Fresh
VOLUME 19 • July, 2010
Analytical Science

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E D I T O R I A L

Dear Reader

We at PerkinElmer are trying to get in touch with you through various channels. The Fresh has become the face for customers in the subcontinent. We appreciate the suggestions and feed back for improvements and appreciations from various readers and customers. Though PerkinElmer provide the scientific solutions make human and environmental health better; we bring you the topics of the interest of all the cross section of the people.

In this issue of July 2010; you will find an article on Pre-natal screening; where the expecting mothers can ensure the child to be free of genetic disorders. The growing population in the globe should be having good health and better life; and PerkinElmer corporation continue to develop and provide technological solutions to provide safer water, safer food and safer medicines to make healthy world.

The modern food habits include synthetic and natural colors; how safe they are to consume? Read in the article. The lifestyle also s making human being to lead towards the nutraceuticals and dietary supplements which are being consumed by the developed world. The regulations are getting more stringent to test them; where PerkinElmer is providing the technologies and solutions to meet them.

We hope you will like this Fresh. We welcome your suggestions and feed backs.

WHAT'S Fresh inside...

Article

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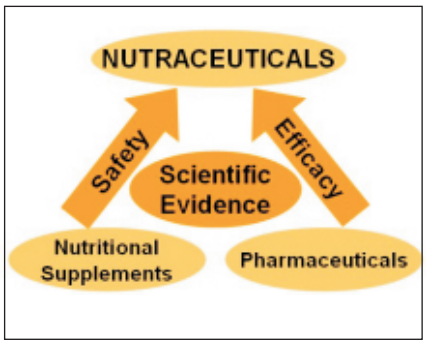
Nutraceuticals – An emerging health habit

Nutraceuticals means "Food, or parts of food, that provide medical or health benefits, including the prevention and treatment of disease."
This can be classified in the following categories



Dietary Supplements including botanicals:

- Vitamins, minerals, co-enzyme Q, carnitine
- Gingsing, Gingko Biloba, Saint John's Wort, Saw Palmetto

Functional Foods:

- Oats, bran, psyllium and lignin's for heart disease and colon cancer
- Prebiotics - oligofructose for control of intestinal flora
- Omega-3 milk in prevention of heart disease
- Canola oil with lowered triglycerides for cholesterol reduction
- Stanols (Benecol) in reduction of cholesterol adsorption

Medicinal Foods:

- Transgenic cows and lactoferrin for immune enhancement
- Transgenic plants for oral vaccination against infectious diseases
- Health bars with added medications

Reasons for Rapid Emergence of Nutraceuticals

Consumers dissatisfied with drug costs and conventional healthcare are turning to unproven and untested natural products for treatment and prevention.

- Chronic diseases with poor therapeutic alternatives
- Hurried impersonal exchanges with providers stressed by managed care
- Desire for personalized medicines
- Large population trying to stave off the effects of aging
- New focus on preventive medicine
- Public perception that "natural is good"

Many people use alternative medical therapies, Nutraceuticals (herbals /botanicals) account for a significant proportion.
Nutraceuticals, The Alternative Crop For Wellness And Prevention Request Fund an initiative at the National Nutraceuticals Center that brings together industry, academia, and government to jointly apply cost-effective scientific approaches in agricultural and manufacturing efforts to make Nutraceuticals a highly profitable crop. The Center will disseminate the results to the general

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Just ONE POTENT PUNCE of VIBE is EQUIVALENT to nutrients found in:

11 Tomatoes Vitamin A	**10 cups** Green beans Folate	**30** Broccoli Selenium	**19** Wheat slices Zinc	**96** Blueberries Antioxidants
				
				
71 Cantaloupe Vitamin E	**Certified Organic** Aloe Vera gel	**25** Asparagus Calcium	**5 cups** Green tea (EGCG content)	**12** Orange slices Vitamin C

public and to healthcare, agriculture, and manufacturing industries and will focus on:

- Basic and clinical research to determine key plant components, effectiveness, dosage levels, and interactions with other Nutraceuticals & pharmaceuticals.
- Basic agricultural and plant biotechnology studies to determine how to grow Nutraceuticals, maximize key ingredients, and develop a cash crop potential.
- Quality assurance and standards development at all levels of supply/manufacturing.

Nutraceuticals are prescribed because a healthy diet is hard to find. Many people like to think that they eat a healthy diet. They think they have everything their bodies need for good health. Studies have shown that many people can describe a healthy diet. But when they write down what they actually eat, it's not a nutritionally complete diet.

