Rediscover

Health & Wellness

with

Phytonutrients and Fibre

Paul Kramer

Fruits and vegetables make up a huge part of a healthy diet.

They contain essential vitamins, minerals, and antioxidants that keep your body functioning well and protect it against harmful free radicals. To get all your fruits and veggies, consider creative ways to add them to your diet.

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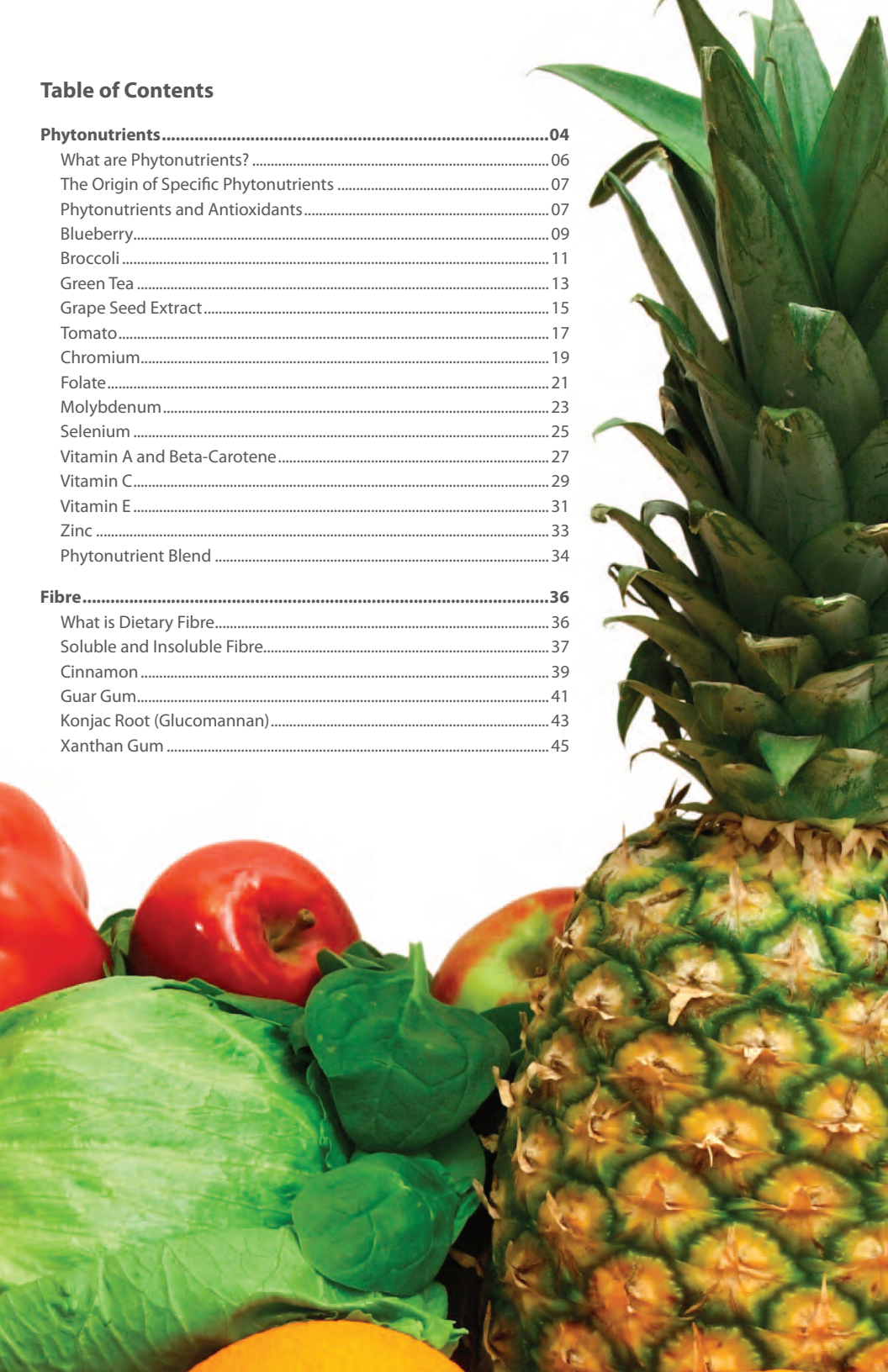

PHYTONUTRIENTS

What are Phytonutrients?

"Phyto" means plant and the term "phytonutrient" applies to nutritional substances found in plants. Beside the macro nutrients, like carbohydrate, fats and protein, plants also contain many beneficial nutrients in the form of vitamins and minerals, and thousands of phytochemicals (which are nature's creations).

Vitamins play an important role in helping us stay healthy, aiding our cells in the production of energy, and protecting the tissues in our body from damage. There are lots of discussions and research being done to determine if and how vitamins help to prevent certain diseases or maintain good health.

Minerals are inorganic substances found in rocks and ore, some of which are essential to human life. Minerals enter our diets via plants and through animals that feed on plants.[2] Like vitamins, minerals are needed in small quantities, without them the body cannot properly function.[2]

In just one serving of vegetables there may be over 100 different kinds of phytochemicals, which include carotenoids, capsaicin, flavonoids, indoles, isoflavones, and protease inhibitors. Different plants supply different kinds and amounts of phytochemicals.[1]

Phenolic compounds, such as flavonoids, are the largest category of phytochemicals and occur naturally in fruits, vegetables, herbs, nuts, seeds, flowers and barks. Plants produce these phytochemicals to protect their own health, longevity, and reproduction.[2]

Vitamins, minerals and phytochemicals produce a synergistic effect. That is they increase the positive effect each one has on its own. For example, it is well-known that vitamin D is important for good bone health, because it aids in the absorption and utilization of calcium.[3] Studies show vitamin E and selenium works together and may help to prevent breast cancer.[5] Vitamin C may increase iron and chromium absorption.[3] Grape seed extract and chromium together is known to help reduce total cholesterol and LDL cholesterol.[3]

PHYTONUTRIENTS

The Origin of Specific Phytonutrients

Phytonutrients are nutrients derived from plant sources, that includes phytochemicals, vitamins, minerals, fibres etc. **The most well known phytonutrients are Flavonoids, EGCG, OPCs, Carotenoids and Lycopene.**

Flavonoids are a group of health-promoting compounds found in plants. Some flavonoids have antioxidant, antibacterial, antiviral, anti-inflammatory, and cardio protective functions. Flavonoids may also help protect against heart disease by relaxing the arteries.[1] EGCG and catechins in Green tea are known for their significant antioxidants properties.[1] Tea catechins acts as an antioxidant protection by inhibiting free radicals.[3] Red grapes are rich in oligomeric proanthocyanidins (OPCs). The antioxidant properties of OPCs have made products containing these extracts candidate therapies for a wide range of human diseases.[4] Fruits like mangos and tomatoes are rich in carotenoids which are responsible for the red, orange and yellow plant pigments that give fruits and vegetables their vivid colours. They are also found in dark-green vegetables, such as spinach and broccoli.[1] Carotenoids play a key role in the support of the immune system and enhancement in humans.[1] In the 1990s, researchers found lycopene significantly protected cells from DNA damage.[1] Lycopene can be found in tomatoes and pink grapefruit.

