Editorial

Sustainability will be important part of various industries and more so of food industry. Overexploitation has created problems in many areas. We have seen the tigers disappearing from our jungles. Many species have become extinct. If we do not take care, we might have such a change in environment that we will not only face harsh situation for humans to survive but also the availability of food enough for the entire population.

Environmentalists are talking about indiscriminate mining which has already started problems in certain areas. The plant life changes and the animals and birds also either migrate or may find themselves unfit to survive. It directly affects the local population which then finding it difficult to eke out a living. They then migrate to already overpopulated cities.

We have seen some of the oceans overfished so the fish disappears. There are large trawlers fishing in deep seas with nets literally miles long and taking out most of the fish, large and small. When the smaller fish is also removed the food chain is disrupted so the larger fish cannot survive. There have been instances of large coasts of seas suddenly becoming without fish. Many African coasts have experienced this.

Even industrial and human pollution into the seas will have disastrous effect on fish population and variety. Cities are generating tremendous amount of waste and is at times directly dumped into seas. Many industrial wastes would contain chemicals that are not only toxic to fish but also to human population living near seashore and also coming to seas for clean atmosphere and enjoyment.

What does a food manufacturing industry do about sustainability? When the industry starts using ingredients including water, plant and animal produce and ingredients, the process must not only be environment friendly, it must try to utilize the fuel that may be renewable, ingredients that would be resourced so year after year it would still supply the amounts that are needed. There must be plans to provide for the increase in demand so greater amounts of raw materials may be needed. Industry must provide knowhow and assistance to farmers on newer techniques to keep pace with the larger demands.

There are places in Africa that produce cocoa beans where large areas still have problems such farmers do not get the benefits of good quality and quantity of produce. There are still practices of employing children to keep the prices low. Some companies are actively doing something about these problems and still earning good profits.

Indian farming is no different. There are many problems associated with it. Farmers are regularly committing suicides for all kinds of reasons including cash flow problems. Government efforts are not succeeding rapidly enough. Many farmers are giving up farming for more lucrative jobs in cities. If this is not taken care of there might be problems of lower production and greater population to feed inviting famines. This is not just the government's responsibility but even industry can do its bit in ensuring wellbeing of farmers. They need financial support along with market information and help along with education regarding new farming technology. When industry makes farmers its partners, there will only be win-win situation. With warm regards

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

Coming Events

International Conference on Innovations in Food Processing & Ingredients towards Healthy India
January 4-5, 2011
Location: Peninsula Grand Hotel, Andheri (E), Mumbai
Org: Institute of Chemical Technology & AFSTI-Mumbai
T: 022 3361 1111 / 2222
E: ictafst@gmail.com

Ninth World Food Technology & Innovation Forum 2011
March 1-2, 2011
Location: Brusssels, Belgium
Tel: +44 20 7202 7690
Web: www.wtgevents.com
Email: simon.wright@wtgevents.com

Nutracon
March 9-10, 2011
Location: Anaheim, CA, USA
Contact: New Hope Natural Media
Phone: 866-458-4935
Web: www.nutraconference.com
Email: tradeshows@newhope.com

Vitafoods
May 10-12, 2011
Location: Geneva, Switzerland
Contact: Phil Hawkins
Phone: 44-20-7240-2444
Web: www.vitafoods.eu.com
Email: phil@stormcom.co.com

IFT Annual Meeting & Food Expo
June 11-15, 2011
Location: New Orleans, LA, USA
Contact: The Institute of Food Technologists
Tel: 312-782-8424 **Web:** www.ift.org
Email: info@ift.org

International Scientific Conference on Probiotics & Prebiotics
June 14-16, 2011
Location: Double Tree Hilton Hotel, Univ. City of Kosice, Slovakia
Phone: +421 904 837153 or +431 41 4000123
Website: www.probiotic-conference.net
Email: info@probiotic-conference.net

PFNDAI Bulletin -October 2010

Colouring Confections

Attraction to colours begins at childhood and increases. Hence confectioners choose eye-catching colours for products like candy and gum whose consumers are children. They bait, hook and lure them catching them for life using appealing colours.

Sweet trends

Colours have a strong impact on emotions and feelings. Researchers have found that red is associated with excitement, while orange is distressing and upsetting. Purple is dignified and stately, yellow cheerful while blue is comforting and secure. Children eat a bag of coloured candies one colour at a time due to relationship between colour and emotions. Many M&M consumers feel so strongly about certain colours that new single colour packs are being introduced as "My M&M". Out of 21 colours available, consumers can now buy just the colours they like although colour has no impact on flavour profile of these "melt in your mouth, not in your hand" candies. These coloured candies also have superstitions attached with colours e.g. red is associated with wish coming true while brown being unlucky and green has aphrodisiac reputation.

Most marketers have at least one claim in their portfolio with either all-natural ingredients or better-for-you statement. Hence more manufacturers are going for natural colours. Regarding natural colours it must be noted that what is acceptable in the US may differ from what is approved elsewhere. Further, US FDA does not consider food product to be natural if any colour, natural or synthetic, is added to it, except when the colour is natural to the product itself. Example being colouring cherry gummy bears with cherry juice. However, orange lollipop coloured with annatto extract cannot be labelled "all-natural orange lollipop." Here the acceptable claim would be "made with all-natural ingredients" or "does not contain any synthetic colours."

Industry experts say all-natural candy is not the future but is happening now. One company dug out its original 100 year old recipe, which had all natural ingredients, in order to use "natural" on label.

Health & Wellness customers of jelly beans seeking natural labels were the driving force behind reformulation of Sports Beans, sport performance candies, as they targeted these customers. New beans had new flavour and colour profile including opaque packing to keep product's natural colour from fading. Besides natural, fun is another aspect of food that is being used to target customers and colour plays a vital role here too.

Technical considerations

Most important attribute of candy is appearance and children consume and even enjoy candies their parents feel awful in taste, simply because they look good. So "we eat with our eyes" and colours make the product as attractive as possible.

Different segments of confectionery have different colour requirements both technologically as well as for market positioning. An important technical aspect is solubility. For most applications

water-soluble colours are needed the exceptions being chocolate, fat coatings, some chewing gums and panned candies.

Another property is heat stability for hard candies, gummies and licorice where colours are added at high temperatures (50 to 60°C). Cooking process may also affect the shade of finished candy becoming slightly darker. Heat stability must also be considered when fat ingredients are used where colour is added after melting candy base e.g. in coatings, baking chips etc.

Acid stability is required with products having low pH like gummies made with fruit juice or candies with added acid. Even packages may influence choice of colour. Many colourful candies are packed in transparent containers so colours must have light stability.

Colour may change due to process modifications. When hard candy or gummy is aerated, intense transparent colour will change to opaque pastel shade. Even the choice of stabiliser like starch, gum, pectin etc. will influence colour intensity, clarity or cloudiness with gummies. Colour is normally added to jelly mass after cooking along with flavour and acid. The rate of cooling will also affect clarity.

Pan-coated candies have their own requirements. Colour of the centre influences the colour of the finished product as interior can show through the thin layers of sugar coating and influence the shell colour shade and brightness. Since white background provides bright, vivid colour of any shade, some coat the centre of panned candy with a sugar solution containing titanium dioxide. This primer also helps with pH-sensitive colours. The pH of coloured sugar syrup and the centre, colour may change before coating dries. Considering all these factors, it is easier to work with synthetic colours as they are more stable.

Losing popularity

Although synthetic colours are easier to use, growing number of parents of young children and other consumers are wary of them since studies have shown possible link between them and behavioural problems in children especially those with attention deficit hyperactivity disorder (ADHD). This was first noticed in 1970s and later in 2007 a study from University of Southampton showed a correlation between artificial food colours and additives and exacerbated hyperactive behaviour in children. Even though many medical experts questioned the study's protocol, it stirred up consumer controversy.

Many confectioners are removing artificial colours from children's sweets. Many global companies with presence in Europe where synthetic is frowned upon are switching over to natural colours. European food and beverage manufacturers are required to include a warning statement on products containing six synthetic dyes approved for use in Europe as "May have an adverse effect on activity and attention in children."

The seven synthetics

Certain synthetic food colours are permitted in the US and are called certified colours approved for use in foods, drugs and cosmetics. Dyes are concentrated colours that are water-soluble and oil-insoluble. They may be in the form of powder, granules or liquid. Lakes are made by combining dyes with salts to make them insoluble. They provide colour by dispersion. Lakes are considered more stable and are idea for colouring products that contain fat or lack sufficient moisture to dissolve dyes.

Today there are seven dyes have been permitted in the US: Blue No. 1 also called brilliant blue; Blue No. 2 a darker shade of blue is indigotine; Green No. 3 provides turquoise-blue colour; Red No. 40 is allura red; Red No. 3 leans towards pink and is erythrosine; Yellow No. 5 is tartrazine; and a more orange-yellow shade is Yellow No. 6 which is sunset yellow. These all could be combined to get an infinite number of colours.

Many suppliers offer custom solutions like customised blends, liquid colour systems and dispersion systems that are specific for shade and application. Dye blends and liquid colours can be easily used for hard candy, jellies and gummy applications whereas lake blend systems are useful in panned goods, dry compressed tablets or any application with problem of colour migration. High-shear mixing is necessary for lake pigments to ensure proper utilisation of pigment and maximum tinctorial strength. Improper mixing leads to specking or streaking.

To minimise these problems, suppliers offer shade-specific suspensions of lakes in different vehicles like sugar syrups, water, oil, wax, glycerine, polyols etc. The vehicle is compatible with the confection and this provides ease of use, economy and freedom from cross contamination, inadequate mixing and providing shade consistency.

Natural labelling

There is a growing trend to label “all-natural” in confectionery industry with very little guidelines for using the term “natural” except in colours and flavours. Use of any of synthetic colours prevents labelling “natural”. US FDA provides list of colour additives exempt from certification. Some of these may have synthetic origins or are processed in a way that their naturalness may be questioned by some.

Carmine also known as cochineal extract is bright-red colour obtained from carminic acid produced by insects like cochineal. While names of most exempt colours do not have to be put on labels, in January 2009 FDA mandated companies to cite cochineal extract and carmine on labels due to reports of allergic reactions to foods containing them as well as for religious or dietary reasons consumers may want to avoid insect-derived additives.

The new naturals

Traditionally synthetic colours were used in confectionery as natural colours were of poor stability and too pale in shade. However, recently the development of natural colour formulations from new sources has improved and grown dramatically and are competing with synthetic colours. The shift is also encouraged due to Southampton study on effects of synthetic colours and hyperactivity as well as consumer awareness about diet and health. Careful selection of high-stability pigments using stabilisation technology, light- and heat-stable natural colours can be developed.

Options of colouring confections naturally yellow include oleoresin turmeric and carrot extract and sometimes using annatto with turmeric since latter has a greenish tint. Natural orange is based on carotenoid pigments from paprika and annatto. Carotenoids are robust natural colours used widely in foods. It is important to choose carotenoid-based colour wisely for withstanding processing conditions and shelf stability. Carotenoid not only provides colour but is also a source of antioxidant and vitamin A.

Red hues are typically achieved using either carmine or fruit and vegetable concentrates. Anthocyanin pigments from fruits and vegetables provide blue, pink, red and violet hues. Vegetable concentrates like black carrot, cabbage and radish are better for their heat and light stability compared to grape concentrates. Anthocyanin pigments are sensitive to pH being mostly red at pH values 3 to 3.5 but sometimes up to 4.5. With pH higher than 4.5 they are bluer and less stable. Natural blue stable at low pH is not readily available. A new acid-stable naturally derived blue has been produced from fresh fruit instead of stabilised red cabbage colour.

Natural green for candy is challenging. The best alternative is water-soluble sodium copper chlorophyllin from alfalfa is restricted to citrus-based beverage mixes. The new natural blue can also be used to create green shades. Purple from anthocyanins like grape concentrates can only provide reddish purple and prone to fading. The natural stable blue can also produce shades of purple with other colours.

Natural hurdles

In certain applications natural colours are not as versatile as synthetics for all applications. Paprika oleoresin is the most stable natural colour and is oil-soluble so it would not work in formulations requiring water-soluble colour. Here beta-carotene with an anthocyanin or turmeric with beet may be useful.

