the milk at the time when cows are milked. For example, Salmonella and E. coli have been reported in pooled milk collected from farms., Outbreaks of salmonellosis, campylobacteriosis, and E. coli related to raw milk consumption have been reported since 2005.

Although the sale of raw milk was illegal in 26 states as of 2006, the authors note that those who are opposed to pasteurization have found ways to circumvent the law and obtain raw milk. For example, participants in "cow-share" programs pay for the upkeep of the cow and receive raw milk in exchange, rather than buying raw milk outright.

Raw milk advocates claim that unpasteurized milk cures or prevents disease, but no scientific evidence supports this notion. Testing raw milk, which has been suggested as an alternative to pasteurization, cannot ensure a product that is 100 percent safe and free of pathogens. Pasteurization remains the best way to reduce the unavoidable risk of contamination, according to the authors.
http://www.nutritionhorizon.com/home/viewhealthnutrition.rails?Id=&pageNo=6

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Foods Made From Whole Grains Known to Help Protect Against Heart Disease, Cancer and Diabetes

Bread, pasta, and other foods made from whole grains — known to help protect against heart disease, cancer and diabetes — may get even healthier in the future.

Scientists in Europe collaborating in the European Union HEALTHGRAIN project are reporting the largest study to date comparing nutrient levels in the world's different grain varieties, which could lead to the development of healthier varieties of grain and grain-based foods, they say.

Their findings will be described in a group of papers scheduled for the November 26 issue of the ACS' Journal of Agricultural and Food Chemistry, a bi-weekly publication.

In the new study, Peter R. Shewry and colleagues point out that whole grain foods, including wheat, rye and oats, have been widely touted in recent years for having greater health benefits than refined grains. Health-promoting ingredients in whole grains include fiber, antioxidants, folate, and other plant chemicals.

As nutrient levels can vary from grain to grain, however, it is unclear which grain varieties pack the most nutritional punch, the researchers note.

To find out, the scientists grew 150 wheat varieties used for bread-making and 50 other small-grain varieties (including oats, rye, and barley) on a single farm in Hungary over a one year period. The grains, grown from lines originating worldwide, were then harvested, milled, and analyzed for a range of plant chemicals and fiber components considered to have health benefits.

The researchers identified grain varieties with high levels of healthy components that could be used to breed new, nutrient-rich varieties of grain for healthier whole grain foods.
http://www.nutritionhorizon.com/home/viewhealthnutrition.rails?Id=&pageNo=32

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Regulatory News

Experts call for tighter labelling rules for energy drinks

Consumers are often clueless as to what they are drinking, scientists claim

Bolivian-born Alfredo Duran was working as a shelf stacker for British supermarket chain Asda Wal-Mart when he collapsed and died one evening in September 2006. An inquest in April this year revealed Duran may have consumed four cans of the popular energy drink Red Bull almost every night. Unbeknownst to him, Duran had an enlarged heart, a disorder that impaired its ability to pump blood around the body. The combination of these two factors may have contributed to his death, said pathologist Dr Ian Roberts at the inquest.

While a post-mortem showed there was not enough caffeine in Duran's body to be fatal under normal circumstances, Roberts said. "For an individual with this condition, the risk of problems with the heart is increased by stimulants such as caffeine, and may be triggered by levels which would have no effect on people with a normal heart. My feeling is — given the available evidence — it was a cardiac arrest possibly contributed to by subtoxic caffeine ingestion."

The verdict returned was death by natural causes, with the coroner stating, "We were not able to say in this case that the caffeine was definitely high enough to have caused his heart attack." And, in the wake of the inquest, the makers of Red Bull pointed out, "No one anywhere has ever shown any link between Red Bull energy drink and harmful effects." Nonetheless, many remain concerned about the levels of caffeine that people may be unknowingly consuming.

Scientists at Johns Hopkins University in Baltimore are calling for many of the caffeinated energy drinks on the market to carry prominent labels that note caffeine doses, and warn of potential health risks for consumers.

"The caffeine content of energy drinks varies over a 10-fold range, with some containing the equivalent of 14 cans of Coca-Cola," said Roland Griffiths, one of the authors of an article that appeared in the journal *Drug and Alcohol Dependence*. "Yet the caffeine amounts are often unlabelled and few include warnings about the potential health risks of caffeine intoxication."

Without adequate, prominent labelling, consumers most likely wouldn't realise whether they were getting a little or a lot of caffeine, said Griffiths, who added, "It's like drinking a serving of an alcoholic beverage and not knowing if its beer or scotch."

"It's notable that over-the-counter caffeine-containing products require warning labels, yet energy drinks do not," said Chad Reissig, another of the study's authors.