Phytonutrients and Antioxidants

Phytonutrients act as a protective shield around plants, and we are just beginning to learn that there are hundreds, even thousands of phytonutrients that may also help us in similar ways. Colour is indicative of the amount and type of phytonutrient that food contains so try to **"eat a rainbow" of different fruits, vegetables, and other foods in order to obtain a high level and variety of antioxidants in your diet.** Since most people don't eat enough fresh fruits/veggies every day, phytonutrient/antioxidant supplements are necessary.

Antioxidants are unique nutrient compounds such as certain vitamins, minerals, and various phytonutrients that protect and repair cells from free radical damage, or oxidation. This protection reduces the risk for many health problems including heart disease, cancer, diabetes, and arthritis. Phytonutrients are essentially "plant-nutrients" that exert certain beneficial effects, such as repairing damage to cells, helping build our immune system, and acting as antioxidants.

References:

1. Kim O'Neill & Byron Murray (2002) Power Plants. Brighan Young University Cancer Research Center.
2. Lyndel Costain (2001). Super Nutrients Handbook. New York
3. Natural Standard: The Authority on Integrative Medicine. www.naturalstandard.com
4. Thorne research. Oligomeric Proanthocyanidins (OPCs) monograph. Alternative Medicine Review. Volume 8, Number 4. 2003
5. Paula M. Horvath and Clement Ipz. Synergistic Effect of Vitamin E and Selenium in the Chemoprevention of Mammary Carcinogenesis in Rats. Cancer Research 43, 5335-5341, November 1983

BLUEBERRY

Blueberry

Common name: Blueberry
Botanical name: *Vaccinium Angustifolium*
Part of use: Fruit

Blueberries are native to North America. Blueberries were domesticated in the 20th century, and were collected by the North American Indians and then later by European settlers. Blueberries hold a special place in the foods of North America, since more species of blueberries are native to North America than any other continent. Thanks however, to increasing cultivation blueberries are now enjoyed throughout the year on many of the world's continents. Blueberry flavours range from mildly sweet (cultivated) to tart and tangy (wild), blueberries are nutritional stars bursting with nutrition and flavor while being very low in calories.

Blueberries are rich in phenolic acid and flavonoid phytochemicals, and have the highest antioxidant ability of all fresh fruits.[2] Half a cup of blueberries yields as much antioxidant power as five serving of other fruits and vegetables.[2] Blueberries also have effective anti-inflammatory, anti-blood clotting, and anti-bacterial effects.[2]

Blueberries are a good source of vitamin C, fibre and folate. Other nutrients include: Beta carotene, Niacin, Pantothenic acid, Riboflavin, Thiamin, Vitamin B-6, Vitamin K, Tocopherols, Amino acids, Lutein and Zeaxanthin.[1]

Health Benefits of Blueberries

Blueberries and blood vessels
Blueberries protect the blood vessels and support and strengthen the small blood vessels. The anti-inflammatory action of blueberries helps to control the integrity of capillaries (small blood vessels) by stopping free radical damage from making them leaky. Researchers suggest this effect might help to protect against capillary damage associated with diabetes, which can lead to eye and kidney problems.[1]

Anti-aging
Blueberries may delay the effects of aging.[1] A study showed that blueberries could reverse some signs of aging in rats. A diet on blueberry extract seemed to reverse the normal deterioration in motor skills associated with aging.[1] Older rats who ate the equivalent of half a cup of blueberries daily for eight weeks showed an improvement in age-related decline in short-term memory and coordination. [2]

Blueberries are rich in the flavonoid anthocyanin, which gives the blueberry its deep blue colouring.[1] Blueberries are ranked the highest in berries because they contain the most oxygen radical absorbance capacity (ORAC).

References:
1. Kim O'Neill & Byron Murray (2002) Power Plants. Brighan Young University Cancer Research Center.
2. Lyndel Costain (2001). Super Nutrients Handbook. New York

BROCCOLI

Broccoli

Common name: Broccoli
Botanical name: *Brassica oleracea var. italica*
Part of use: flowers, stems, leaves

Broccoli is a member of the cabbage family, and is closely related to cauliflower. Its cultivation originated in Italy. *Broccolo,* its Italian name, means "cabbage sprout." Broccoli's name is derived from the Latin word *brachium,* which means branch or arm, a reflection of its tree-like shape that features a compact head of florets attached by small stems to a larger stalk. Because of its different components, this vegetable provides a complex of tastes and textures, ranging from soft and flowery (the florets) to fibrous and crunchy (the stem and stalk). Its colour can range from deep sage to dark green to purplish-green, depending upon the variety. One of the most popular types of broccoli sold in North America is known as Italian green, or Calabrese, named after the Italian province of Calabria where it first grew.[2]

According to the American Cancer Society and the Canadian Food Guide to Healthy Eating, it is recommended to include the Brassica vegetables in our daily diets due to their nutritional value and medicinal properties.[1]

Broccoli has many nutrients and biochemical substances, such as vitamins, minerals, fiber, carotenoids, bioflavonoids, sulfur, dithiolethiones, and glucosinolates. More importantly, these vegetables enhance the body's cancer-fighting abilities, possess antioxidant effects, and remove harmful chemical additives, including radiation.[1]

Health Benefits of Broccoli

Cancer

In the early 1950's, researchers found that those who consumed even the smallest amount of broccoli reduced their risk of cancer significantly.[1] Broccoli is an excellent source of phytochemical sulforaphane, which can inhibit the action of cancer causing agents.[2] The cancer fighting abilities of sulforaphane may help to explain studies that link regular intake of cruciferous vegetables, such as broccoli, which is known to reduce the risk of cancer in the bowel, stomach, breast, lungs, and kidneys.[2]

Antioxidant effects

Broccoli contains Vitamin E, Vitamin C, carotenes, flavonoids (quercetin), minerals, and other phytochemicals, and act as direct antioxidants that neutralize free radical molecules.[1] Evidence suggests that a diet rich in fruits and vegetables, especially the Brassica vegetables, may increase plasma oxygen radical absorbance capacity (ORAC) and Vitamin E concentrations.[1]

References:
1. Natural Standard: The Authority on Integrative Medicine. www.naturalstandard.com
2. http://whfoods.org/genpage.php?dbid=9&tname=foodspice

GREEN TEA

Green Tea

Common name: Green tea extract, *Camellia sinensis* extract, *Thea sinensis* extract
Botanical name: *Camellia sinensis ; Thea sinensis L. (Theaceae)*
Part of use: Leaf

Tea ranks second only to water as a major component of fluid intake worldwide and has been considered a health-promoting beverage since ancient times. It was introduced to Western cultures in the 6th Century.[1] Green tea is the fourth most commonly used dietary supplement in the United States.[1] It is grown and consumed primarily in China, Japan, and countries in North Africa and the Middle East. Green tea is made by briefly steaming the just harvested leaves, rendering them soft and pliable, preventing them from oxidation/ fermenting or changing color.