Working with natural colours, many aspects need to be considered. Many colours are sensitive to pH, light and/or heat, so processing parameters need to be considered when developing natural colour system.

When deciding whether to use synthetic or natural colours some factors need to be considered. Synthetic are inexpensive so are used if low cost is the most important factor. Natural colours are used if legislation and a more consumer-friendly label are desirable. New naturals are being developed that are cost effective. New technology is being used with natural colours to make them more attractive with new attributes like coloured film flakes that add bursts of colour, providing flavour, minimising colour bleed etc. There are numerous special effects that could be created with food colours so applications are limited only by imagination.

Natural colour in candy is becoming increasingly important. Sales data from SPINS shows that sales of all-natural candy and individual snacks in traditional channels are now $78.5 million per year, up 2.5% from last year.

Condensed from article by Donna Berry in Food Product Design June 2010

Mood Food

Some foods make you feel better but smooth silky chocolate calms you down after a bad day and caffeine makes you more alert. Is it possible that some compounds in foods have physiological effects on our state of mind?

A caffeinated world

Caffeine is the most widely used psychoactive substance affecting brain function. Caffeine is a xanthine alkaloid absorbed by body within about 45 minutes after ingestion. It binds to adenosine receptor sites in central nervous system leading to lowering adenosine activity, which results in increase in dopamine, a neurotransmitter that stimulates nervous system.

Caffeine does get you through while working. Studies have shown that 4mg per kg body weight of caffeine can increase mental alertness and improve semantic memory, logical reasoning, free recall and recognition memory tasks. Multiple small doses of caffeine given over a period of time seem to be equally as effective as single large dose for improved alertness and performance on reactive and cognitive tasks.

The time taken to eliminate caffeine from body depends on many factors, however, generally half of caffeine consumed at any time is eliminated in 3 to 4 hours, and so nighttime caffeine intake can interfere with sleep. Synthetic and natural sources of caffeine may be added to foods and beverages, which not only may stimulate nervous system but also lends a bitter flavor and enhance sweet and salty tastes of foods.

Theanine and tea

Tea is the mostly widely consumed beverage after water. It can increase alertness and help maintain focus. Relaxation and enhanced concentration of tea comes from the combination of caffeine and the amino acid l-theanine present in it. Although both stimulate increase alertness, l-theanine increases alpha-wave activity that induces relaxation. About 200 mg l-theanine has been shown to reduce psychological and physiological stress. It produces dose-dependent relaxed, yet alert state about 40 minutes after consumption.

Craving carbohydrates

Foods containing carbohydrates provide energy and glucose, the fuel for brain. Cutting carbohydrates from diet affects cognitive functioning, focus and memory adversely. Besides cognitive functioning, carbohydrates affect mood indirectly. They increase insulin in our bloodstream which enables uptake of branched chain amino acids by muscle tissues thereby decreasing amino acid competition across blood-brain barrier. This allows tryptophan to move more easily across blood-brain barrier into central nervous system where it converts to serotonin, the feel-good neurotransmitter.

Since carbohydrate consumption allows neurotransmitter production and hence mood, scientists feel that people reach for carbohydrate-rich foods to make them feel better when in sour mood or depressed state of mind. The link between carbohydrate and enhanced serotonin is further confirmed by studies showing that when prescription drugs to increase serotonin reuptake or

transmission leads to decrease in carbohydrate consumption. In fact some physicians prescribe drugs influencing serotonin reuptake to help control binge eating, overeating and bulimia.

Serotonin needs vitamin B6

Vitamin B6 is needed for converting tryptophan to serotonin, so if B6 is a rate limiting substrate in this process, can taking more B6 enhance serotonin production making one feel happier and less depressed? Unfortunately studies have shown B6 supplementation does not relieve symptoms of depression.

Chocolate comforts

Is there any truth in commercials showing chocolate leaving us feeling relaxed? Some people crave for chocolate and experience greater arousal and pleasure just looking at images of chocolate. It has also been shown that those experiencing higher depression reach for chocolate more often. Studies have shown that eating chocolate can improve negative mood although it apparently does not have any effect on positive or neutral mood.

Despite the immediate lift in mood after eating chocolate, this elated state of mind is transitory and can immediately turn to feelings of guild in those who believe that certain foods will adversely affect their efforts to control weight.

Scientists believe that people use food to cope with stress and improve their mood although there is a large variation in tendencies for craving for certain foods and how people handle stress and feelings. Emotional eaters actually have different responses in feel-good sections of brain to food or even anticipation of food compared to non-emotional eaters. This makes it more difficult for emotional eaters to fight the urge to indulge.

Condensed from article by Marie Spano in Food Product Design June 2010

Adding a Woman's Touch to Wellness

List of health issues of women could be daunting – heart disease, osteoporosis, PMS, pregnancy, graceful aging etc. These are all market opportunities for companies. Juggling family, work and health, women want proven solutions giving real results in today's fast-paced society. As knowledgeable consumers age, they take healthcare themselves and try preventable solutions more commonly.

Modern life puts more pressure on bodies and health especially for women. Although men help out more at home, women often take full-time work and shoulder majority of household and childcare tasks. Women are recognising that good diet and regular exercise are important to health and seek guilt-free and convenient options incorporated into their busy lives.

Heart Health & Omenga 3s

Over 42 million women in US live with cardiovascular disease, which remains the leading cause of death and is five times that for breast cancer as per American Heart Association. Benefiting from qualified health claim, omega 3 fatty acids sales have shot over $1 billion in dietary supplement and additional $1 billion in omega 3 foods. Worldwide, omega 3 finished products including pharma, functional foods and infant formula represent $13 billion industry. Indication of the success of omega 3s, one drug MNC's product has reached blockbuster drug status as an FDA-approved prescription product – derived from omega 3 fish oil designed to lower triglyceride levels.

While regulators differ over dietary reference values and industry proponents want revision due to new data, consumers continue to speak through their purchasing patterns. For the first time dietary supplement users chose omega 3s over multivitamins as per 2010 survey. Researchers have corroborated the faith of consumers through research on ability of omega 3 fatty acids to prolong the survival of heart patients.

In another study specific to women, researchers examined the link between fatty fish and marine omega 3 with heart failures in a population of middle-aged and older women. Researchers concluded that moderate consumption of fatty fish and marine omega 3 fatty acids were associated with a lower rate of first heart failure hospitalisation or death in this population.

Fat Facts

With heart disease, obesity is an underlying risk factor for arthritis, birth defects, breast cancer, endometrial cancer, gallbladder disease, infertility and urinary stress incontinence. Over 62% of adult women in US are overweight and 34% are obese, inviting many risks.

Compared to men, higher rates of obesity and arthritis among women leave them at greater risk of disability in old age. Researchers have found that women suffered 2 ½ times more disabilities than men of same age. Women were also more likely to fracture a bone and suffer from vision problems and bronchitis.

Scientific community has indicted trans fats for their association with obesity leading to endometriosis that has no cure and can cause infertility. In a long term study, women whose diets are rich in foods with omega 3 oils might be less likely to develop endometriosis than those

consuming trans fats. Another study found that obese women had lower amounts of omega 3s in blood and those with higher omega 3s had healthier BMI, hip and waist circumferences.

Calcium + Vitamin D

Bone health also continues to be a top concern for many women throughout their lives, especially during menopause. Osteoporosis affects 8 million American women and half of women over 50 will break a bone due to this. Calcium remains most important for strong bones while vitamin D is useful for its ability to improve calcium absorption. Vitamin K and genistein from soya also increase bone density.

In a study covering 36,282 postmenopausal women was designed to determine effects of calcium and vitamin D on risk of hip fractures and colorectal cancer. Participants received 1g calcium and 400 IU vitamin D or placebo over 7 years. Those taking supplements had 29% fewer fractures. Among women over 60, those taking supplement had 21% decreased risk of hip fractures. The study also showed a potential weight management role of calcium and vitamin D as they may stimulate breakdown of fat cells and suppress new ones developing. Women taking supplement weighed an average 0.28 pounds less than those taking placebo, which although small but statistically significant. The greatest benefit was derived by those women who were taking less than 1200 mg calcium per day before the study.

According to Packaged Facts, diet foods and drinks including weight loss bars and snacks, drinks, frozen meals and diet desserts reached $ 18 billion globally in 2009. US consumers alone spent about $ 2 billion every year as per Nutrition Business Journal. With such competition, calcium doesn't get enough mention, although there is a convincing link between weight issues, heart disease and bone health especially when most women are just trying to achieve general health and wellness.

Herbs, Pregnancy & PMS

Complementary and alternative medicine plays unique role in women's health issues. Women are more likely to use herbal remedies than men. About 10% of pregnant women in US use herbal products as per study published in American Journal of Obstetrics and Gynaecology observing over 4200 women who delivered babies without major birth defects from 1998-2004. Higher prevalence was seen in women over 30 and having education of more than 12 years. Ginger and ephedra were most commonly used in early pregnancy while tea and chamomile were reported used throughout pregnancy. Herbal remedies are time honoured allies for relieving symptoms associated with women's health problems. They can create balance, correct deficiencies, and restore health of tissues, organs and systems that affect menstrual cycles, moods and emotions etc.

Modern healthcare has commonly neglected women's needs as they relate to premenstrual syndrome (PMS) prompting many women to try herbal remedies. Viltex agnuscastus (chasteberry) is popular European herbal remedy for PMS and menopausal symptoms. It is a hormone regulator helping mood swings relieves depression and treats fluid retention, breast tenderness and food cravings. In one study with Chinese women, it effectively treated moderate to severe PMS. It reduces prolactin levels which cause PMS symptoms in the body. There are clinical trials showing its effectiveness in women's health.

Another popular herb used globally is dong quai (Angelica sinensis) which is used in traditional Chinese medicine as blood tonic and a pain reliever for cramps associated with PMS.

Gamma linolenic acid (GLA) is often recommended for PMS as it can help reduce inflammation. It is thought that women with PMS are deficient in GLA whose metabolites are precursors to anti-inflammatory prostaglandin E1. Gingko biloba also may relieve PMS fluid retention and consequent swelling and tenderness. It inhibits platelet-activating factor which triggers inflammation leading to vascular congestion, edema and swelling.

Pyridoxine is also recommended for PMS as it helps form dopamine whose low levels are thought to be related to PMS. Pyridoxine and other B vitamins might also prevent liver fat accumulation improving estrogen metabolism and potentially affecting PMS symptoms.

Menopausal Problems

Menopause can be challenging for many women who are now turning to phytoestrogens and other natural products. Isoflavones are the most common and potent of phytoestrogens, the others being lignans and coumestans. Phytoestrogens are found in many food sources. Black cohosh is the leading herb recommended for symptoms of menopause. Among other phytoestrogen sources recommended are red clover, soy, kudzu and dong quai due to their genistein content. Studies on genistein are getting showing real benefits for women especially since synthetic estrogens can be problematic especially for long term usage.

Menopause and its hormonal swings adversely affect women's ability to concentrate and focus which may be accompanied by memory loss, disorientation, mental confusion and stress during transition stage. Chocamine is derived from chocolate and has been shown to improve congnitive functions in healthy adults and may have possibility in women having congnitive issues, focus and concentration during PMS.

Omega 3 have also shown promise in depression symptoms in women as some studies have shown improvement when on high omega 3 diet.

It Takes Two, Baby

One company combines L-arginine with ginseng, gingko biloba, damiana leaf, vitamins A, C, E, B complex, along with calcium, iron and zinc. L-arginine is nitric oxide precursor and ginseng may improve this conversion. Gingko facilitates microvascular circulation and damiana has been shown to affect hormone receptors and reduce anxiety. The product is supposed to enhance peripheral circulation and brain stimulation. One study with women from 22 to 73 years has shown improvement in marital life with the use of this.

UTI & Cranberry

Women of all ages are vulnerable to urinary tract infections (UTI) with 20% in US developing UTI in their lifetime. Cranberries have become popular and effective ingredient in combating these bacterial infections. One study with cranberry concentrate has shown it to be on par with UTI prescription trimethoprim. Cranberry is full of fibre and antioxidants like vitamin C, quercetin and proanthocyanidins and has potential to promote health throughout whole body including urinary tract, cardiovascular, cellular and gastrointestinal system.