Despite the negative press surrounding energy drinks, they have never been more popular. Sales have risen by 400 per cent in the US since 2003 to a value of $4.8 billion now, according to Mintel's latest report. And the industry insists its products are safe. In a statement responding to the Johns Hopkins paper, the American Beverage Association said, "Our companies meet all government labelling regulations. Consumers can easily find out how much caffeine is in a beverage by calling the company's 1-800 number or visiting its website. In addition, some of our member companies

voluntarily list the amount of caffeine directly on a product's label. Quite simply, energy drinks can be part of a balanced lifestyle when consumed sensibly."
From a Report by Richard Clarke in Food Ingredients November 2008

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Stevia gets green light

The US Food and Drug Administration has given the green light for stevia to be used in food and drink applications after deciding the ingredient poses no health risks. The agency has granted the all-natural sweetener status as generally recognised as safe (GRAS) after being pressed to do so by sweetener suppliers Cargill and Merisant Company.

Stevia's newly acquired GRAS status is likely to open the floodgates for a raft of new launches of products containing the sweetener. The Coca-Cola Company and PepsiCo will be among them, having already confirmed plans to market beverages containing the ingredient.

Stevia was in the headlines just days before the FDA announced its verdict, after the Wall Street Journal claimed that The Coca-Cola Company was poised to launch a beverage containing stevia imminently. The newspaper said Coke planned to begin selling three flavours of a juice drink in its Odwalla line containing stevia on the US market even though the FDA had not yet issued formal approval of the ingredient under GRAS, which is a voluntary programme.

But the FDA's conferral of GRAS status came just a few days after the story broke, and means Coca-Cola, and others, can press ahead with launches of products that contain stevia with the knowledge they have the FDA on their side.
From: Functional Ingredients December 2008

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China launches food safety campaign

According to an article in the *Washington Post*, China has launched a four-month food safety campaign to weed out illegal or excessive chemicals in food. The drive is being conducted by nine central government departments and targets food and additive producers across the country. The campaign is being conducted in three phases. In the first month, companies are being asked to conduct internal checks. In the following two months, authorities will inspect producers of meat, dairy, and other products rich in protein, and conduct checks on markets. The third phase in the last month will focus on stemming the supply of illegal food additives by targeting producers and punishing companies that use such chemicals. The chemicals being focused on are those that have been issues in past domestic food scares. These include: malachite green, a possibly cancer-causing chemical used to treat fungal infections in fish; the industrial dye sudan red, which was being used to color egg yolks; and the more recent melamine, which was being used to make dairy products appear to be higher in protein.
http://www.washingtonpost.com/wp-dyn/content/article/2008/12/09/AR2008120900002.html

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India's GEAC Clears Limited Field Trials of GM Corn

India Business Insight -- November 22, 2008 -- The Genetic Engineering Approval Committee has given permission to Monsanto India Ltd to conduct limited field trials of corn hybrids that have been genetically modified to improve resistance to the corn borer insect pest. The approval enables Monsanto to carry out bio-safety trials on one-acre plots at select State Agricultural University owned farms. It may take 3-4 years for the product to be finally released for commercial cultivation.
http://www.soyatech.com/news_story.php?id=11347

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Fruit-Base Drinks Found High Levels of Pesticide in Some Countries Outside US

In the first worldwide study of pesticides in fruit-based soft drinks, researchers in Spain are reporting relatively high levels of pesticides in drinks in some countries, especially the United Kingdom and Spain. Drinks sampled from the United States, however, had relatively low levels, the researchers note. Their study is scheduled for the December 15 issue of ACS' Analytical Chemistry, a semi-monthly journal.

In the report, Antonio Molina-Díaz, Amadeo Fernández-Alba and colleagues note that strict regulations limit pesticide levels in fresh fruits, vegetables, and drinking water. However, regulators have paid less attention to the presence of pesticides in soft drinks made from fruits. Scientists are increasingly concerned about the possible impact of pesticide-containing fruit juices on the health of children, who tend to consume large amounts of such soft drinks, they add.

The scientists used a sophisticated lab test to measure levels of a wide range of common pesticides in more than 100 fruit-based soft drink samples from 15 different countries. They tested for pesticides such as carbendazim, thiabendazole, and imazalil, and malathion, which are applied to crops after harvest and can remain on fruits and vegetables during processing. They found relatively large concentrations of pesticides, in the micrograms per liter range, in most of the samples analyzed. Samples from Spain and the U. K. had the highest levels of pesticides, while samples from the U. S. and Russia were among the lowest. "Steps should be taken toward the removal of pesticides in these beverages by changing the way they are manufactured," the researchers conclude.
http://www.nutritionhorizon.com/home/viewhealthnutrition.rails?Id=&pageNo=13

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Research in Health & Nutrition

Low-Glycemic Diet Shows Greater Improvement In Glycemic Control Than High-Fiber Diet

Persons with type 2 diabetes who had a diet high in low-glycemic foods such as nuts, beans and lentils had greater improvement in glycemic control and risk factors for coronary heart disease than persons on a diet with an emphasis on high-cereal fiber, according to a study in the December 17 issue of *JAMA.*

One dietary strategy aimed at improving both diabetes control and cardiovascular risk factors is the use of low-glycemic index diets, but there is disagreement over their effectiveness, according to background information in the article.