The components of Green tea include caffeine, polyphenols, trace elements, and vitamins. Major polyphenols include catechins, epicatechin, epicatechin gallate, epigallocatechin-3-gallate (EGCG), and proanthocyanidins.[1]

Health Benefits of Green Tea

Antioxidant effects
The secret of green tea lies in the fact that it is rich in catechin polyphenols, particularly epigallocatechin gallate (EGCG). EGCG is a powerful anti-oxidant: It inhibits the growth of cancer cells and kills cancer cells without harming healthy tissue. It is also effective in lowering LDL cholesterol levels, and inhibiting the abnormal formation of blood clots. The latter takes on added importance when you consider that thrombosis (the formation of abnormal blood clots) is the leading cause of heart attacks and stroke.

Cardiovascular effects
Catechins in Green tea may prevent cardiovascular diseases by preventing LDL cholesterol from oxidative damage due to its free radical quenching and metal chelating abilities.[1] A Japanese study showed that drinking green tea regularly may significantly lower cholesterol levels. This may be explained partly due to the ability of 'flavanols' to inhibit cholesterol absorption into the body.[2]

Other benefits
Green tea is used as an antioxidant for chronic disease prevention.[1] It can help prevent tooth decay. Just as its bacteria-destroying abilities can help prevent food poisoning, it can also kill the bacteria that cause dental plaque. Traditional health claims for green tea include: Improving blood and urine flow, assisting in the elimination of alcohol and toxins, relieving joint pain, and improving resistance to diseases. Green tea is an accepted cancer preventive agent in Japan and Fiji. Traditional Chinese medicine practitioners use green tea as a cardiotonic, central nervous system stimulant, and diuretic. In India, green tea infusions are used to treat fungal infections.

References
1. Natural Standard: The Authority on Integrative Medicine. www.naturalstandard.com
2. Lyndel Costain (2001). Super Nutrients Handbook. New York

GRAPE SEED EXTRACT

Grape seed extract

Common name: Grape seed extract
Botanical name: *Vitis vinifera*
Part of use: Seeds

Red Grapes are rich in colourful flavonoids called anthocyanins and their colourless precursors called oligomeric proanthocyanidins (OPCs).[1] The ability of OPCs to complex protein is referred to as astringency and is responsible for the "puckery" sensation when tea or red wine comes in contact with saliva and buccal tissue.[2]

Health Benefits of Grape seed extract

Antioxidant

Grape seed extract is a source of antioxidant for the maintenance of good health.[3] The OPCs in grape seed extract has potent antioxidative properties that fight against free radical and oxidative stress. Cathecins components of grape seed extract, helps to reduce allergic responses by inhibiting enzymes involved in the formation of histamine – therby helping to reduce symptoms of allergies and excess histamine in the stomach that may lead to stomach problems. Researches on OPCs show it inhibits chemically-induced lipid peroxidation.

Chronic Venous Insufficiency (CVI)

Grape seed extract helps to relieve symptoms related to non-complicated chronic venous insufficiency (CVI), such as the sensation of swelling, heaviness and tingling of the legs.[3] In Europe, some researchers use OPCs to treat various vascular disorders, such as varicose veins, venous insufficiency, capillary fragility, and retinopathies. Several clinical trials have confirmed the beneficial effects of OPC use in treating vascular disorders.[2]

Other benefits

Edema is swelling caused by surgery or an injury, and seems to go away faster when people take grape seed extract. Edema is common after breast cancer surgery, and one double blind placebo controlled study found that breast cancer patients who took 600 mg of grape seed extract daily after surgery for 6 months, had less edema and pain than those who took placebo. Another study found that people who took grape seed extract after experiencing a sports injury had less swelling than those who took placebo.[4]

Safety

Currently, grape seed extract is available as a dietary supplement in the United States. Based on historical use and available research, it appears that grape seed extract is generally well tolerated.[1]

References:
1. Natural Standard: The Authority on Integrative Medicine. www.naturalstandard.com
2. Thorne research. Oligomeric Proanthocyanidins (OPCs) monograph. Alternative Medicine Review. Volume 8, Number 4. 2003
3. Health Canada Compendial Monograph
4. http://www.umm.edu/altmed/articles/grape-seed-000254.htm

TOMATO

Tomato

Common name: Tomato
Botanical name: *Lycopersicon esculentum*
Part of use: Fruit

The tomato is native to the Andes and was spread throughout Central America by the Spanish Conquistadors.[1] Tomatoes are actually fruits, but most often thought of as vegetables because they are usually prepared and served like vegetables, which is why they are often categorized as such.[1]

One medium tomato has 35 calories and provides 40 percent of the RDA of vitamin C.[1] 85 percent of lycopene in our diet comes from tomatoes and tomato products.[2] Lycopene is an antioxidant that is known to reduce the risk of cancer and other diseases.[1]

In terms of phytonutrients, tomatoes are basically off the chart containing Flavonones, Flavonols, Hydroxycinnamic acids, Carotenoids, Glycosides and Fatty acid derivatives. Specific antioxidant nutrients found in tomatoes, whole tomato extracts, and overall dietary intake of tomatoes have all been associated with antioxidant protection.

Tomatoes are a treasure of riches: They also provide an excellent amount of Vitamin C and beta-carotene, a very good amount of the mineral manganese, and a good amount of Vitamin E.

Health Benefits of Tomatoes

Heart Disease
Lycopene is linked to a reduced risk of heart attacks.[2] A study in Europe showed that men with high levels of lycopene in their bodies had half the risk of heart attacks than those with low levels.[2]

Prostate Cancer
Tomatoes are linked with lower prostate cancer risk.[1] A study of 47,000 American men showed that those who ate tomato products 10 or more times a week had 35 percent less risk of developing cancer.

Breast Cancer
Lycopene in tomatoes helps to reduce the risks of breast cancer. Results from a study in *Cancer Causes & Control* suggested "that lycopene and other plasma-carotenoids may reduce the risk of developing breast cancer and that menopausal status has an impact on the mechanisms involved."