Proanthoacyanidins with anti-adhesion mechanism is linked with inhibiting bacterial infection flushing out harmful bacteria. Daily consumption of cranberry juice may help reduce incidence of asymptomatic bacteriuria in pregnant women, which if untreated may cause preterm deliveries

and low birth weight. Cranberries could be added to bread, cereals, bars, yogurts and drinks offering convenient and tasty option for busy women.

Probiotic Solutions

Synergies by combination of ingredients have created new partnerships in nutraceuticals industry. One triple action women's health product combines probiotics with concentrated cranberry and D-mannose as low calorie, natural alternative to women for managing UTI issues and yeast health management as well as improvement of digestive health and immune function. There is global interest in probiotic solutions to women's health especially with clinical evidence supporting the benefits.

Graceful Aging & Antioxidants

Women of all ages want to age gracefully and many use dietary supplements to protect skin. As people age the skin gets depleted of antioxidants protecting skin against internal and external damage due to free radicals. Skin's ability to fight free radicals gets compromised when antioxidants like β-carotene, vitamins C & E and CoQ10 get depleted. One product has been developed which is a beauty drink to be consumed daily that provides antioxidants to protect and hydrate layers of skin. The oxidants include vitamins, phytonutrients and botanical and fruit extracts that fight the aging signs from within. It has been clinically shown that it improves the antioxidant activity in body, improves skin tone and protects skin by lowering the effects of moderate skin exposure.
Another dietary supplement has been developed based on antioxidants combining super oxide dismutase (SOD) extracted from cantaloupe with wheat gliadin biopolymer and it works as a catalyst rapidly reducing reactive oxygen species replenishing the decrease in the SOD production in body due to age.

Becoming Part of the Solution

Finally the nutraceuticals industry has to do more if products are to be as trusted as clinically evaluated ingredients like omega 3. Industry must undertake quality control especially with authentication of raw material. Quality issues like substitution, spiking and dry labbing can reduce quality and hurts the entire industry. Appropriate scientific studies including clinical support data on efficacy needs to be gathered. Consumers must know that these products are thoroughly tested for quality and safety and GMP is in place. Even proper labelling with credible statements based on scientific research is needed if it is to be used as dietary supplement. Companies must live up to their health claims as women are willing to pay a premium for products if they truly work.
(Condensed from article **by Sean Moloughney** in Nutraceuticals World May 2010)

Health & Nutrition News

Moms Who Don't Breastfeed More Likely to Develop Type 2 Diabetes – Study

Mothers who did not breastfeed their children have significantly higher rates of type 2 diabetes later in life than moms who breastfed, report University of Pittsburgh researchers in a study published in the September issue of the American Journal of Medicine.

"We have seen dramatic increases in the prevalence of type 2 diabetes over the last century," said Eleanor Bimla Schwarz, M.D., M.S., assistant professor of medicine, epidemiology, and obstetrics, gynecology and reproductive sciences at the University of Pittsburgh. "Diet and exercise are widely known to impact the risk of type 2 diabetes, but few people realize that breastfeeding also reduces mothers' risk of developing the disease later in life by decreasing maternal belly fat."

The study included 2,233 women between the ages of 40 and 78. Overall, 56 percent of mothers reported they had breastfed an infant for at least one month. Twenty-seven percent of mothers who did not breastfeed developed type 2 diabetes and were almost twice as likely to develop the disease as women who had breastfed or never given birth. In contrast, mothers who breastfed all of their children were no more likely to develop diabetes than women who never gave birth. These long-term differences were notable even after considering age, race, physical activity and tobacco and alcohol use.

"Our study provides another good reason to encourage women to breastfeed their infants, at least for the infant's first month of life," said Dr. Schwarz. "Clinicians need to consider women's pregnancy and lactation history when advising women about their risk for developing type 2 diabetes."

E! Science News Aug 26 2010

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Grapefruit's Bitter Taste Holds a Sweet Promise for Diabetes Therapy

Naringenin, an antioxidant derived from the bitter flavor of grapefruits and other citrus fruits, may cause the liver to break down fat while increasing insulin sensitivity, a process that naturally occurs during long periods of fasting.

A team of researchers from the Hebrew University of Jerusalem and Massachusetts General Hospital (MGH) report that naringenin activates a family of small proteins, called nuclear receptors, causing the liver to break down fatty acids. In fact, the compound seems to mimic the actions of other drugs, such as the lipid-lowering Fenofibrate and the anti-diabetic Rosiglitazone, offering the advantages of both. If the results of this study extend to human patients, this dietary supplement could become a staple in the treatment of hyperlipidemia, type-2 diabetes, and perhaps metabolic syndrome. The report appears in this week issue of the online journal PLoS ONE.

"It is a fascinating find," says Yaakov Nahmias, PhD, of the Hebrew University of Jerusalem the paper's senior author. "We show the mechanism by which naringenin increases two important

pharmaceutical targets, PPARα and PPARγ, while blocking a third, LXRα. The results are similar to those induced by long periods of fasting".

The liver is the main organ responsible for the regulation of carbohydrate and lipid levels in the blood. Following a meal, the blood is flushed with sugars, which activate LXRα, causing the liver to create fatty acids for long-term storage. During fasting, the process is reversed; fatty acids are released by fat cells, activate PPARα in the liver, and are broken down to ketones. A similar process, involving PPARγ, increases sensitivity to insulin.

"It is a process which is similar to the Atkins diet, without many of the side effects," says Martin L. Yarmush, MD, PhD, director of the MGH Center for Engineering in Medicine and one of the paper's authors. "The liver behaves as if fasting, breaking down fatty acids instead of carbohydrates." Yarmush is the Helen Andrus Benedict Professor of Surgery and Bioengineering at Harvard Medical School.

"Dual PPARα and PPARγ agonists, like naringenin, were long sought after by the pharmaceutical industry," says Nahmias, "but their development was plagued by safety concerns. Remarkably, naringenin is a dietary supplement with a clear safety record. Evidence suggests it might actually protect the liver from damage."

Grapefruit's bitter taste is caused the presence of the flavonoid naringin, which is broken down in the gut into naringenin. Earlier evidence has shown the compound has cholesterol lowering properties and may ameliorate some of the symptoms associated with diabetes. The researchers demonstrated that the compound activates PPARα and PPARγ by dramatically increasing the levels of a co-activator peptide of both, called PGC1α. At the same time, naringenin bound directly to LXRα, blocking its activation. These effects culminated with increased fatty acid oxidation and the inhibition of vLDL ('bad cholesterol') production.

PhysOrg.Com Aug 25 2010

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Omega-3s May Benefit the Lungs, Uterus and Ears in Addition to the Heart

Research continues to unveil potential benefits of omega-3 fatty acids found in seafood, pointing to healthful effects on the lungs in children, the uterus in women and hearing in older adults. The August 2010 PUFA Newsletter and Fats of Life e-newsletters for health professionals and consumers, respectively, report the latest findings about these and other topics.

Two large studies from Europe reported that middle-aged and older adults who ate at least 3 ounces of fatty fish a week were 30 percent less likely to develop heart failure or acute coronary syndrome, which includes heart attack and chest pain, compared with individuals who did not eat fish.

"These studies add more evidence that consuming fatty fish regularly is associated with a lower likelihood of two major types of heart disease, the leading cause of death in western countries," said Joyce Nettleton, D.Sc., editor of the PUFA Newsletter and Fats of Life. "Moreover, omega-3 fatty acids from seafood have diverse benefits in many other tissues and health conditions."

Case in point, U.S. researchers who provided healthy toddlers different amounts of the omega-3

DHA (docosahexaenoic acid) found that those in the highest DHA group (130 mg per day) had significantly fewer respiratory illnesses 17% compared with 46% than the group receiving unsupplemented formula. "If confirmed in larger studies, these results could have far-reaching effects on the health of preschool and school-aged children who are frequently exposed to respiratory illnesses," Nettleton noted.

Premenopausal women may also benefit from higher intakes of seafood omega-3 fatty acids. A large U.S. epidemiological study of 1,000 women showed that those with higher intakes of omega-3s had a 22 percent lower chance of developing endometriosis.

"These findings are especially intriguing because the treatment options for endometriosis are limited and often undesirable," Nettleton said. "If proven effective in controlled intervention trials, omega-3s would offer a non-invasive treatment without side effects."

For the first time, research in older adults linked fish consumption to a significantly lower chance of developing age-related hearing loss. In one study, those who ate fish at least one to two times a week experienced half the rate of progressive hearing loss over five years compared with those who didn't eat fish. Recommendations to consume fatty fish at least twice a week may be well worth listening to.

PRNewswire Aug 11, 2010 ---

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1 High-Fat Diet, 2 Different Outcomes: The Path to Obesity Becomes Clearer

Why is it that two people can consume the same high fat, high-calorie Western diet and one becomes obese and prone to diabetes while the other maintains a slim frame? This question has long baffled scientists, but a study by Yale School of Medicine researchers provides a simple explanation: weight is set before birth in the developing brain. The results are reported online the week of August 2 in the Proceedings of the National Academy of Sciences.

Led by Tamas Horvath, chair and professor of comparative medicine and professor of neurobiology and obstetrics & gynecology at Yale School of Medicine, the research team analyzed the same question in specific groups of rats. These animals have been bred so that their vulnerability to diet-induced obesity is known before they would be put on high-fat, high-calorie diet diets.

Horvath said animals that become obese already had a significant difference in the feeding center of the brain. Neurons that are supposed to signal when you've eaten enough and when to burn calories, are much more sluggish in these animals because they are inhibited by other cells. In animals resistant to obesity, these satiety signaling neurons are much more active and ready to signal to the rest of the brain and peripheral tissues when enough food has been consumed.

"It appears that this base wiring of the brain is a determinant of one's vulnerability to develop obesity," said Horvath, who is also co-director of the Yale Program in Integrative Cell Signaling and Neurobiology of Metabolism. "These observations add to the argument that it is less about personal will that makes a difference in becoming obese, and, it is more related to the connections that emerge in our brain during development."

Horvath points to other unwanted consequences of these brain mechanisms. "Those who are vulnerable to diet-induced obesity also develop a brain inflammation, while those who are resistant, do not," he said. "This emerging inflammatory response in the brain may also explain why those who once developed obesity have a harder time losing weight."

Diet-induced obesity has become one of the most critical medical problems in the United States. In particular, the incidence of childhood obesity has reached unprecedented levels. Since genetics alone cannot explain the surge of obesity in society, investigators have been trying to determine the primary underpinnings of the vulnerability to develop obesity on a Western diet.

"What genetic, epigenetic and environmental factor determines this base wiring in the brain is a very important issue to address," said Horvath. "Specifically, the emerging view is that besides genetics, maternal impact on the developing brain is likely to be critical to imprint these feeding circuits thereby determining one's vulnerability or resistance to obesity."

Nutrition Horizon Aug 3 2010 ---

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Obesity and Diabetes: Immune Cells in Fat Tissue Explain the Link

Inflammation-causing cells in fat tissue may explain the link between obesity and diabetes, a team of Walter and Eliza Hall Institute researchers in Melbourne, Australia, has shown. The discovery, by Professor Len Harrison and Dr John Wentworth from the institute's Autoimmunity and Transplantation division, opens the way for new anti-inflammatory treatments that prevent insulin resistance (where the body is unable to respond to and use the insulin it produces) and other complications associated with obesity.

"We have shown that insulin resistance in human obesity is closely related to the presence of inflammatory cells in fat tissue, in particular a population of macrophage cells," Professor Harrison said.

Macrophages, white blood cells derived from the bone marrow, are immune cells that normally respond to infections. In obese people, macrophages move into the fat tissue where they cause inflammation and release cytokines, which are chemical messenger molecules used by immune cells to communicate. Certain cytokines cause cells to become resistant to the effects of the hormone insulin, leading to diabetes and heart disease.

Professor Harrison and Dr Wentworth worked with Mr Gaetano Naselli, Ms Belinda Phipson and Dr Gordon Smyth at the institute as well as Professor Paul O'Brien at Monash University's Centre for Obesity Research and Education to analyse the fat tissue of more than 100 Victorians who had undergone lapband surgery.