Other studies have shown that the standard diet has more than enough calories. But the food does not have the right amounts of vitamins and minerals. It doesn't have enough fiber, carbohydrate, or protein. All of these things are needed to really be healthy.

Supplemental nutrition is needed because most people do not eat an ideal diet. Over time, your body will begin to show the effects of a less-than-perfect diet. Feeling tired or having colds too often are some of the signals of nutritional deficiencies in your body tissues. Regular joint stiffness and body aches can also be signs of decreased nutritional health. When you are faced with extra challenges like injury or surgery, nutraceuticals are a quick and reliable way to flood your system with chemical elements. For a short time, you will get all you need to restore, repair, and return to excellent health.

An eye opener from the developed world

- The healthcare costs are growing upward, while morbidity and mortality measures are not correspondingly the highest.
- Consumers dissatisfied with drug costs and conventional healthcare are turning to unproven and untested natural products, Nutraceuticals, for treatment and prevention.
- Supply of "certified" products is limited and demand exceeds supply.

Benefits of Nutraceuticals in Medicine

- Higher confidence in product quality and effectiveness
- Improved market for nutraceuticals products
- Increased public awareness
- Increased healthcare industry Awareness
- Establishment of a self-governing Agenda

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Nutraceuticals looked upon as an Alternative Crop

Nutraceuticals, foods or food components that help in prevention or treatment of disease, are made from herbal/botanical raw materials. This is a rapidly growing industry (7-12% per year). With extensive anecdotal data on exciting health results, Nutraceuticals promise significant contributions to disease prevention. Nutraceuticals crops can replace or complement traditional crops and, with vertical integration into agriculture and manufacturing, will impact rural economic development. There are, however, barriers to the introduction of Nutraceuticals crops:

- Common belief that only rare herbals/botanicals are effective.
- Little data on the cultivation and adaptability of popular herbals /botanicals.
- Little data on how to make Nutraceuticals a cash crop equal to more traditional crops.
- Wide range of manufacturing processes with no attention to product extraction, effective "shelf-life", storage, ingredient standards or contamination.
- Stricter regulations which could further regulate the supply of natural products.

Food and drugs administrations from all over the world are engaged in putting regulations in place for the Nutraceuticals. US Pharmacopeia has incorporated the norms in their recent release of Ch.2322 for the elemental contents in the dietary supplements. New methodologies and modern instrumentations are being used to make the consumption of Nutraceuticals safer for the human being and to make healthy population.

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Prenatal Screening

Be informed… when it matters the most.

Did you know that you can be informed about your baby's health before she is born? Learn more about PerkinElmer Prenatal Screening.

As the name suggests, "Prenatal Screening" is basically checking for diseases or conditions in a fetus or embryo before it is born. The aim is to assess the risk of birth defects such as Down syndrome, chromosome abnormalities, neural tube defects and other conditions. All couples have approximately 2% risk of having a child with birth defects.

At various stages of pregnancy, the doctor may recommend different tests to check on the health of the mother and to ensure that the baby is developing normally. **Internationally, one such test which is mandatory in many countries is the Prenatal Screening test to check the chromosomal condition of the baby.**

Given below are answers to some **Frequently Asked Questions on Prenatal Screening.**

What are chromosome conditions?

A chromosome condition occurs when there are extra or missing chromosomes, or a rearrangement of pieces of chromosomes. Intellectual and physical development can be affected as a result of this chromosome difference.

Down syndrome, also known as trisomy 21 is the most common chromosome condition. People with Down syndrome have 47 instead of 46 chromosome, having an extra chromosome 21.

Why should I have prenatal testing?

While most babies are born healthy, only 2 or 3 out of 100 newborns may have major birth defects. For the majority of babies the cause is unknown. However, there are certain birth defects that can be tested for prenatally before a baby is born. These include Down syndrome, trisomy 18, trisomy 13, and open neural tube defects.

International guidelines in many countries such as USA, Canada, UK, Netherlands, Spain & France, recommend prenatal testing be offered to all pregnant women, regardless of age.

The First trimester screening test is performed to rule out the possibility that you are at increased risk of having a baby with Down syndrome, trisomy 18 or trisomy 13.

What is Down syndrome?