References:
1. Kim O'Neill & Byron Murray (2002) Power Plants. Brighan Young University Cancer Research Center.
2. Lyndel Costain (2001). Super Nutrients Handbook. New York

CHROMIUM

Chromium

Common Name: Chromium
Proper name: *Chromium*
Source material(s): Chromium Chelate

Chromium is an essential trace element found in foods and supplements and appears to have very low toxicity and a wide margin of safety. Benefits of chromium supplementation appear to be related to several factors, including chromium intake/status and a degree of glucose intolerance.[1] Chromium supplement has gained popularity among Americans, especially those seeking a weight-loss program.[1] Good chromium food sources include whole grain breads and cereals, lean meats, cheeses, and some spices, such as black pepper and thyme. Brewer's yeast is also rich in chromium.

Health Benefits of Chromium

Blood sugar balance and Diabetes mellitus
Chromium plays an important role in the regulation of insulin in blood glucose. It acts as a cofactor for a number of enzymes involved in energy production and has been used to treat diabetes. Chromium treatment has also been reported to improve glycemic control in patients with type 2 diabetes and may also help regulate blood sugar in patients with low blood sugar disorders.[1]

Cholesterol lowering
People with blocked arteries may have low Chromium levels, which can lead to heart disease. Research studies on people with raised blood cholesterol levels taking 200 mcg of chromium supplement daily showed evidence of reduced levels of LDL or "bad "cholesterol. [2]

Why take this supplement?
People 55 years and older who exercise regularly may have increased losses of chromium. Also people who eat diets rich in processed foods containing few good chromium sources, or has a poor ability to balance blood sugar levels in their body, or those that have a tendency to gain weight, may benefit from this supplement. [2]

Safety
Because of the potential for side effects and interactions with medications, you should take dietary supplements only under the supervision of a knowledgeable health care provider.

References:
1. Natural Standard: The Authority on Integrative Medicine. www.naturalstandard.com
2. Amanda Ursell (2001).Vitamin & Minerals Handbook. New York.

FOLATE

Folate

Common Name: Folate
Proper name: *Folate*
Source material(s): Folacin, Folate, Folic acid, Vitamin B9

Folate and folic acid are forms of the water-soluble B9 vitamin.[1] It is crucial for the correct development of the body's spinal cord within the first three months of conception.[2] Folate occurs naturally in food, and folic acid is the synthetic form of this vitamin.[1] Folic acid is better absorbed by the body than folate.[2] It is effective at increasing folate levels in the blood and decreasing symptoms associated with inadequate folate status.[1] Folic acid is benefical for cognitive enhancement, cancer, psychiatric illnesses, and cardiovascular conditions.[1]

Health Benefits of Folate

Neural Tube Defects
Studies have shown folate to be related to Neural Tube Defects (NTDs). NTDs result when the tissues of the brain, spinal cord, and the tissues that surround them fail to develop properly. The most frequently occurring NTD is known as spina bifida and results in the failure of the spine to close properly around the spinal cord. In the most severe cases the spinal cord can actually protrude out of the back. These complications bring with them an assortment of physical and neurological difficulties including varying levels of paralysis, incontinence, and mild learning disabilities.[3]

Anemia
Tiredness and fatigue caused by anemia, are related to folate deficiency. Anemia can be treated by taking folic acid supplements, and anemia during pregnancy can be treated with a combination of vitamin B12, folic acid, and iron.[2]

Why take this supplement?
Folic acid supplements are suggested for use in women of childbearing age in order to prevent neural tube defects (NTDs).[1] Men may also benefit from it to reduce the risk of atherosclerosis, caused by raised levels of homocysteine. Supplements could also be considered if the following symptoms occur: Tiredness, fatigue, eczema, cracked lips, anxiety, tension, poor memory, poor appetite, low moods and pale skin.[2]

Food Sources
Sources of folate include cereals, baked goods, leafy vegetables, okra, asparagus, fruits, legumes, yeast, mushrooms, organ meat (beef liver, kidney), orange juice, and tomato juice. Folic acid is frequently used in combination with B vitamins in vitamin B complex formulations.[1]

References:
1. Natural Standard: The Authority on Integrative Medicine. www.naturalstandard.com
2. Amanda Ursell (2001).Vitamin & Minerals Handbook. New York.
3. Lyndel Costain (2001). Super Nutrients Handbook. New York

MOLYBDENUM

Molybdenum

Common Name: Molybdenum
Proper name: *Molybdenum*
Source material (s): Molybdenum

Molybdenum is a transition metal, required by most organisms, including humans. Molybdenum is found in the earth's crust, soil, and plants. Higher levels are found in the soil of certain countries like Australia and New Zealand. In plants, molybdenum is found in higher concentrations in legumes and leafy vegetables.[1] Molybdenum is also found in animal livers and dairy products.[1]

Health Benefits of Molybdenum

Molybdenum is involved in the functioning of several important enzymes that help the body to make use of the energy from fats and carbohydrates in food. [2] In the human body, molybdenum is considered an essential trace element present in very small amounts in the body and plays an important role as a cofactor for several enzymes. It is involved in many important biological processes, possibly including development of the nervous system, waste processing in the kidneys, and energy production in cells. Molybdenum deficiency results in a decreased activity of this enzyme.[1]

Other benefits
Molybdenum and related compounds have been studied for its benefits in some diseases and conditions, such as cancer, macular degeneration, cataract prevention, cirrhosis, symptomatic Wilson's disease (an inherited disorder resulting in too much copper), hypertension, and stroke.[1] Further research is needed.

Why take this supplement?
Humans require very small amounts of molybdenum, and deficiency appears to happen only under the rarest of circumstances. Supplements may be useful for a person fed entirely through the veins for a very long time, or in a person with a genetic problem in which the body cannot use the molybdenum that is eaten in foods.[3] Supplementation may also be necessary for people who eat cereals and vegetables that have been grown on molybdenum depleted soils, and also in areas of soft water, which is low in this mineral.[2]

Food Sources
Legumes, leafy vegetables, livers and dairy products.[1]

References:
1. Natural Standard: The Authority on Integrative Medicine. www.naturalstandard.com
2. Amanda Ursell (2001).Vitamin & Minerals Handbook. New York.
3. http://www.cancer.org/Treatment/TreatmentsandSideEffects/ComplementaryandAlternativeMedicine/HerbsVitaminsandMinerals/molybdenum

SELENIUM

Selenium

Common Name: Selenium
Proper name: *Selenium*
Source material(s): Selenium Yeast

Selenium is an essential mineral found in small amounts in the body. Selenium can be found in some meats and seafood. Animals that eat grains or plants that grow in selenium-rich soil have higher levels of selenium in their muscles. Selenium also occurs naturally in foods such as whole grains, garlic, eggs and mushrooms.