Their findings, published in the journal *Diabetes*, provide the first evidence in humans that macrophages in the fat tissue are producing cytokines that prevent cells from appropriately responding to the presence of insulin.

"The complications of obesity such as insulin resistance and diabetes, cardiovascular disease associated with hardening of the arteries, and liver problems are the result of inflammation that

occurs in the fat tissue," Professor Harrison said. "These complications could be prevented by developing drugs that target certain cytokines released by the macrophages. Encouragingly, our study also showed that when obese people lost weight the macrophages in the fat tissue disappeared, as did the risk of developing insulin resistance and diabetes."

Diabetes affects more than a million Australians and is a disease in which the body does not produce or properly use insulin, a hormone necessary to convert sugar, starches and other food into the energy needed for daily life.

Science Daily Aug. 14, 2010
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Drink Water to Curb Weight Gain? Clinical Trial Confirms Effectiveness of Simple Appetite Control Method

Has the long-sought magic potion in society's "battle with the bulge" finally arrived? An appetite-control agent that requires no prescription, has no common side effects, and costs almost nothing? Scientists report results of a new clinical trial confirming that just two 8-ounce glasses of the stuff, taken before meals, enables people to shed pounds. The weight-loss elixir, they told the 240th National Meeting of the American Chemical Society (ACS), is ordinary water.

"We are presenting results of the first randomized controlled intervention trial demonstrating that increased water consumption is an effective weight loss strategy," said Brenda Davy, Ph.D., senior author on the study. "We found in earlier studies that middle aged and older people who drank two cups of water right before eating a meal ate between 75 and 90 fewer calories during that meal. In this recent study, we found that over the course of 12 weeks, dieters who drank water before meals, three times per day, lost about 5 pounds more than dieters who did not increase their water intake. People should drink more water and less sugary, high-calorie drinks. It's a simple way to facilitate weight management."

Davy pointed out that folklore and everyday experience long have suggested that water can help promote weight loss. But there has been surprisingly little scientific information on the topic. Previous studies hinted that drinking water before meals reduces intake of calories. Lacking until now, however, has been the "gold-standard" evidence from a randomized, controlled clinical trial that compares weight loss among dieters who drink water before meals with those who do not.

The study included 48 adults aged 55-75 years, divided into two groups. One group drank 2 cups of water prior to their meals and the other did not. All of the subjects ate a low-calorie diet during the study. Over the course of 12 weeks, water drinkers lost about 15.5 pounds, while the non-water drinkers lost about 11 pounds.

Davy said water may be so effective simply because it fills up the stomach with a substance that has zero calories. People feel fuller as a result, and eat less calorie-containing food during the meal. Increased water consumption may also help people lose weight if they drink it in place of sweetened calorie-containing beverages, said Davy, who is with Virginia Tech in Blacksburg, Va.

Diet soda pop and other beverages with artificial sweeteners may also help people reduce their calorie intake and lose weight, Davy said. However, she advised against using beverages sweetened with sugar and high-fructose corn syrup because they are high in calories. A 12-ounce can of regular soda pop, for instance, contains about 10 teaspoons of sugar.

Davy noted that that nobody knows exactly how much water people should drink daily. The Institute of Medicine, an agency of The National Academies, which advises the Federal Government on science, says that most healthy people can simply let thirst be their guide. It does not specify exact requirements for water, but set general recommendations for women at about 9 cups of fluids -- from all beverages including water -- each day, and men at about 13 cups of fluids.

And it is possible to drink too much water, a situation that can lead to a rare, but serious, condition known as water intoxication, Davy pointed out.

Medical Daily Aug 24, 2010
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Fat Distribution Plays a Role in Weight Loss Success in Patients at Risk of Diabetes

Why is it that some people lose weight and body fat when they exercise and eat less and others don't? German researchers say MRI and magnetic resonance (MR) spectroscopy can provide the answer -- and help predict who will benefit from lifestyle changes. Results of the study are published online and will appear in the November issue of the journal *Radiology*.

"You may have two individuals who weigh the same and have the same body mass index (BMI), but have very different levels of internal fat," said lead researcher and physicist Jürgen Machann, Dipl. Phys., from University Hospital Tübingen in Tübingen, Germany. "Abdominal and liver fat are the two most important factors in predicting whether a lifestyle intervention will be successful."

Machann and researchers performed MRI and MR spectroscopy on 243 individuals prior to and nine months after a lifestyle intervention. The intervention called for a weight loss of 5 percent, reducing fat intake to a maximum of 30 percent of total calories (including less than 10 percent in the form of saturated fat) and engaging in moderate physical activity such as walking at least three hours a week.

Each of the participants, which included 144 females (mean age 44.5 years) and 99 males (mean age 47.3), was considered at risk of developing type 2 diabetes as a result of obesity, measured by a body mass index (BMI) of 27 or greater or having an impaired glucose tolerance or a first-degree relative with the disease.

"Common methods, such as body impedance analysis, may determine that a body consists of 25 percent fat, but that does not tell you how the fat is distributed," Machann said. "BMI is a good measure for obesity but not necessarily a predictor for health risk, because not only the amount of fat, but also its distribution are essential. Only by looking inside the body can you establish the amount of visceral (abdominal) and liver fat."

MRI allowed researchers to differentiate fatty tissue from lean tissue throughout the body. MR spectroscopy generated additional data on the fat content of individual organs, such as the liver.

Researchers used improved insulin sensitivity to measure the success of the lifestyle intervention. Individuals with type 2 diabetes do not respond correctly to insulin, a hormone secreted by the pancreas that aids in metabolism. In pre-diabetes, cells become resistant to the action of insulin.

After nine months of participating in the lifestyle intervention, insulin sensitivity improved in 71 percent of the men and 58 percent of the women. Individuals with improved insulin sensitivity lost significant amounts of visceral fat (a mean reduction of 19 percent for women and 20 percent for men) and liver fat (a mean reduction of 35 percent for women and 44 percent for men) while reducing 3 to 5 percent of body weight.

"The participants who improved their health status as a result of diet and exercise started out with lower baseline levels of abdominal and liver fat," Machann said. "In our study, these two factors predetermined whether or not a lifestyle intervention would be successful for a particular individual."

Individuals who did not improve insulin sensitivity as a result of lifestyle changes lost much smaller amounts of visceral fat (a mean reduction of 4 percent for women and 6 percent for men). The men also lost less liver fat (a mean of 15 percent), and women gained a mean of 22 percent in liver fat.

"Our results demonstrate that with MRI and MR spectroscopy, we can determine who will benefit from dietary changes and exercise and who will need other interventions," Machann said.

Medical News Today Aug 26, 2010
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Black Rice Rivals Pricey Blueberries as Source of Healthful Antioxidants

Health conscious consumers who hesitate at the price of fresh blueberries and blackberries, fruits renowned for high levels of healthful antioxidants, now have an economical alternative, scientists reported here today at the 240th National Meeting of the American Chemical Society (ACS). It is black rice, one variety of which got the moniker “Forbidden Rice” in ancient China because nobles commandeered every grain for themselves and forbade the common people from eating it.

“Just a spoonful of black rice bran contains more health promoting anthocyanin antioxidants than are found in a spoonful of blueberries, but with less sugar and more fiber and vitamin E antioxidants,” said Zhimin Xu, Associate Professor at the Department of Food Science at Louisiana State University Agricultural Center in Baton Rouge, La., who reported on the research. “If berries are used to boost health, why not black rice and black rice bran? Especially, black rice bran would be a unique and economical material to increase consumption of health promoting antioxidants.”

Like fruits, “black rice” is rich in anthocyanin antioxidants, substances that show promise for fighting heart disease, cancer, and other diseases. Food manufacturers could potentially use black rice bran or the bran extracts to boost the health value of breakfast cereals, beverages, cakes, cookies, and other foods, Xu and colleagues suggested.

Brown rice is the most widely produced rice variety worldwide. Rice millers remove only the outer husks, or “chaff,” from each rice grain to produce brown rice. If they process the rice further, removing the underlying nutrient rich “bran,” it becomes white rice. Xu noted that many consumers have heard that brown rice is more nutritious than white rice. The reason is that the bran of brown rice contains higher levels of gamma-tocotrienol, one of the vitamin E compounds, and gamma-oryzanol antioxidants, which are lipid-soluble antioxidants. Numerous studies showed that these antioxidants can reduce blood levels of low-density lipoprotein cholesterol

(LDL) — so called “bad” cholesterol — and may help fight heart disease. Xu and colleagues analyzed samples of black rice bran from rice grown in the southern United States. In addition, the lipid soluble antioxidants they found in black rice bran possess higher level of anthocyanins antioxidants, which are water-soluble antioxidants. Thus, black rice bran may be even healthier than brown rice bran, suggested Dr. Xu.

The scientists also showed that pigments in black rice bran extracts can produce a variety of different colors, ranging from pink to black, and may provide a healthier alternative to artificial food colorants that manufacturers now add to some foods and beverages. Several studies have linked some artificial colorants to cancer, behavioral problems in children, and other health problems.

Black rice is used mainly in Asia for food decoration, noodles, sushi, and pudding. Dr. Xu said that farmers are interested in growing black rice in Louisiana and that he would like to see people in the country embrace its use.
SoyTech eNews Aug. 28, 2010
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B Vitamins Reduce Risk of Mild Cognitive Impairment

In the largest trial of its kind, Oxford University researchers have discovered that B vitamins significantly reduced the risk of mild cognitive impairment in a population of subjects 70 and older. Mild cognitive impairment often leads to dementia and Alzheimer’s disease.

According to researchers, an increased rate of brain atrophy is often observed in older subjects, particularly those who suffer from cognitive decline. And 16% of those over 70 years old have mild cognitive impairment and half of these develop Alzheimer's disease. Homocysteine is a risk factor for brain atrophy, cognitive impairment and dementia. Plasma concentrations of homocysteine can be lowered by dietary administration of B vitamins.

During the two-year trial, 271 individuals with mild cognitive impairment were enrolled and asked to take either a combination of high-dose folic acid, vitamin B6 and vitamin B12 or a placebo. A subset (187) volunteered to have cranial MRI scans at the start and finish of the study. The researchers were looking to evaluate the change in the rate of brain atrophy over the period.

The accelerated rate of brain atrophy in elderly with mild cognitive impairment can be slowed by treatment with homocysteine-lowering B vitamins. Since accelerated brain atrophy is a characteristic of subjects with mild cognitive impairment who convert to Alzheimer's disease, researchers believe trials are needed to see if the same treatment will delay the development of Alzheimer's disease.
Nutraceuticals World September 9, 2010
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Calcium & Vitamin D Tied to Weight Loss

Higher dairy calcium intake and increased serum vitamin D are related to greater diet-induced weight loss, according to results of a study published recently in the *American Journal of Clinical Nutrition.* Israeli researchers analyzed data from participants in the 2-year Dietary Intervention Randomized Controlled Trial (DIRECT) [n = 322; mean body mass index (BMI; in kg/m2): 31;

mean age: 52 years]. A representative sample (n = 126) was followed for 6 months for serum vitamin D changes.

They found that adults who drank the most milk (nearly 2 glasses per day) and had the highest vitamin D levels at 6 months, lost more weight after 2 years than those who had little or no milk or milk products—nearly 12 pounds weight loss, on average.

Researchers also found that each additional 6-oz. serving of milk or milk products (about 3/4 of a glass of milk) was associated with 10 pounds successful weight loss above the average, at 6 months.

More than 300 overweight or at risk men and women ages 40 – 65 participated in the study following low-fat, Mediterranean or low-carb diets for 2 years. Regardless of diet, researchers found participants with the highest dairy calcium intake 6 months into the study (averaging about 580 mg per day—the amount in nearly 2 glasses of milk) lost about 12 pounds at the end of the 2 years, compared to about 7 pounds for those with the lowest dairy calcium intake (averaging about 150 mg, or about half of a glass).