Down syndrome also known as trisomy 21, is the most commonly occurring chromosome abnormality. It is caused by having an extra copy of chromosome 21. The incidence of Down syndrome is about 1 in 700 live births. (Ref: Trends Pharmacol Sci. 2010 Feb; 31(2) : 66-73)

Down syndrome often results in developmental problems and a higher risk of conditions including heart defects, mental retardation, breathing and hearing problems, and childhood leukemia. The severity of these conditions varies greatly from individual to individual. No treatment is available for Down syndrome. Counseling and support to manage the baby is the only hope.

What is trisomy 18 & trisomy 13?

Trisomy 18 or Edward's syndrome and trisomy 13 or Patau syndrome are comparatively rare and severe forms of chromosomal abnormality associated with severe mental and physical problems with life threatening complications in a baby's first months

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and years. No treatment is available for trisomy 18 or trisomy 13.

Why is prenatal testing important?

Being tested during pregnancy will allow you to be informed about the health of your baby, even before she is born. The information you receive will be extremely valuable in helping you plan for your baby's birth. You and your doctor will also be able to decide if you need more testing later in your pregnancy. If you learn you will have a baby with one of these birth defects, you can proactively prepare your family for the future by making important medical and financial decisions about care.

How is prenatal screening performed?

Various methods of prenatal screening are practiced. The screening may be done in the first trimester, second trimester or in both trimesters. The screening takes into account your age, a blood test and usually involves a special ultrasound test.

First trimester screening

A popular and advantageous model of prenatal testing is the combined first trimester screening test. It involves a simple blood test done on you when the fetus is between 9 weeks and 13 weeks 6 days of age. Your blood is analyzed for 2 markers normally found in all pregnant women. The blood test is followed by an ultrasound examination, when the fetus is between 11 weeks, 1 day and 13 weeks, 6 days of age. The ultrasound confirms your baby's age and measures the amount of fluid behind the baby's neck (Nuchal Transluscency scan or NT scan).

Results of the blood test and the ultrasound are combined to estimate the risk of Down syndrome, trisomy 18, and trisomy 13.

- About 90% of Down syndrome cases are detected
- About 95% of trisomy 18 and trisomy 13 cases are detected.

Second trimester screening

If you have missed the opportunity of first trimester screening, you should undergo the second trimester screening. The detection rates for Down syndrome is lower than the first trimester screening (around 65-70%) but it also checks for open neural tube defects (ONTDs). **All women should be tested for ONTDs in the second trimester.** ONTDs, such as spina bifida, result from improper development of the brain and spinal cord, which may cause an opening to remain along the spine or head after the baby is born. ONTDs can be detected through a maternal serum alpha-fetoprotein (MSAFP) screening. Blood is drawn from the mother's arm and sent to the lab for analysis. High levels of AFP in the blood may indicate that the developing fetus has an ONTD.

What do the results of the prenatal screen mean?

Low risk: A low risk report means your baby is at low risk for Down syndrome, trisomy 18, or trisomy 13. If you get a low risk report, your doctor would usually stop further testing to rule out trisomy. A low risk does not completely eliminate the possibility your baby may have Down syndrome, trisomy 18, or trisomy 13.

High risk: A high risk report means your baby is at increased risk for Down syndrome, trisomy 18, or trisomy 13. When you receive this result, you and your doctor may choose to consider additional diagnostic testing options. **Please remember, a screening test does not confirm trisomy. Hence, a high risk report should be followed by a confirmatory test like chorionic villus sampling (CVS) or amniocentesis.**

Just remember

- Most babies are born healthy.
- Early, more accurate screening gives peace of mind during pregnancy.

To know more about the PerkinElmer prenatal screening test, SMS 'CARE' to 53636 or Call on toll free no. 18002092233 or email 'CARE' to marketing.india@perkinelmer.com

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Coloring Agents as Food Additive

A color additive is any die, pigment, or substance that imparts color when added or applied to a food, drug, cosmetic, or human body. Food additives have been used by mankind for centuries. Salt, sugar and vinegar were among the first and used to preserve foods. In the past 30 years, however, with the advent of processed foods, there has been a massive explosion in the chemical adulteration of foods with additives. Considerable controversy has been associated with the potential threats and possible benefits of food additives.

Coloring agents are added to foods because of the sensory appeal they provide, for the purpose of making processed foods look more appetizing. For example, colors are used in baked products, candies, dairy products such as butter, margarine and ice cream, gelatin desserts, jams and jellies in order to improve their appearance. It has been said that people "eat with their eyes" as well as their plates.