Due today's farming method and nutrient depleted soil, it is important to supplement with selenium.[1] According to Dr. Richard A. Passwater, "Your body needs this mineral for the production of several important body compounds, including enzymes, or catalysts, which are involved in antioxidant protection and thyroid-hormone metabolism. It has been estimated that there are between 50 and 100 different selenium-containing proteins in the human body, including those that build heart muscle, red blood cells, and sperm."[1]

Health Benefits of Selenium

Immune system stimulant
Selenium supplements appear to stimulate the immune system, which in turn helps to protect the body from infections.[2]

Cancer
It is believed that selenium helps to fight diseases including cancer by neutralizing harmful elements called "free radicals," the unstable molecules that damage tissues.[1] It has also been shown that people who have diets rich in selenium have lower rates of cancer than those who have poor intakes of this mineral. Studies are currently assessing whether taking selenium supplements can actually help to reduce the risk of certain cancers, especially those of the lung, prostate gland, colon, and rectum.[2]

Heart Health
Selenium benefits the heart by helping to reduce LDL "bad" cholesterol buildup that clogs artery walls. It also helps to prevent damage to the artery walls from free radical attacks.[2]

Why take this supplement?
There are different forms of selenium in the nutraceutical market. Selenium can be purchased either in a salt form or in an organically bound form. The salts are sodium selenite and sodium selenate, both has been shown to be less bioavailable than organically bound forms of selenium. Organically bound forms of selenium are high selenium yeast or selenomethionine. High selenium yeast is produced in a consistent and controlled fermentation system. Yeast provides increased bioavailability for the human body compared to other forms of selenium, which greatly reduces the potential for toxicity.[1]

References:
1. Richard A. Passwater, Ph. D. Avery Publishing Group - Garden City Park, New York
2. Amanda Ursell (2001).Vitamin & Minerals Handbook. New York.

VITAMIN A AND BETA-CAROTENE

Vitamin A and Beta-carotene

Common Name: Retinol, Vitamin A; and Beta-carotene, all-trans-beta-Carotene
Proper name: *Vitamin A; and all-trans-beta-Carotene*
Source material(s): Vitamin A palmitate/All-trans retinyl palmitate; and Beta-carotene

Vitamin A is a nutrient that is vital to growth and development and is obtained in two ways:

- As vitamin A from animal sources such as liver, fish oils, egg yolks, and dairy products
- As beta carotene from many fruits and vegetables (such as carrots, broccoli, spinach, squash, peaches, and apricots) which the body converts to retinol (a type of vitamin A) in the small intestine.

Vitamin A is stored in the liver until needed by the body. Vitamin A and closely related molecules are also known as retinoids. [4]

Health Benefits of Vitamin A and Beta-carotene

Eye Health

Vitamin A is called the *Eye Vitamin*; good for general eye health. It helps to maintain the eyesight, and helps in the development and maintenance of night vision.[3] Prolonged vitamin A deficiency can lead to exophthalmia (dry eye).[2]

Anemia

Vitamin A deficiency has been shown to impair the mobilization of iron. A supplementation of vitamin A has been shown to raise hemoglobin levels and serum iron concentrations, particularly in children and pregnant women. It has also been shown to enhance the efficacy of iron supplementation in patients with vitamin A deficiency and iron deficiency anemia.[1]

Other benefits

Vitamin A helps to maintain skin membranes. It also helps to maintain the immune function and helps in the development and maintenance of bones and teeth.

Why take this supplement?

Vitamin A is a fat soluble vitamin. Anyone on a long term low fat diet or has poor absorption may benefit from this vitamin. Vitamin A deficiency may trigger the inability to adjust the eyesight to see in the dark, poor growth in childhood, dry, scaly skin, poor tooth enamel development in children, etc.[2]

Safety

At recommended doses, vitamin A is generally considered nontoxic. Excess amounts may lead to acute or chronic toxicity.

References:
1. Natural Standard: The Authority on Integrative Medicine. www.naturalstandard.com
2. Amanda Ursell (2001).Vitamin & Minerals Handbook. New York.
3. Health Canada Compendial Monograph
4. www.cancer.org

VITAMIN C

Vitamin C

Common Name: Vitamin C
Proper name: *Vitamin C, Ascorbic acid*
Source material(s): Ascorbic acid/Vitamin C

Vitamin C (ascorbic acid) is a water-soluble vitamin that is an essential nutrient for humans. In living organisms ascorbate acts as an antioxidant. It is necessary for the formation of collagen in the bones, cartilage, muscle, and blood vessels. It also helps the body to absorb iron. Severe vitamin C deficiency may cause scurvy. Although rare, scurvy may lead to potentially severe consequences, including death.[1]

Excellent food sources of vitamin C include broccoli, bell peppers, parsley, brussels sprouts, cauliflower, lemon juice, strawberries, mustard greens, kiwifruit, papaya, kale, cabbage, oranges, cantaloupe, grapefruit, pineapple, chard, tomatoes, collard greens, raspberries, spinach, green beans, fennel, cranberries and asparagus. It is important to note that most of the vitamin C in foods will be destroyed with cutting, cooking, storing, and other forms of processing.

Health Benefits of Vitamin C

Immunostimulant effects
Supplements of vitamin C may increase the immune system's ability to fight viral and bacterial infections, helping, for example, to reduce the duration of a cold.[3]

Wound Healing
People who take 200-250 mg of vitamin C daily have an improved recovery rate after surgery, while the healing of bedsores and bleeding gums are evident in people taking 250-500 mg daily.[3]

Other Benefits
Vitamin C helps the body to metabolize fats and proteins: It helps in the development and maintenance of bones, cartilage, teeth; helps in the development and maintenance of gums and helps in connective tissue formation.[2] It also helps to detoxify our bodies, promotes healing of all of our cells, and allows us to better deal with stress. It also supports the good bacteria in our gut, destroys detrimental bacteria and viruses, neutralizes harmful free radicals, removes heavy metals, protects us from pollution, and much more.

Why take this supplement?
Vitamin C is a water-soluble vitamin, meaning that your body doesn't store it. Vitamin C supplement is necessary for people who are not consuming enough fruits and vegetables. For adults, the daily recommended dose of vitamin C is 45-90 mg.[2] Smokers, pregnant women and breast-feeding mothers need to take more vitamin C. Vitamin C overdose are rare.

References:
1. Natural Standard: The Authority on Integrative Medicine. www.naturalstandard.com
2. Health Canada Compendial Monograph
3. Amanda Ursell (2001).Vitamin & Minerals Handbook. New York.