Beyond calcium, the researchers also found that vitamin D levels independently affected weight loss success and in line with previous research, milk and milk products were the top contributors to vitamin D in the diets of the study participants.
Nutraceuticals World September 16, 2010
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CLA – New Research Shows Potential to Help at Risk Children Achieve and Maintain a Healthy Body Weight

The increasing trends in children who are overweight and childhood obesity will have a significant impact on public health for future generations. The prevalence of childhood overweight and obesity rates worldwide have been on the rise. For example, prevalence of childhood obesity in school age children between 2006 and 2010 rose from 13.2% to 15.2% in the United States and 7.9% to 10.0% in Europe. Overweight and obesity during childhood is associated with a high probability of obesity in adulthood. Obesity or excessive weight gain in adulthood (which is largely due to excessive fat mass) is associated with a substantial breadth of health problems, including an increased risk of coronary heart disease, hypertension, and diabetes. Therefore, it is imperative to establish strategies to halt the trend of weight gain and obesity and help children achieve and maintain a healthy body weight.

Numerous factors have been identified which are suggested to contribute childhood as well as adult weight gain such as reduced or lack of physical activity, food choices of high caloric value and excessive food intake. While increasing physical activity and monitoring caloric and food intake may indeed prove to be effective strategies to prevent excessive weight gain in children, another effective and novel strategy may be the use of active ingredients to help at risk children maintain a healthy weight. A new study suggests that one ingredient with potential to help children at risk of becoming overweight or obese achieve and maintain a healthy body weight is conjugated linoleic acid (CLA). CLA is a naturally occurring polyunsaturated 18-carbon compound most commonly present in dairy and beef products, as mostly the cis-9, trans-11 (c9,t11) isomer. Human dietary intake of CLA is approximately 130–440 mg/day. CLA in larger quantities can also be derived from safflower oil which contains largely the cis-9, trans-11 and trans-10, cis-12 (t10,c12) isomers. These are considered the most physiologically active isomers,

to show effects on weight management. CLA has been available as a weight management supplement for more than 15 years and also recently as a food ingredient in the United States, European Union, and other territories. In July 2008, CLA was FDA GRAS (Generally Recognized As Safe) approved for its use in a wide range of food applications. More than 2500 studies over the past 20 years were done, of which 27 published human clinical trials have shown that CLA supplementation can positively influence body composition by significantly decreasing fat mass and increasing lean body mass in adults independent of diet and exercise. Two recent meta-analyses confirmed the effects of CLA supplementation on decreased fat mass and increased lean body mass in adults. The total fat loss produced by CLA supplementation at the recommended 3.2 g daily dosage is approximately 2 kg after treatments of 1 y which is equivalent to 90 g fat loss per week. CLA supplementation was also found to produce a 1% increase in lean body mass as well. Thus CLA is an effective ingredient to help achieve and maintain a healthy body weight and body composition.

Although the improved body composition effects of CLA has been observed in many clinical studies in adult populations, the effects on improving body composition in children at risk of being overweight or obese have not been explored. Thus, a recent study was undertaken to evaluate the effects of Clarinol CLA (supplied by Lipid Nutrition) on children at risk of being overweight or obese. For this study fifty-three children aged 6 to 10 years who were at risk of being overweight or obese (at or above the 85th percentile for BMI) were evaluated in a double blind placebo controlled trial. The children were randomized into two groups: a group that consumed chocolate milk with 3 g of Clarinol (CLA group, n=28) and a group that consumed chocolate milk with 3 g sunflower oil (placebo group, n=25). The milks were consumed once per day for six months and there were no dietary or physical activity interventions given. The measurements of the study included body composition (fat mass and lean mass) determined by Dual Energy X-ray absorptiometry (DEXA), weight and BMI. After six months, the children consuming the chocolate milk with Clarinol CLA showed a significant improvement of BMI and body composition vs. the placebo group. In the growing children, the increase in BMI was 0.5 kg/m2 in the CLA group vs. 1.1 kg/m2 in the placebo group. This attenuation of BMI increases was largely due to decreases in fat mass. The percentages of total fat, abdominal fat and peripheral fat all significantly decreased in the children consuming chocolate milk with Clarinol CLA. In addition, lean body mass percentage significantly increased in the CLA group whereas lean body mass percentage decreased in the placebo group. The chocolate milk with Clarinol CLA was well tolerated and there were no differences in adverse events between the groups.

CLA has long been known to improve body composition in adults, however this is the first study to show positive effects on body composition with CLA as a food ingredient for children at risk of being overweight or obese. A unique attribute of CLA, versus many other weight management ingredients, is that CLA has a dual effect on improving body composition in that it decreases fat mass while also increasing lean body mass. In at risk children, this attribute, even if modest, may have profound long term benefits for both overall health and energy metabolism as the degree of fat mass in the body is linked to several chronic diseases and adding lean mass helps to burn more calories. Ultimately, as endeavors are undertaken to improve the health of at risk children, nutritional interventions may prove to be effective strategies to help reverse the trend of childhood obesity. As this is the first study to evaluate the effects of CLA in at risk children, further research is needed. Given the initial results, the use of an active food ingredient along with a healthy diet and exercise may be an effective tool to help at risk children achieve and maintain a healthy body composition.

Nutrition Horizon Sep 15 2010 ---

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Australian Study Says Omega 3s Can Cut Health Costs

A study commissioned by Australia's National Institute of Complementary Medicine (NICM) found that EPA and DHA fish oil supplements are a cost-effective way to reduce cardiovascular mortality, but not cost effective in rheumatoid arthritis as an adjunct therapy to non-steroidal anti-inflammatory drugs (NSAIDs), according to the Global Organization for EPA and DHA Omega 3.

GOED said that for improving cardiovascular mortality, the report focused solely on secondary prevention in people who had suffered myocardial infarctions, based primarily on the GISSI-Prevenzione and DART studies. It found that the cost of saving one disability-adjusted life-year (DALY) with fish oils was approximately AU$2,041, which was significantly below the health care costs associated with one DALY. Given the prevalence of people who had already suffered from myocardial infarctions, the cost of administering fish oil interventions in patients would be AU$39.6 million per year, but could save 19,424 DALYs per year.

With rheumatoid arthritis, the analysis compared the addition of fish oils to an NSAID regimen to the same regimen without fish oils on the theory that fish oils could reduce the NSAID requirements. However, the study found the cost of saving one DALY was more than AU$529,000 due to the minor improvements measured in scientific literature. At this cost, it was not cost effective from a public health perspective to administer fish oils to rheumatoid arthritis patients.

The study also looked at St. John's wort in depression, acupuncture for lower back pain, and an herbal complex for osteoarthritis, according to GOED. All were found to be cost effective, but none as much as fish oils, for reducing the costs of secondary cardiovascular disease prevention. The report was prepared by Access Economics, a consultancy.

Nutraceuticals World September 13, 2010

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What Are Babies Made Of? Research Shows for Some It Is Sugar, Salt and Not All Things Nice

Children as young as four weeks old are being fed a poor diet of biscuits, ice-cream and soft drinks, according to new Australian research. A study published in the journal *Nutrition & Dietetics* found some month-old babies had been introduced to high fat, salt and sugar foods, despite health authorities recommending exclusive breastfeeding to six months of age.

Researcher Jane Scott and colleagues tracked 587 women from two Perth maternity hospitals through regular phone interviews for 12 months to understand how the new mothers fed their babies. "Almost one in four mothers had introduced fruit juice, biscuits and cakes to their infants by six months of age. This is a worry because eating habits developed early in life usually continue throughout a person's lifetime -- and an overweight child is much more likely to become an overweight adult," said Associate Professor Scott, of the Department of Nutrition and Dietetics, Flinders University, Australia.

The study found babies who were started early on solids, and also those with two or more siblings, had a greater chance of eating high fat, salt and sugar foods by their first birthday.

In a recent Australia-wide survey, up to 20 per cent of children aged two to three years were found to be overweight or obese[1], indicating that the problem of children being overweight starts early in life. Dietitians Association of Australia spokesperson and obesity expert Professor Clare Collins said: "What newborns eat does matter. Babies need breast milk, not biscuits, ice-cream and soft drinks. Parent need more support to optimise breastfeeding initiation and duration rates, and we need ways to make it easier for parents to feed their children right."

"Infants and children are dependent on adults to choose the foods that will be best for them. Both eating habits and body weight track from childhood into adulthood, so getting off to the right start is crucial. What happens at home has the biggest effect on what children eat, so any effort to address children being overweight and obese must start at home. Australian parents need specific, evidence-based recommendations on what food and drinks are suitable for newborn babies, similar to the guidelines which are available for children older than five," said Professor Collins.

She called for better support for and promotion of breastfeeding, which she said is one of the most important factors in the long-term health of newborns.

Science Daily Sep. 7, 2010

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Corn Bred to Contain Beta-Carotene Is Good Source of Vitamin A, Iowa State Study Finds

A new Iowa State University study has found that corn bred to contain increased levels of beta-carotene is a good source of vitamin A. The discovery gives added support to the promise of biofortified corn being developed through conventional plant breeding as an effective tool to combat vitamin A deficiency in developing countries.

Beta-carotene is converted in the body to vitamin A. The researchers found that the beta-carotene in the corn was converted to vitamin A at a higher rate than what's predicted for corn, and higher than the rate for beta-carotene in vegetables - including spinach and carrots, among others.

Wendy White, an ISU associate professor of food science and human nutrition, led the six-week study conducted at Iowa State's Nutrition and Wellness Research Center. The results validate the promise of 'orange' maize that will soon be released to combat vitamin A deficiency in sub-Saharan Africa.

According to a 2009 World Health Organization estimate, vitamin A is deficient in more than half of the world's countries, with Africa and Southeast Asia having the highest deficiencies. Medical researchers have reported vitamin A deficiency to be one of the most serious causes of malnutrition in developing countries and can cause blindness, poor immune function and even premature death -- particularly in young children.

Working with HarvestPlus on biofortified corn

The effort to biofortify corn with beta-carotene is being led by HarvestPlus

(http://www.harvestplus.org/) - a global research initiative directed, in part, by the Washington, D.C.-based International Food Policy Research Institute. "Biofortification is a revolutionary approach to combating micronutrient malnutrition in developing countries and it has the potential to be self-sustaining," White said. "The seeds are bred by plant breeders to be naturally high in key micronutrients, such as vitamin A, zinc and/or iron. And then the seeds will ultimately be distributed to poor farmers in developing countries and they'll be able to reproduce the seeds so they can share them with their communities.

"This study answered a major feasibility concern for the biofortification program because plant breeders were quickly successful in ramping up the beta-carotene content in the corn, but then the question was, 'Would it be available to be absorbed and utilized by people?,'" she continued. "So what we've shown is the beta-carotene is bioavailable to be converted to vitamin A in the body, and much more so than previously expected."

The study was posted online this month by the *American Journal of Clinical Nutrition*, which is published by the American Society for Nutrition. Iowa State graduate students Shanshan Li and Angela Nugroho, and Purdue University researcher Torbert Rocheford -- who was at the University of Illinois at Urbana-Champaign at the time the research was conducted -- collaborated with White on the study. An abstract is available at: http://www.ajcn.org/cgi/content/abstract/ajcn.2010.29802v1.

The researchers had their six healthy female subjects, between the ages of 18 and 30, consume 250-gram portions of maize porridge three times at two-week intervals. Each subject consumed the beta-carotene biofortified maize porridge, as well as two white maize control porridges that were naturally devoid of beta-carotene, but contained known amounts of added beta-carotene or vitamin A. Blood samples were drawn after they ate each porridge to determine the amount of vitamin A that was absorbed in the blood.

An important step in fighting malnutrition

White says the study's findings provide an important step in the process of making the biofortified corn available to the people who desperately need vitamin A in their diets. "These [their subjects] were mostly graduate students based in the U.S. who were screened for excellent health. So this study was conducted under ideal conditions," White said. "And so the next step -- knowing that under ideal conditions the beta-carotene can be well absorbed -- is to take it into a more field setting."

White reports that there is already a pilot program being conducted in Zambia to feed the beta-carotene, biofortified maize to young children to increase their vitamin A intake. HarvestPlus is conducting that project and supported the development of the maize for the Iowa State study.

SoyTech eNews Sep. 8, 2010

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Diet When Young Affects Future Food Responses

A high protein diet during development primes the body to react unhealthily to future food binges. A study on juvenile rats, published in BioMed Central's open access journal *Nutrition and*

Metabolism, suggests that lasting changes result from altering the composition of the first solid food that is consumed throughout growth into early adulthood.