David J. A. Jenkins, M.D., of St. Michael's Hospital and the University of Toronto, and colleagues assessed the effects of a low-glycemic index diet vs. a high-cereal fiber diet on glycemic control and cardiovascular risk factors for 210 patients with type 2 diabetes. The participants, who were treated with antihyperglycemic medications, were randomly assigned to receive 1 of the 2 diet treatments for 6 months.

In the low-glycemic index diet, the following foods were emphasized: beans, peas, lentils, nuts, pasta, rice boiled briefly and low-glycemic index breads (including pumpernickel, rye pita, and quinoa and flaxseed) and breakfast cereals (including large flake oatmeal and oat bran). In the high-cereal fiber

diet, participants were advised to take the "brown" option (whole grain breads; whole grain breakfast cereals; brown rice; potatoes with skins; and whole wheat bread, crackers, and breakfast cereals). Three servings of fruit and five servings of vegetables were encouraged on both treatments.

The researchers found that hemoglobin A1c (HbA1c; a substance of red blood cells tested to measure the blood glucose level) decreased by -0.50 percent absolute HbA1c units in the low-glycemic index diet compared with -0.18 percent absolute HbA1c units in the high-cereal fiber diet. Significant treatment effects were observed for high-density lipoprotein cholesterol (HDL-C) and the low-density lipoprotein cholesterol (LDL-C):HDL-C ratio. HDL-C increased in the low-glycemic index diet group by 1.7 mg/dL and decreased by -0.2 mg/dL in the high-cereal fiber diet group. The LDL-C:HDL-C ratio showed a greater reduction in the low-glycemic index diet group compared with the high-cereal fiber diet group.

"Lowering the glycemic index of the diet improved glycemic control and risk factors for coronary heart disease (CHD). These data have important implications for the treatment of diabetes where the goal has been tight glycemic control to avoid complications. The reduction in HbA1c was modest, but we think it has clinical relevance," the authors write. "Low-glycemic index diets may be useful as part of the strategy to improve glycemic control in patients with type 2 diabetes taking antihyperglycemic medications."

"Pharmacological interventions to improve glycemic control in type 2 diabetes have often failed to show a significant reduction in cardiovascular events. In view of the 2- to 4-fold increase in CHD risk in participants with type 2 diabetes, the ability of a low-glycemic index diet to address both glycemic control and CHD risk factors increases the clinical relevance of this approach for patients with type 2 diabetes, such as those in this study, who are overweight and also taking statins for CHD risk reduction."

JAMA. 2008;300[23]:2742-2753

From: Medical News Today 18 Dec 2008

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Ingredients Found in Grapes Could Be the Key to Living Longer

Scientists have discovered two ingredients found naturally in some food and wines and doctors say in a supplement formula, these ingredients may increase mitochondria and turn on longevity genes. So, is it a Medicine Man Potion or a Real Alternative for Mankind to increase life expectancy?

This clinically proven discovery has created a stir in the research world. Could substances found in red grapes, peanuts, dark chocolate, red wine and blueberries hold a key to living longer, feeling better, looking younger fighting cancer, reduce insulin for Diabetic patients, lower cholesterol and being thinner? Several anti aging scientists and doctors are leaning towards the possibilities this discovery will bring about.

"We find that resveratrol is the best molecule we know of to increase healthy lifespan and the mice end up being resistant to diseases of aging like diabetes, cancer, heart disease and can even run twice as far on a treadmill," says Dr. David Sinclair, a biologist and pathologist at Harvard Medical School.

"People are actually feeling more energetic, being able to walk farther, often times especially older people can extend their walks, which is really great sense of well being, sleeping better, less aches and pains," says Dr. Jamie McManus, a clinical research director at the Shaklee Company.

This research biologist and family physician are representing the makers of Vivix; a cellular anti-aging tonic that they say in one teaspoon has the same amount of resveratrol equal to 100 glasses of red wine. Adding a powerful antioxidant called polyphenol in the form of an extract from the muscadine grape. Vivix is a high concentration you couldn't receive from eating normal amounts of food and together they say have been clinically proven in the lab working to slowing down and rebuilding the four mechanisms of aging in our cells. And they say there is an additional effect.

"The mice lost weight and they looked much better, you could really tell the difference between the mouse that was taking resveratrol and the control animal," adds Dr. Sinclair.

Other experts say, yes, there does seem to be promising results with resveratrol for anti-aging, but they don't think we are there yet because science lacks the studies on humans. "Remember these words that Mackie said it: 'I think it's going to have a profound effect on mitochondrial function,'" stated Fitness expert Mackie Shilstone.

"This particular molecule seems to be able to turn off and on, sort of change the activity of different genes in our body that regulate things like obesity. It really looks to regulate how the little energy storehouses in our cells work. So not only does it have an effect on obesity but it does seem to have an effect on aging and it seems to have an effect on some cancers as well," says Dr. Henri Roca in the Department of Family and Integrative Medicine at LSU.

"What we see is resveratrol just like exercise is really effective at boosting the number and activity of these mitochondria within cells. The good news is that resveratrol has been in human clinical trials already and the results there been positive that we're seeing the same metabolic-physiological effects that we saw in the mice translating into people," says Dr. Sinclair.

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