VITAMIN E

Vitamin E

Common Name: Vitamin E
Proper name: *Vitamin E*
Source material(s): RRR-alpha-tocopherol/d-alpha-tocopherol

Vitamin E is a fat-soluble vitamin with antioxidant properties. Vitamin E exists in eight different forms. Alpha-tocopherol is the most active form in humans. Vitamin E supplements are available in natural or synthetic forms. The natural forms are usually labeled with the letter "d" (for example, d- alpha -tocopherol), whereas synthetic forms are labeled "dl".[1]

Vitamin E helps to neutralize potentially damaging free radicals in the body and is very important for helping to keep cell walls in good condition. Vitamin E is also essential for maintaining healthy skin, nerves, muscles, red blood cells, body circulation, including the heart.[3]

Foods that contain vitamin E include eggs, fortified cereals, fruits, green leafy vegetables (such as spinach), meat, nuts, nut oils, poultry, vegetable oils (corn, cottonseed, safflower, soybean, sunflower), argan oil, olive oil, wheat germ oil, and whole grains. Cooking and storage may destroy some of the vitamin E in foods.[1]

Health Benefits of Vitamin E

Vitamin E is an antioxidant for the maintenance of good health.[2] It helps prevent oxidative stress by working together with a group of nutrients to prevent oxygen molecules from becoming too reactive.[1] Vitamin E supplements may also lower the risk of heart disease, stroke, and angina by reducing the formation of atherosclerosis plaques on artery walls.[3]

Other benefits
Vitamin E may be appropriate for people with a family history of heart disease, those exposed to pollution, and anyone interested in slowing down the aging process.[3] Vitamin E improves the activity of vitamin A in the body, and, unlike other fat-soluble vitamins, seems to be stored for only a short time in the body-indicating the need for regular intakes.[3]

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1. Natural Standard: The Authority on Integrative Medicine. www.naturalstandard.com
2. Health Canada Compendial Monograph
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ZINC

Zinc

Common Name: Zinc
Proper name: *Zinc*
Source material(s): Zinc sulfate

Zinc is a trace mineral essential for the functioning of enzymatic and other cellular processes. Zinc is present in all organs, tissues, fluids, and secretions of the body.[1] It helps the body to metabolize carbohydrates, proteins and fats[2]; it is a co-factor for over 70 different enzymes. Zinc plays a vital role in the growth of children and is especially important for the production of healthy sperm. Adequate amounts of protein in the diet can help to improve zinc levels in the body.[3] Severe zinc deficiency may result in growth failure, diarrhea, hair loss, sandpapered nails, decreased immunity, and low testosterone (in males).[3]

Health Benefits of Zinc

Immune function
Zinc is necessary for the immune system and for the healing of wounds. It helps to detoxify harmful metals.[3] Zinc has also been shown to help relive E. coli-induced diarrhea in children.[1] Zinc has been studied since the 1960s.

Children's health
Zinc supplementation is effective in enhancing the physical development of children, particularly with low birth weight, stunted growth, or malnutrition, as determined through the examination of weight, height and body mass composition.[1]

Wound Healing
Wounds that take longer to heal than usual, are often as a result from a lack of zinc in the diet, and may be improved by taking modest daily zinc supplements.[4]

Other benefits
Zinc helps to maintain healthy skin; helps the body to metabolize carbohydrates, proteins, fats and helps in connective tissue formation.[3]

Why take this supplement?
Zinc is essential for normal growth and development. The requirement for zinc increases during pregnancy.[2] Intake of zinc by individuals over 65 years of age in the United States is less than two-thirds of the RDA for zinc.[2] The primary clinical manifestations of severe zinc deficiency includes: Growth retardation, delayed sexual maturation and impotence, immune deficiencies, night blindness, delayed healing of wounds, impaired appetite and food intake, etc.

Food Sources
Zinc is available through foods such as beef, pork, shellfish, peanuts, and legumes. Within the body, zinc is distributed in the muscle, bone, skin, kidney, liver, pancreas, retina, prostate, and particularly in the red and white blood cells.[1]

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1. Natural Standard: The Authority on Integrative Medicine. www.naturalstandard.com
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PHYTONUTRIENT BLEND

Apple Powder
Apples contain a type of fibre called pectin which helps to promote regularity. Apples also contain phloretin which has antibacterial activity and are also high in quercetin, a powerful phytonutrient.

Beet Root Powder
Beets contain a component called betaine. There is evidence to suggest that beets can assist in maintaining a healthy liver by removing fat deposits.

Cabbage Powder
A source of the phytonutrient called anthocyanins, cabbage supports healthy eye function. In addition, cabbage has been shown to reduce pain associated with ulcers.

Carrot Powder
Very high in natural beta carotene, carrots support healthy eye function as well is a powerful natural antioxidant.

Cauliflower Powder
Cauliflower is in the same family as broccoli and cabbage and shares the same cancer fighting abilities as broccoli. Cauliflower contains sulforaphane and isophiocyanate, the two phytonutrients responsible for its cell protecting abilities.

Cherry Powder
High in anthocyanins, cherries help support healthy eyes and also contribute to the health of the cells in the body. Cherries are high in antioxidants.

Garlic Powder
The active compound in garlic is called alliin. This nutrient is useful in supporting the immune system and has been shown to reduce cholesterol.

Grapefruit Powder
Grapefruit plays an important role in weight loss and overall well being. Grapefruit is known to reduce insulin levels,

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which regulates fat metabolism and may have the ability to control appetite.

Mango Powder
Mango is an excellent source of beta carotene, potassium and vitamin C. High in natural antioxidants; mangos also contain an enzyme that helps improve digestion and sooth the stomach.

Onion Powder
Onion has been traditionally used to maintain cardiovascular health. This allium species and their constituents, act on blood coagulability and have positive effects on other risk factors for cardiovascular disease.

Orange Peel Powder
Very high in vitamin C and bioflavanoids, oranges help to maintain healthy teeth, gums and connective tissue. Bioflavanoids also support strong capillary health.

Parsley Powder
This common cooking herb is used for its ability to enhance digestion. Parsley contains quercetin, a phytonutrient that helps with peptic ulcers.

Pineapple Powder
Pineapple is very high in vitamin C and mineral manganese. In addition, pineapple contains the enzyme bromelain. This enzyme helps to break down and digest protein in the diet.

Prune Powder
Prunes are one of the highest antioxidants known to mankind! They have the highest ORAC measurement, the standard for measuring antioxidant values. Prunes assist in bowel regularity.

Raspberry Powder
Very high in natural antioxidants, raspberries contain quercetins which help to fight asthma and hay fever.

Rose Hips
One of nature's highest sources of vitamin C, rose hip supports healthy teeth, gums, blood vessels and capillaries. Useful for helping to fight colds and infection.

Spinach Powder
High in naturally occurring iron, spinach helps to maintain healthy blood iron levels, thereby ensuring normal energy levels.