Raylene Reimer worked with a team of researchers from the University of Calgary, Canada, to carry out the weaning experiments in 18 litters of rats. Six litters were placed on each of three diets: high prebiotic fiber, high protein and normal control. They consumed these diets until they were 14 weeks old, when they were switched to a high fat, high sugar diet for a further six weeks. Reimer said, "After a weaning diet high in protein, the rats demonstrated an increase in body weight and fat mass in response to the high energy diet. They also showed higher energy intake than the fiber-diet rats".

This is the first study to investigate the long-term effects of high protein or fiber diets during development on the response to future food intake. Speaking about the results, Reimer said, "Overall, it appears that a long-term diet high in protein, when mismatched with a high energy challenge, has negative effects on body mass and hormones and genes involved in glucose and lipid metabolism. However, a fiber-enriched diet may provide some protection".

Eurekalert Sep 29, 2010

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Why Fish Oils Work Swimmingly Against Inflammation and Diabetes

Researchers at the University of California, San Diego School of Medicine have identified the molecular mechanism that makes omega-3 fatty acids so effective in reducing chronic inflammation and insulin resistance. The discovery could lead to development of a simple dietary remedy for many of the more than 23 million Americans suffering from diabetes and other conditions.

Writing in the advance online edition of the September 3 issue of the journal *Cell,* Jerrold Olefsky, MD, and colleagues identified a key receptor on macrophages abundantly found in obese body fat. Obesity and diabetes are closely correlated. The scientists say omega-3 fatty acids activate this macrophage receptor, resulting in broad anti-inflammatory effects and improved systemic insulin sensitivity.

Macrophages are specialized white blood cells that engulf and digest cellular debris and pathogens. Part of this immune system response involves the macrophages secreting cytokines and other proteins that cause inflammation, a method for destroying cells and objects perceived to be harmful. Obese fat tissue contains lots of these macrophages producing lots of cytokines. The result can be chronic inflammation and rising insulin resistance in neighboring cells over-exposed to cytokines. Insulin resistance is the physical condition in which the natural hormone insulin becomes less effective at regulating blood sugar levels in the body, leading to myriad and often severe health problems, most notably type 2 diabetes mellitus.

Olefsky and colleagues looked at cellular receptors known to respond to fatty acids. They eventually narrowed their focus to a G-protein receptor called GPR120, one of a family of signaling molecules involved in numerous cellular functions. The GPR120 receptor is found only on pro-inflammatory macrophages in mature fat cells. When the receptor is turned off, the macrophage produces inflammatory effects. But exposed to omega-3 fatty acids, specifically

docosahexaenoic acid (DHA) and eicosapentaenoic acid (EPA), the GPR120 receptor is activated and generates a strong anti-inflammatory effect.

"It's just an incredibly potent effect," said Olefsky, a professor of medicine and associate dean of scientific affairs for the UC San Diego School of Medicine. "The omega-3 fatty acids switch on the receptor, killing the inflammatory response."

The scientists conducted their research using cell cultures and mice, some of the latter genetically modified to lack the GPR120 receptor. All of the mice were fed a high-fat diet with or without omega-3 fatty acid supplementation. The supplementation treatment inhibited inflammation and enhanced insulin sensitivity in ordinary obese mice, but had no effect in GPR120 knockout mice. A chemical agonist of omega-3 fatty acids produced similar results.

"This is nature at work," said Olefsky. "The receptor evolved to respond to a natural product -- omega-3 fatty acids -- so that the inflammatory process can be controlled. Our work shows how fish oils safely do this, and suggests a possible way to treating the serious problems of inflammation in obesity and in conditions like diabetes, cancer and cardiovascular disease through simple dietary supplementation."

However, Olefsky said more research is required. For example, it remains unclear how much fish oil constitutes a safe, effective dose. High consumption of fish oil has been linked to increased risk of bleeding and stroke in some people.

Should fish oils prove impractical as a therapeutic agent, Olefsky said the identification of the GPR120 receptor means researchers can work toward developing an alternative drug that mimics the actions of DHA and EPA and provides the same anti-inflammatory effects.

Science Daily Sep. 4, 2010

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‘Good’ Salt Reduces Blood Pressure

Increasing the amount of “good" potassium salts in a diet may significantly improve blood pressure and increase cardiovascular health, according to a new study from researchers at Wageningen University.

The findings, published in the Sept. 13, 2010, issue of ***Archives of Internal Medicine*** suggest the favorable effect brought about by potassium is estimated to be comparable with the blood pressure reduction achievable by halving the intake of “bad" sodium salts (mostly from table salt). In Western countries only 20% to 30% of the population has optimal blood pressure. Data revealed the average potassium intake in 21 countries including the United States, China, New Zealand, Germany and the Netherlands varies between 1.7 and 3.7 g a day, considerably lower than the 4.7 g a day recommended based on the positive health effects observed at this level of intake. A hypothetical increase in the potassium intake to the recommended level would reduce the systolic blood pressure in the populations of these countries by between 1.7 and 3.2 mm Hg. This corresponds with the reduction that would occur if Western consumers consumed 4 g of salt less per day. The intakes of potassium and sodium are therefore important in preventing high blood pressure.

The researchers noted an effective way to increase potassium intake is to follow the guidelines for healthy nutrition more closely, including a higher consumption of vegetables and fruit. The use of mineral salts in processed foods also would contribute to an improved intake of both sodium and potassium.

Food Product Design September 15, 2010

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Healthy Diet Rocks When It Comes to Fighting Kidney Stones

Certain key ingredients of a diet designed to prevent high blood pressure can ward off kidney stones, according to a study appearing in an upcoming issue of the *Clinical Journal of the American Society Nephrology* (*CJASN*). The results suggest how low-fat dairy products and/or plants may have potent kidney stone-fighting properties.

The Dietary Approaches to Stop Hypertension (DASH) diet -- which is high in fruits, vegetables, nuts and legumes, dairy products, and whole grains and is low in sweetened beverages and red and processed meats -- effectively lowers blood pressure. Research by Eric Taylor, MD (Brigham and Women's Hospital, Harvard Medical School, and Maine Medical Center) and his colleagues also now suggests that a DASH-style diet reduces one's risk of developing kidney stones.

The investigators studied 24-hour urine samples of 3426 individuals with and without a history of kidney stones in the Health Professionals Follow-up Study (HPFS) and the Nurses' Health Studies (NHS) I and II. The study participants were part of a previous, larger study where Dr. Taylor reported that a DASH-style diet was associated with a reduced risk of kidney stone formation. HPFS and NHS I and II are large studies of the lifestyle practices and health of both male and female health care workers.

Individuals who followed a DASH-style diet excreted more urine than individuals who did not follow the diet, despite similar fluid intake. The researchers speculate that higher urinary volumes were, at least partly, a result of the higher food water content in a DASH-style diet. Also, the urine of DASH consumers contained a higher concentration of citrate, an important inhibitor of calcium stones, than the urine of others in the analysis. The study also indicated that there may be other important, and perhaps as of yet unidentified, kidney stone inhibitors in dairy products and/or plants.

Dr. Taylor's data suggest that a DASH-style diet could be important for keeping stones from reappearing in people who suffer from them. "We believe our results provide a strong rationale for a randomized trial examining the effect of a DASH-style diet on kidney stone recurrence," the authors wrote.

Science Daily Sep. 17, 2010

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More Infants Should Receive Iron Supplements, Researchers Urge

Giving iron supplements to children with marginally low birth weights (2000-2500 grams) dramatically reduces the risk of developing iron deficiency and anemia. This is shown by Umeå

researcher Magnus Domellöf and associates in the coming edition of the pediatric scientific journal *Pediatrics*.

It has recently been discovered that both birth weight and the infants' nutrition supply are important risk factors for later morbidity in adulthood. Due to high nutritional requirements, infants with low birth weight are at risk of developing nutrient deficiencies during their first year of life, including iron deficiency. Iron is necessary for the production of hemoglobin for the blood, and also for the development of the brain. Iron deficiency in infants has been shown to be associated with poor neurological development.

The present study included 285 children with marginally low birth weights (2000-2500 g). They were randomly divided into three groups that were given different amounts of iron drops (0, 1, or 2 mg per kg daily) from the age of 6 weeks to 6 months. Among children who were given placebo drops (no iron) 36% had iron deficiency and 10% iron-deficiency anemia at the age of 6 months, whereas the corresponding figures for children who received 2 mg of iron were 4% and 0%. At greatest risk of developing iron deficiency were those children who were fully breast-fed at the age of 6 weeks. They ran an 18% risk of developing iron-deficiency anemia by the age of 6 months if they did not receive iron drops.

The study indicates no negative effects from iron drops on the children's growth, infections, or other morbidity. Most children with marginally low birth weights in Sweden are considered healthy and are not given iron drops, although routines differ from one hospital to another. The study indicates that these children should be given iron drops, as they otherwise run a high risk of developing iron deficiency and anemia.

What effects iron deficiency has on brain development is as yet unclear, but the Umeå researchers will be following these children up to the age of 7 years and test their intellectual development, the occurrence of behavioral problems, and attention problems in order to find out whether iron supplements for infants have any effect on brain function at school age.

The findings will have a great impact on nutrition recommendations for children with marginally low birth weights in Sweden and abroad, and they will hopefully lead to improved health in these children when they reach school age. In Sweden 3.5% of all newborns have low birth weights (under 2500 grams), which means that some 300,000 Swedes have had a low birth weight. Most of these people had only marginally low birth weights (2000-2500 g).

Science Daily Sep. 7, 2010

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Maternal Diet High in Trans Fats Doubles Risk of Excess Body Fat in Breastfed Babies, Study Finds

A new University of Georgia study suggests that mothers who consume a diet high in trans fats double the likelihood that their infants will have high levels of body fat. Researchers, whose results appear in the early online edition of the *European Journal of Clinical Nutrition*, found that infants whose mothers consumed more than 4.5 grams of trans fats per day while breastfeeding were twice as likely to have high percentages of body fat, or adiposity, than infants whose mothers consumed less than 4.5 grams per day of trans fats.

The researchers investigated different fatty acids, but determined trans fats to be the most important contributor to excess body fat. "Trans fats stuck out as a predictor to increased adiposity in both mothers and their babies," said study co-author Alex Anderson, assistant professor in the UGA College of Family and Consumer Sciences.

Anderson explained that although breast milk is optimal for the health of infants, it could also contain high levels of trans fats, depending on the mother's diet. A better understanding of how a mother's consumption of trans fats may impact the health of her baby would aid nutritionists in making more accurate dietary recommendations to prevent chronic disease later in life by encouraging mothers to select a diet low in trans fats, he said.

To determine the effect of the intake of trans fats by the child through breast milk, the researchers studied three different groups; mothers who only breast fed their infants, those that only used formula and those that used a combination of breast milk and formula.

It is important to measure body fat in addition to weight, said Anderson, since being overweight does not always mean having a high percent of body fat and vice versa. "It's not just the weight, but the amount of body fat in the person that affects their health," Anderson said. "That is why adiposity is such an important measure of cardiovascular risk."

The researchers also found that mothers who consumed more than 4.5 grams of trans fats per day increased their own risk of excessive fat accumulation, independent of pre-pregnancy weight, by almost six times. This data suggests that trans fats intake could have a more significant weight-gain effect on breastfeeding mothers than it does at other times in their lives, Anderson said.

The researchers studied 96 women, many of whom were highly educated non-Hispanic white women, and note that the study should be replicated in a larger, more diverse group to strengthen information about the health dangers of eating trans fats. "It would help to be able to follow the child from when the mother was pregnant, through birth, and then adolescence, so that we can confirm what the type of infant feeding and maternal diet during breastfeeding have to do with the recent epidemic of childhood obesity," said Anderson.

Eurekalert 29 Sep 2010

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National News

India's Soybean Meal Exports Rise 38% in August

India's exports of soybean meal in August jumped over 38 per cent to 1.7 lakh tonnes in comparison to last year, Soybean Processors Association of India (SOPA) said. Exports during October 2009 to August this year is 20,55,001 tonnes, against 30,40,423 tonnes last year, down 32.41 per cent, it said. The oil year runs from October to September.