There are thousands of foods that use colors to maker them looks appetizing and attractive. The primary reasons for adding coloring agents include the following:

- Offsetting color loss due to exposure to air, light, moisture and storage
- To correct natural variations in color or enhance color
- To provide visual appeal to wholesome and nutritious foods
- To provide color to foods that would otherwise be colorless, including "fun foods" and special foods for various holidays

Pigment may be derived from natural sources such as plant, mineral or animal sources primarily the former. Some of the same ingredients added to foods for their health benefits, also offer "natural" coloring. These includes anthocyanins, carotenoids, chlorophylls, foods such as beets (betalains), cabbage, tomatoes (lycopene), and number of other flowers, fruits and vegetables.

Synthetic coloring agents are generally less expensive than the natural colorants, are more intense, and have better coloring power, uniformity, and stability when exposed to environmental conditions such as heat and light. They may be water soluble or made water insoluble by the addition of aluminum hydroxide. Only small quantities of granules, a paste, a power or solution are needed in foods to achieve the desired color effects.

The FDA separates color additives for foods into two categories: Certifiable or Exempt from Certification. Cerfiable color additives are man-made. They must be tested for consumption safety and approved or certified by the FDA to be added to their list. There are nine certified color additives on the FDA approved list from which a multitude of colors can be mixed.

Certified color additives are known as dyes or lakes. Dyes are water-soluble and be used in beverages, dry mixes, baked goods, confections, dairy products, pet foods, and other products. Lakes will not dissolve in

water and are more stable than dyes. They are best-used in foods containing fats and oils or those foods which do not contain a lot of moisture to dissolve dyes, such as tablets, cake mixes, hard candies, and chewing gum.

Color Additives Certifiable for Food Use (January, 1993)

Name/Common Name	Hue	Common Food Uses
FD&C Blue No. 1Brilliant Blue FCF	Bright blue	Beverages, dairy products, dessert powders, jellies, confections, condiments, icings, syrups, extracts
FD&C Blue No. 2Indigotine	Royal blue	Baked goods, cereals, snack foods, ice cream, confections, cherries
FD&C Green No. 3Fast Green FCF	Sea green	Beverages, puddings, ice cream, sherbet, cherries, confections, baked goods, dairy products
FD&C Red No. 40Allura Red AC	Orange-red	Gelatins, puddings, dairy products, confections, beverages, condiments
FD&C Red No. 3Erythrosine	Cherry red	Cherries in fruit cocktail and in canned fruits for salads, confections, baked goods, dairy products, snack foods
FD&C Yellow No. 5Tartrazine	Lemon yellow	Custards, beverages, ice cream, confections, preserves, cereals
FD&C Yellow No. 6Sunset Yellow	Orange	Cereals, baked goods, snack foods, ice cream, beverages, dessert powders, confections

Exempt from Certification are those color additives derived from natural resources which are known to be safe to consume. These exempt additives come from such sources as vegetables, minerals, animals as well as man-made concoctions from natural foodstuffs. Normally man-made color additives have no flavor, while colors made from natural foods may well impart some unexpected flavor and color results. Keep this in mind if you plan on using homemade natural color additives at home.

Colors Exempt from Certification

Annatto extract	Beta-carotene	B-Apo-8' carotenal*
Canthaxanthin	Beet powder	Carrot oil
Caramel color	Cottonseed flour, toastedpartially defatted, cooked	Cochineal extract (carmine)
Fruit juice	Ferrous gluconate*	Grape skin extract* (enocianina)
Grape color extract*	Paprika oleoresin	Paprika
Saffron	Riboflavin	Turmeric
Titanium dioxide*	Vegetable juice	Turmeric oleoresin

*Restricted to specific uses

Chemicals are purposely added to food to change its color, preserve it, prevent rancidity, keep fats emulsified, and foods stable. Most of the chemicals are synthetic compounds, some with known negative health effects. But more importantly, we don't really know

what the long-term consequences of consuming such large amounts of additives are. It is therefore best to avoid all additives, with a few notable exceptions.

Since foods without preservatives are more likely to spoil, it's important to buy fresh produce and consume it relatively quickly.

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TESTED COLORS SAFER COLORS

Flexar FX-10 HRLC solutions for Synthetic food dyes analysis in

Alcoholic and Non alcoholic beverages and other food colors.

For more details please log on www.perkinelmer.com