Strawberry Powder
Strawberries contain a range of nutrients, vitamin C heading the group. They also contain significant levels of phytonutrients and antioxidants, which fight free-radicals. Studies suggest that it can help protect against age-related macular degeneration (ARMD) and rheumatoid arthritis.

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FIBRE

What is Dietary Fibre?

Dietary fibre includes all parts of plant foods that your body can't digest or absorb. It is also known as roughage or bulk and has no calories.[1] Good sources of fibre can be found mainly in two food groups: Grain products, including whole grains such as wild and brown rice and oatmeal, vegetables and fruit. Meat alternatives such as beans and lentils also provide a high source of fibre. Food sources of dietary fiber are often divided into soluble or insoluble fiber. Plant foods contain both types of fiber in varying degrees, according to the plant's characteristics. **Many people think of dietary fibre as a single, simple food component but fibre is a complex and varied macronutrient. In fact, it has been suggested that measuring the total fibre content of a food is about as useful as measuring the total vitamin content of a food.[2]**

Research on the beneficial effects of dietary fibre show that high levels of dietary fiber intake is associated with significantly lower rates for coronary heart disease and stroke. Furthermore, increased consumption of dietary fibre improves serum lipid concentrations including blood glucose control in diabetes, and promotes regularity.[2]

Fibre is a vital part of a healthy diet, but most of us are getting less than half the recommended amount.

How Much Fiber?

Countries have developed guidelines for dietary fibre intake ranging from 21g to 40 g per day, whereas the WHO recommends a total fibre intake of 25g per day. However, estimates of actual total dietary fibre consumption in various countries range from a low of 14g per day to a high of 29g, with most countries reporting consumption levels below either national or WHO recommendations. In Canada, surveys of nutrient intake from foods indicate that dietary fibre intakes range from 14.3 to 16.6 g/d for women and from 16.5 to 19.4 g/d for men. In Japan, the suggested daily dietary fiber intake was 20.5 g daily in 1952, which rapidly declined to 70% of that level in 1970 (14.9 g/d). This intake is well below the IOM recommendations for dietary fibre and reflects a limited consumption of whole-grain cereals, fruits, vegetables, and pulses which are considered to be the best natural sources of dietary fibres.

The results of the 2008 Tracking Nutrition Trends VII survey (Canadian Council of Food Nutrition, 2008) indicated that a large majority understands that some types of dietary fibre can help reduce blood cholesterol (74%) and that a diet high in fibre may help prevent colon cancer (78%).

Note, people with diabetes should watch their fruit intake

References:
1. Brenda Watson and Leonard Smith. (2007) The Fiber 35 Diet. Nature's Weight Loss Secret. New York.
2. Proposed Policy: Definition and Energy Value for Dietary Fibre. Bureau of Nutritional Sciences. Health Canada. (Dec 2010)

FIBRE

Soluble and Insoluble Fibre

There are two basic types of fibre-soluble and insoluble. Soluble fibre dissolves and breaks down in water. When this happens it forms a thick gel. It includes pectin, gum, and mucilage. Insoluble fibre does not dissolve in water or break down in the digestive system. Insoluble fibre passes through the gastrointestinal tract almost intact. It includes cellulose hemicelluloses and lignin. **It is important to consume both soluble and insoluble fibre, given that each type provides unique benefits.**

Soluble Fibre

Function of Soluble Fibre:
- Prolongs the emptying of the stomach so that sugar is released and absorbed more slowly
- Binds with fatty acids, which are the building blocks of fats

Some Benefits of Soluble Fibre:
- Lowers total cholesterol and LDL cholesterol (bad cholesterol), thereby reducing the risk of heart disease
- Regulates blood sugar
- Remove toxins and unwanted metals
- Slows the absorption of food after meals and is therefore good for people with diabetes
- Reduces the side effects of radiation therapy
- Reduce the risks of heart disease and gallstones

Some food sources of Soluble fibre:
Fruits and vegetables, especially berries, oranges, apples and carrots, barley, beets, lentils, oats, oatmeal, peas, etc…

Insoluble Fibre

Function of Insoluble Fibre:
- Moves bulk through the intestines
- Controls and balances the PH (degree of acidity or alkalinity) in the intestines

Some Benefits of Insoluble Fibre:
- Promotes regular bowel movements and prevents constipation
- Removes toxic waste from the colon
- Helps prevent colon cancer by keeping optimal PH in the intestines to prevent microbes from producing cancerous substances
- Helps prevent hemorrhoids, varicose veins, colitis, and constipation
- Assists in the removal of cancer-causing substances from the colon wall
- Promotes weight loss
- Helps lower cholesterol levels
- Helps to prevent the formation of gallstone by binding with bile acids and removing stones before they can form
- Beneficial for people with diabetes or colon cancer

Some food sources of Insoluble fibre:
Whole grains (breads, pasta, oatmeal, cereals), fruit skin, cauliflower, root vegetable (such as potatoes) skins, sour plums, wheat bran, flaxseed, popcorn, etc….

CINNAMON

Cinnamon

Common name: Cinnamon
Botanical name: *Cinnamomum aromaticum*
Part of use: Bark

Cinnamon has been around for thousands of years and revered as a spice and healing agent. The ancient Egyptians included cinnamon in their embalming oils. In China it was used to treat fever, diarrhea and menstrual symptoms as far back as 2000 BC. Cinnamon is mentioned in historical documents as a well-known spice in the New World and in Europe. It was traditionally used mainly as a stomachic and carminative for gastrointestinal complaints and is still used for these conditions today.[1]

Cinnamon is commonly used in supplements to help to maintain blood glucose. It is shown to be highly effective in improving glucose and insulin metabolism. Cinnamon has some of the same health benefits as consuming fibre, such as lowering blood sugar and blood cholesterol effects. Cinnamon is also popularly used in some fibre formulas to enhance the effects of reducing blood glucose and cholesterol.

Health Benefits of Cinnamon

Diabetes
Based on human and animal studies, cinnamon may control blood sugar. The insulin-sensitizing effects of cinnamon was established and first published in vivo studies on cinnamon supplementation in humans: It reported a substantial reduction of fasting serum glucose concentration and improvement in blood lipid profile in patients suffering from type 2 diabetes.

Cardiovascular effects
Cinnamon has been proven to have an effect on the blood and the cardiovascular system, and has been shown to reduce blood pressure in some studies. Other human trials also demonstrated lowered systolic blood pressure upon treatment with a water-soluble cinnamon extract.

Other Benefits
Antidiabetic effects, antioxidant effects, anti-inflammatory effects, anticancer/antitumor effects, Immunomodulatory effects

Safety
Cinnamon has been approved Generally Recognized as Safe (GRAS) status as a food additive by the U.S. Food and Drug Administration (FDA). The bark is the only part of the plant that is used as a spice or for medical purposes.