Soybean meal exports during the current month of September, this year, is expected to be higher vis-a-vis the same period last year, SOPA added. Soybean, a cream-coloured oval bean about the size of a common pea, is an important protein source for people. In India, Madhya Pradesh, Maharashtra, Rajasthan and Andhra Pradesh are the major producers of soybeans. Madhya Pradesh tops the list with nearly 88 per cent of the total soybean produce.

Asia Pulse Businesswire -- NEW DELHI, September 7, 2010 –

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BARC Develops Wheat to Fight Crop-Damaging African Fungus

India is getting ready to fight Ug99, a deadly fungus causing stem rust, which has destroyed wheat fields across Kenya and reached Iran. Trombay-based Bhabha Atomic Research Centre (BARC) has developed radiation-induced resistance mutations in wheat that it hopes can withstand the fungus.

In the two-year research, BARC scientists used radiation-induced mutation technique (see box) on two popular wheat varieties to develop new mutants that could be used if the rust finds its way to India. First identified in Uganda in 1999 -- hence the name Ug99 -- the virulent fungus has moved to Kenya, Ethiopia, Sudan, Yemen and most recently to Iran. "Since the spores of the fungus travel with wind and come down with rain, the disease may come to India," warned Stanislaus F. D'Souza, head, Nuclear Agriculture and Biotechnology Division, BARC.

Scientists closely monitoring the fungus disease fear it may not take too much time to enter India via Pakistan. "Resistant varieties have to be developed and kept ready for use if needed. If popular varieties are used for inducing mutation, the new mutant variety will find immediate acceptability," said D'souza.

The work assumes importance as India produces more than 70 million tonnes of wheat annually, making it the second largest producer of wheat in the world after China. India is also the second largest consumer of wheat. BARC is awaiting permission from the appropriate Indian agency to send the mutant varieties for screening and testing to Kenya -- a country infested with Ug99 -- to check their efficacy.

The Ug99 fungus grows on the stems and other parts of wheat plant and derives nutrition from the plant ultimately weakening the stem so that plants can no longer stand upright. Infected plants produce fewer seeds and may die. "Given the importance of wheat to India, any threat whether a pest or disease or an abiotic factor (drought, heat or salinity) is extremely important," said David Hodson, international focal point for the Wheat Rust Disease Global Programme, Food and Agriculture Organization of the United Nations.

From: Hindustan Times Sept. 12, 2010
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Research Looks at How Sensory Attributes of Soy Snacks Drive Acceptability to Indian Consumers

Fresh data on food and farming are presented in the report 'Drivers of liking for soy-based Indian-style extruded snack foods determined by U.S. and Indian consumers.' According to recent research published in the Journal of Food Science, "Although many researchers have studied potential ways to deliver soy in novel forms, little is known about specific sensory attributes associated with soy snacks, or how those attributes drive liking for consumers. The first objective of this study was to use sensory descriptive analysis to characterize 9 extruded soy snacks with varying soy levels and soy grits contents."

"A total of 12 trained panelists used a descriptive analysis method to evaluate the snacks and found 14 attributes to be significantly different across the samples. Furthermore, it is not known how preferences of Indian snack consumers living in the United States and India may vary for sensory attributes of soy snacks. The 2nd objective was to correlate descriptive profiling data and previously collected consumer data to construct preference maps illustrating consumers' attitudes toward the snacks. Results indicate that consumers generally accept samples characterized by attributes such as crunchy, cumin, curry, salty, and umami, but dislike samples with wheat, rough, or porous attributes. Indian consumers differed from the U.S. consumers in that their preferences were more varied, and they tended to be more tolerant of wheat and porous attributes," wrote E.A. Neely and colleagues, University of Illinois.

The researchers concluded: "Therefore, different strategies should be utilized when developing products for these groups to cater to their specific inclinations."

Food Weekly News -- September 8, 2010 –

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Food Science & Technology News

Innovations in Fiber-Fortified Foods, Beverages

ROCKVILLE, Md.—Major food companies and other industry players are introducing waves of new fiber-fortified food and beverage products in order to help Americans get the recommended amount of 25 to 30 grams of fiber daily, according to Packaged Facts' **"Fiber Food Ingredients in the U.S.: Soluble-, Insoluble- and Digestive-Resistant Types"** report.

According to the report, formulators are embracing novel fibers—most of which have only been available to formulators since the turn-of-the-century or for an even shorter period of time. Novel fibers have gained the attention of formulators due to their versatility and invisible nature in food applications that previously were not conducive to fiber enrichment. This, along with the desire of food manufacturers to increase the soluble fiber content of foods, has Packaged Facts predicting that the novel fiber food ingredient category will increase its share of the market by more than 750%, jumping 35 percentage points from a 5% share in 2004 to a 39% share in 2014.

Data estimates that in 2004, 91% of all fiber food ingredient sales were of conventional, insoluble-type fibers—the fiber food ingredients that have historically been used the most in food formulations. The remaining 9% share was split evenly between conventional, soluble-type fibers and emerging, novel fibers. Future projections are that the share for conventional, insoluble-type fibers will decrease by 41%, or 38 percentage points in 2014, while the share for the mostly new or newly refined conventional, soluble-type fibers will increase 64%, or almost 3 percentage points.

The report examines the fiber-fortified food and beverage category from two angles. The primary focus is on available fiber ingredients and the suppliers that provide them to the consumables industry. The report also explores the finished products in the marketplace and the Americans that purchase them. Data provides insight to the types of fiber and their proven benefit; the companies that supply the ingredients, including a competitive analysis by fiber type and application; marketplace success stories; consumer understanding of the category as well as use of fiber-fortified products and more.

"Packaged Facts determined that sales of all fiber food ingredients (i.e., conventional, insoluble-type fibers; conventional, soluble-type fibers; and novel fiber food ingredients) will continue to increase indefinitely, as the market for fiber-enhanced foods is still in its infancy," said Don Montuori, publisher of Packaged Facts. "There is a great deal of room for growth across almost all food categories, which presents an opportunity for the many different fiber ingredients that are among the most popular with today's food formulators."

Food Product Design September 10, 2010

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Making Cookies That Are Good for Your Heart

Years of research has proven that saturated and trans fats clog arteries, make it tough for the heart to pump and are not valuable components of any diet. Unfortunately, they are contained in many

foods. Now, a University of Missouri research team has developed a soybean which produces oil that is naturally low in saturated and trans fats.

"When we started this research, we were looking at three factors," said Kristin Bilyeu, a researcher with the USDA Agriculture Research Service located in the College of Agriculture, Food and Natural Resources at MU. 'We needed a heart-healthy oil. It needed to be stable with a good shelf life. Finally, it needed to be economically feasible. Oleic acid is a stable component of oil and is not a saturated fat. It does not require hydrogenation, which stabilizes oil but creates trans fats. Oleic acid is the main component of olive oil, but is not a large component in soybean oil. We set out to help the soybean produce more oleic acid in the beans."

Back in the 1970s, scientists discovered that saturated fats, which can be found in foods such as cream, cheese and butter, were bad for the heart. While searching for a substitute, researchers targeted soybean oil. But because soybean oil spoiled when heated, producers had to hydrogenate the oil to keep it stable, thus creating trans fats.

Through natural pollination procedures, Bilyeu and Grover Shannon, professor of plant sciences at MU, developed a soybean oil that was very high in oleic acid, which not only stabilized the oil, but also made it healthier. The natural breeding increased oleic acid in the bean from 20 percent to 80 percent and decreased the amount of saturated fat in the oil by 25 percent.

Additionally, because the new oil is more stable, it doesn't require hydrogenation, which typically rids the oil of Omega-3 fatty acids, which are good supplements for the human heart.

The next step of the research is determining whether this soybean will produce economically viable yields in different environments. Soybeans are grown in nearly every climate in the middle of the country. Preliminary results look promising.

"One of the nice things about this trait of producing oil that is high in oleic acid is that it appears to be very stable," Shannon said. "If you grow the plant in northern Missouri, you typically have 70 percent to 80 percent oleic acid in the soybean's oil. In southern Missouri, the oil is consistently 80 percent oleic acid. Before our work, we saw a lot of variation in the amount of oleic acid that was produced based on the environment."

E! Science News Sep 13, 2010

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Talented Bacteria Make Food Poisoning Unpredictable

While we are often exposed to bacteria in our food which could cause food poisoning, we don't always become ill -- why should this be so? Professor Colin Hill, who is presenting his work at the Society for General Microbiology's autumn meeting in Nottingham, describes how bacteria use different tricks to aid their survival inside the body, helping to explain why food poisoning can be so unpredictable.

One of the biggest challenges faced by food-borne bacteria is acid. Acidic conditions, particularly in the stomach and in the gut will kill most microbes found in contaminated food.

Professor Hill's group at University College Cork has revealed that Listeria bacteria, which may be found in soft cheeses and chilled ready-to-eat products, can overcome harsh acidic conditions by exploiting key food ingredients. Listeria that survive are able to cause serious and sometimes fatal infections, particularly in the elderly and pregnant women.

Certain food constituents such as the amino acid, glutamate, can help the bacteria neutralise acid, allowing the bacteria to pass through the stomach unscathed. Professor Hill explains the significance of this. "People who consume foods that are contaminated with Listeria and are also high in glutamate, such as soft cheese or meat products, have a higher chance of developing serious infection than someone eating the same quantity of bacteria in a low-glutamate food," he said. "Of course this is further complicated by the fact that a contaminated, low-glutamate food could be eaten in combination with a high-glutamate food such as tomato juice, which could also increase the risk of infection."

Listeria can also take advantage of food processing and storage conditions to help them survive. "Bacteria that are exposed to low pH before entering the body may adapt to become more acid-tolerant and therefore better equipped to deal with acidic conditions in the body. For example, Listeria contaminating naturally acidic foods such as cheese may be more likely to cause infection than Listeria carried at a more neutral pH in water.

Professor Hill explains how his group's work could help reduce the incidence of Listeria infections. "The number of cases of listeriosis has nearly doubled in the last decade in Europe. This is because the bacterium is so good at overcoming the challenges it faces in food and in the body," he said. "Our studies show that consuming Listeria in one food may be quite safe, while eating the same amount in another food might be lethal. By understanding the role of the food matrix we may be able to identify and eliminate high-risk foods from the diet of susceptible people."

Science Daily Sep. 6, 2010

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Vegetable Oil-Based Fat Powders

Vegetable oil-based fat powders from **Cognis**, Cegepal TG 186 and Cegepal O3C, are suitable for "clean label" products, as they contain no hydrogenated fat.

Cegepal TG 186 and Cegepal O3C enhance the creamy texture of filling cream, bakery cream, ice cream and other desserts, as well as savory products like soups and sauces. These two non-lauric and non-foaming specialty fat powders are designed to enrich nutritionally balanced foods.

Cegepal TG 186 is designed for powder mixes that require a high content of unsaturated fatty acids. Based on sunflower oil, it contains a high proportion of mono and polyunsaturated fatty acids and linoleic acid. Cegepal TG 186 is suited for use in soups, sauces, desserts and food targeting the well-being market. Due to an extremely fine dispersion of the fat in a protein carbohydrate matrix, it is convenient to use. The cold-dispersible powder is odor-free, neutral in taste and improves the organoleptic properties, creaminess and mouthfeel, thereby giving the end product a creamy texture.

A key ingredient of Cegepal O3C is rape seed oil, which is low in saturated fat, high in monounsaturated fat, and has a beneficial omega-3 fatty acid profile. The odor-free powder has a slightly sweet taste and is cold dispersible. These benefits make Cegepal O3C an ideal ingredient for dietetic, clinical and sports foods.

Food Product Design August 31, 2010

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Weight concerns have big impact on ingredients trends

Research* by the independent market analyst has revealed that although health and wellness concerns as a whole are driving new ingredient trends in NPD it is weight management which is believed to be the trend to watch.

Natasha Horton consumer analyst at Business Insights said: "There are growing opportunities for manufacturers to deliver products with new ingredients to help weight management, as well as offering other targeted health benefits. This is due to the increasing developments and understanding of ingredients such as green tea and stevia."

Importantly consumers are becoming more sophisticated in their knowledge of how to manage their weight. We are now aware that calorie quality is a vital component in a healthy diet. Therefore it is no longer a case of just ensuring ingredients are low in calorie, so ingredients that can offer increased health benefits are also increasing in popularity.

The savory snack category is a case in point. The industry has moved on from offering healthy solutions by simply reducing saturated fat content or by baking rather than frying. Now we're starting to see healthful, calorie quality ingredients instead. To achieve this we're seeing a rising popularity in fortifying snacks with vitamins and minerals, making chips out of vegetables such as parsnip and including far more fruit than before.

However, despite this strong trend there are a number of barriers to the opportunities in natural and healthful ingredient formulations which include ensuring new novel ingredients have staying power, which will depend on meeting the demands and changing needs of consumers.

Ensuring that consumers understand what a 'natural' ingredient is and the narrowing of regulations could also affect ingredient trends in the near future. Business Insights suggest that regulatory agencies need to develop a strategy to define what it is and what is not a natural ingredient to ensure clarity for both consumers and manufactures.

Business Insights 10 September 2010

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Regulatory News

Adulteration of Milk Products and Pet Food With Melamine Underscores Weaknesses of Traditional Methods, Experts Say

Recent incidents of adulteration involving infant formula, other milk products and pet food with the industrial chemical melamine revealed the weaknesses of current methods widely used across the domestic and global food industry for determining protein content in foods. The possible utility of alternative existing and emerging methods is the subject of a new paper published in *Comprehensive Reviews in Food Science and Food Safety*, a peer-reviewed journal of the Institute of Food Technologists (IFT).

The paper, now available online, is authored by a team of experts led by Jeffrey Moore, Ph.D., of the U.S. Pharmacopeial Convention (USP). USP publishes the Food Chemicals Codex (FCC), a compendium of quality standards for food ingredients.

The paper examines how reliance on 19th century methods -- primarily the Kjeldahl method and the combustion (Dumas) method -- for measuring total protein content in foods and the lack of more specific methods allowed for the adulteration of protein-based foods with melamine and related nonprotein compounds in 2007 and 2008. Rather than quantifying protein content, these methods rely on total nitrogen determination as a marker to estimate the amount of protein in a food -- and are the current standard for the food industry. Such approaches may allow unscrupulous parties to fool these tests simply by adding a cheap organic compound containing nitrogen, which can result in severe physical damage to humans and animals as well as financial consequences for food producers and consumers through price increases, market disruptions, trade restrictions, product liability costs, loss of revenues and brand damages.

"While the globalization of the food industry has provided consumers with a seemingly endless number of choices and year-round availability to enhance their diets, the events of 2007 and 2008 have shown that it may also introduce new risks -- leaving the industry as a whole and individual consumers vulnerable to potential serious consequences," said Dr. Moore. "Adulteration of foods represents a significant public health threat that needs to be addressed. In this paper, we look at a path forward on the complex issue of protein measurement -- development, validation and implementation of new analysis methods specific for protein-based food ingredients."

As described in the paper, protein content is held at a premium because of the nutritional value of proteins as well as their contribution to functional properties of food such as texture and flavor. Thus, protein quantification is an important tool used throughout the global food supply chain, helping to determine the economic value of a food. The authors note that as long as the value of food ingredients is based on protein content, the incentive to adulterate these materials by measures designed to inflate protein measurement will exist -- necessitating the need for new approaches used by the food industry.

To stimulate discussion and to provide new information about the development and adoption of new or alternative protein methodologies, the authors of the paper review the following:

- the early history of food protein methodology
- analytical strategies to prevent intentional adulteration of foods and food ingredients

- challenges of developing or adopting new or alternative protein quantification methods and associated reference materials
- criteria against which new methodologies can be evaluated, and
- emerging methodologies for total food protein measurement, including pros and cons.

The paper looks at the two primary analytical strategies to prevent "economic adulteration of food," which is defined as "fraudulent addition of non-authentic substances or removal or replacement of authentic substances without the purchaser's knowledge for economic gain of the seller." The first approach uses analytical tests to identify one or more suspected adulterants, where an "absence of" result indicates the test material is not adulterated with a specific material. This requires prior knowledge about the adulterant and therefore is not useful for detecting unknown adulterants, thus prohibiting it from preventing future adulteration with unknown substitutes. The second approach is based on compendial identification and purity tests that substantiate an ingredient's identify and quantify its purity, i.e., a "presence of" result. This approach is effective when either a known or unknown adulterant is substituted for the original material at concentrations high enough to be recognized in test results. As noted in the paper, it is less useful when adulterants are present in low concentrations; however, from a practical perspective, counterfeiters often must adulterate at relatively high concentration levels to realize economic gain. Such purity standards are contained in compendia including the FCC. At this time, no current compendial methods are sufficiently selective to differentiate protein from other nitrogen-containing compounds.

The paper identifies a host of existing methods for food protein measurement that may exhibit potential for broader use (and the associated pros and cons of each method), including infrared methods, amino acid-based methods and new spectral probes. Certain methods have existed for some time but have not achieved routine use by the food industry, instead having been largely limited to research applications. However, the authors note that even though these methods may have some utility, many food matrices have unique requirements that necessitate different approaches for protein measurement. This may require a combination of different protein analysis methods to effectively prevent adulteration. The paper also looks at emerging methods including antibody based methods and high performance liquid chromatography (HPLC) that may be useful once sufficiently developed for practical use in routine protein measurements.

"Through further exploration of available and emerging methods -- and new work in this area -- the ultimate hope is to protect public health by preventing the next melamine," noted Dr. Moore.

My Eco Project Aug 27, 2010
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FDA Announces Menu Labeling Rule

WASHINGTON, D.C.—When President Obama signed health-care reform legislation into law on March 23, 2010, it included stipulations requiring restaurants and similar retail food establishments with 20 or more locations to list calorie content information for standard menu items on restaurant menus and menu boards, including drive-through menu boards. Other nutrient information—including total calories, fat, saturated fat, cholesterol, sodium, total carbohydrates, sugars, fiber and total protein—needs to be available in writing upon request. The Act also requires vending machine operators who own or operate 20 or more vending machines to disclose calorie content for certain items.

FDA has released the following documents:

- A draft guidance document describing implementation of certain provisions of the federal law;
- A final guidance document for industry regarding the effect of the new federal nutrition labeling requirements on state and local laws.

The draft guidance states that FDA realizes the industry may need additional information and time to comply with these new provisions, and that the agency expects to refrain from enforcement action for a time period that will be provided in the guidance once it is finalized.

These actions are the latest in a series of steps toward FDA's implementation of the menu labeling provisions in the new law. On July 7, 2010, FDA opened **a docket** for the public to submit comments on how the agency could best apply these provisions. And on July 21, 2010, FDA issued **a *Federal Register* notice** explaining how restaurants, similar retail food establishments and vending machine operators that are not subject to the new federal nutrition labeling requirements can elect to voluntarily be subject to the federal requirements.

The FDA is required by law to issue proposed regulations to carry out these provisions by March 23, 2011.

Food Product Design August 25, 2010

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Reading Food Labels, Combined With Exercise, Can Lead to Weight Loss, Study Finds

Nutritional science and food marketing has become so sophisticated in recent decades that a trip to the supermarket can require a complete nutritional re-education. The average consumer needs to be on guard against preservatives, added fat, colorings, and calories, false advertising, and sophisticated but misleading labels.

Although guidelines for the information of food labels have gotten a bad rap in recent years, a new study published in the *Journal of Consumer Affairs* suggests that observing them may lead to weight loss, especially for women entering their middle years. The study was authored by Bidisha Mandal, PhD, an assistant professor at the School of Economic Sciences at Washington State University.

Using information on whether consumers read food labels the first time they buy a product, the study's author found that people who observe the labels and do not exercise display a slightly greater likelihood of weight loss than those who do exercise but do not pay attention to food labels. By simply adding an exercise routine to their lifestyle regular food label readers can increase their changes of losing weight. Women between the ages of 37-50 years are more likely to read food labels than men, and are therefore more likely to lose weight, according to the study.

Previous research has focused on food marketing and behaviour but has not followed related weight loss over time in this middle-aged demographic group. The data for this study was taken from a National Longitudinal Survey of Youth compiled from 2002-2006. The survey began in 1979 with over 12,000 male and female participants born in the years 1957-1964.

Over fifty percent of participants reported that they were trying to lose or control weight. Of these participants, almost seventy percent were obese or overweight. Almost fifty percent were actively reading food labels on their first time purchase and slightly more than twenty-five percent were actively participating in vigorous exercise. Overall, older individuals are less likely to lose weight by reading food labels, and general participation in vigorous exercise drops off after age forty-five.

Additionally, the Nutrition Labeling and Education Act (NLEA), enacted in 1994, requires all food manufactures to present essential nutrient and ingredient information on food packages. According to the recently-passed health care reform bill there will be easier access to nutritional information at restaurants, retail food establishments and vending machines. Combined with these new findings, it is likely that this measure will be useful to those who want to lose weight and read food labels to make well-informed decision regarding their diets in and outside their homes.

Weight loss programs and plans would do well in augmenting their client's weight loss goals with the recommended use of food labels, in order to maintain a healthy weight. This is particularly important as people enter middle age and are at a risk for heart disease, obesity-related diabetes, cancer and dementia.

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Sugary Sports Drinks Mistakenly Associated With Being Healthy, Say Researchers

Children who practice healthy lifestyle habits such as eating fruits and vegetables and engaging in physical activity may be negatively impacting their health because they tend to consume large amounts of flavored and sports beverages containing sugar, according to research at The Michael & Susan Dell Center for Healthy Living at The University of Texas Health Science Center at Houston (UTHealth).

"Children and parents associate these drinks with a healthy lifestyle despite their increased amount of sugar and lack of nutritional value," said Nalini Ranjit, Ph.D., principal investigator and assistant professor of behavioral sciences at the UTHealth School of Public Health. The study will be published in the October issue of *Pediatrics*.

Researchers examined the association between sugar-sweetened beverage consumption, unhealthy and healthy foods and physical activity levels of 8th and 11th grade Texas students to determine the relationship between beverage consumption and other behaviors. Sugar-sweetened beverages are drinks that contain added caloric sweeteners such as sugar or high-fructose corn syrup, including a large variety of carbonated and noncarbonated drinks but excluding 100 percent fruit juice.

Flavored or sports beverage drink consumption increased with levels of healthy food consumption and physical activity when compared to high soda consumption, which was associated with lower levels of these healthy behaviors.

"Sports drinks have been successfully marketed as beverages consistent with a healthy lifestyle, which has set them apart from sodas," said Ranjit, "However they have minimal fruit juice and

contain unnecessary calories." Study results suggest there is a popular misperception of flavored and sports beverages being consistent with a healthy lifestyle, despite their sugary content.

Researchers in the study found that 28 percent of Texas children are consuming sugar-sweetened beverages three or more times a day. Among boys, the average daily consumption of soda increased from 8th to 11th grade while consumption of non-carbonated flavored and sports beverages remained steady. Soda consumption in girls remained steady from 8th to 11th grade and consumption of non-carbonated flavored and sports beverages declined substantially. Of the ethnicities of the children involved in the study, researchers found black children had lower soda consumption but considerably higher flavored and sports beverage consumption compared to Hispanic or white children.

Nearly 17 percent of children and adolescents ages 2 to 19 in the United States are in the 95 percentile of the BMI-for-age growth charts, according to the Centers for Disease Control and Prevention. There is widespread consensus that the increasing consumption of sugar-sweetened beverages is associated with high levels of obesity nationwide, according to the study.

"High levels of consumption of these beverages has the potential to increase weight gain," said Ranjit, "Drinking just one can of soda or other sugary beverage a day could lead to more than a 10-pound weight gain in a year." Nutritionists at UTHealth also caution that children should have no more than one glass of fruit juice, even 100 percent fruit juice, a day, because of the high calories. Sports drinks should be reserved only for extreme exercise. Otherwise, children should drink water to replenish lost fluids, they say, and whole fruit is a better nutritional choice than fruit juice.

Ranjit recommends adolescents and their parents educate themselves on the sugar content of flavored and sports beverages. "Consuming large amounts of flavored and sports beverages could undo the effects of all that exercise," said Ranjit. "Recognizing these misperceptions is important to obesity prevention efforts."

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