References:
1. Louise Tenney (2000). Today's Herbal Health. 5 th Edition.
2. Natural Standard: The Authority on Integrative Medicine. www.naturalstandard.com

GUAR GUM

Guar Gum

Common name: Guar Gum
Proper name: *Cyamopsis tetragonoloba*
Part of use: Seed endosperm

Guar gum is an extract of the guar bean (Cyamopsis tetragonoloba). The plant is primarily grown in Pakistan and parts of India. Guar gum is widely used as a food-thickening agent. It is also found in nutritional supplements.[1] Due to paper shortages in the 1940s, guar gum became popular for commercial use as a replacement in the paper industry.[1]

Guar gum is considered a plant-based dietary fiber. According to the American Association of Cereal Chemists (AACC) International, a dietary fiber is "the edible parts of plants or analogous carbohydrates that are resistant to digestion and absorption in the human small intestine with complete or partial fermentation in the large intestine. Dietary fibers promote beneficial physiological effects including laxation, and/or blood cholesterol attenuation, and/or blood glucose attenuation." [2]

Guar gum may be beneficial in reducing cholesterol levels, as there is a substantial amount of evidence to support its use for this purpose.[1] Guar gum is used to promote normal gastrointestinal (GI) motility and may be useful in patients with diarrhea, constipation, or irritable bowel syndrome (IBS). Guar gum has also been shown to reduce postprandial glucose and insulin levels in diabetic and nondiabetic patients. [1]

Health Benefits of Guar Gum

Antidiabetic effects
In human research, guar gum has been found to decrease fasting blood glucose, and postprandial and fasting glycemia. Guar gum was reputed to produce postprandial glycemic decrease through the reduction and absorption of glucose in the small intestine. Guar gum may also increase insulin sensitivity and reduce insulin resistance, which may play a role in improved glucose control.[1]

Blood pressure effects
Supplementation of guar gum has been found to reduce blood pressure. Conversely, it has also been found to lessen hypotension following intraduodenal and oral glucose load. This effect may occur as result of reduced gastric emptying and absorption of glucose.[1]

Other benefits
Guar gum is used in weight loss formulas. The use of guar gum for weight loss may be based on the theory that it may suppress appetite by absorbing water and expanding the stomach, thus creating the sensation of being full.[1]

References:
1. Natural Standard: The Authority on Integrative Medicine. www.naturalstandard.com
2. Brenda Warson. (2007) The Fibre 35 Diet. New York

KONJAC ROOT

Konjac Root (Glucomannan)

Common name: Konjac glucomannan
Botanical name: *Konjac glucomannan*
Part of use: Root

Konjac root (glucomannan) is a soluble, fermentable, and highly viscous dietary fiber. Glucomannan fiber has been used as a food and as a medicinal agent in various Asian cultures for more than a thousand years. Its introduction into Western cultures is more recent. In the 1980s, glucomannan gained interest with respect to its cholesterol, blood sugar, and weight reduction properties. The most common term for glucomannan is soluble fiber derived from the root of Amorphophallus konjac (elephant yam or konjac plant). The konjac plant is native to Asia and may have blotchy green, white, yellow, and/or brown markings on its stem, resembling snake skin. The tubers can grow more than 10 pounds in weight.

The plant has various uses which include its traditional use as a food source (sliced and fried, baked, boiled, stewed, or as cereal meal, flour, or candy) or topical gel, as well as more recently, a source of dietary supplement. Glucomannan is a highly viscous soluble fiber thus when consumed, it absorbs water in the digestive tract, whereby reducing the absorption of carbohydrates and cholesterol. It is this property that makes glucomannan a product of interest with respect to weight loss, blood sugar lowering, and cholesterol reduction. There is good evidence to support the use of glucomannan for cholesterol reduction, constipation, diabetes, and weight loss. Glucomannan is being studied as a means to deliver drugs to the large intestines, due to its resistance to digestion in the upper digestive tract and absorption in the colon.

Health Benefits of Konjac Root (Glucomannan)

Cholesterol levels
Glucomannan supplementation is known to significantly reduce cholesterol levels in humans according to meta-analysis and randomized controlled trials. Glucomannan is a high-molecular-weight water-soluble polysaccharide: It is thought that soluble fibers interfere with the transport of cholesterol and bile acids. It was also determined that glucomannan improved blood lipid levels by enhancing fecal excretion of neutral sterol and bile acids.

Diabetes
Evidence from randomized controlled studies, as well as studies of lesser methodological quality suggested that glucomannan supplementation reduced fasting and postprandial blood glucose in individuals with type 2 diabetes.

Hypertension
Studies show that Glucomannan supplementation significantly reduces blood pressure.

References:
1. Natural Standard: The Authority on Integrative Medicine. www.naturalstandard.com

XANTHAN GUM

Xanthan Gum

Common name: Xanthan Gum
Proper name: *Xanthan Gum*
Part of use: Whole cell

Xanthan gum is a high molecular weight glucomannan gum that is derived from Xanthomonas campestris by a pure-culture fermentation process. In the food industry, xanthan gum is a natural carbohydrate and is used as an all- purpose stabilizer and thickener due to its unique physical properties, heat, PH stability and high viscosity.[1]

Like guar, xanthan gum has been reported to slow gastric emptying of glucose and nutrient energy in animals. It proved to be more effective than guar in inhibiting the preferential emptying of sugar and fat from the stomach. Xanthan gum, like guar, is a suitable candidate for metabolic studies in man.[2]

Health Benefits of Xanthan Gum

Xanthan Gum and diabetes mellitus

In one study, xanthan gum was fed to diabetic and non-diabetic patients or controls, with moderately elevated serum glucose but managing without insulin or hypoglycemic drugs. The consumption of xanthan gum was shown to lower fasting and post load serum glucose levels. Xanthan gum also tends to lower fasting and post load levels of gastrin; subjects reported a sense of fullness but no severe digestive symptoms.

Xanthan Gum and High Cholesterol

Xanthan Gum can lower cholesterol levels. In the same study of xanthan gum consumption in diabetic and non-diabetic patients or controls, xanthan gum was shown to reduce fasting levels of total plasma cholesterol. The fasting levels of total triglyceride and total cholesterol were also reduced.[1] In another study it was found there was a moderate (10%) reduction in serum cholesterol.[2]

Other Benefits

Xanthan Gum is used by people who are allergic to gluten, to add volume and viscosity to bread and other gluten-free baked goods.

References:
1. Osilesi, O., Trout, D. L., Glover, E. E., Harper, S. M., Koh, E. T., Behall, K. M., O'Dorisio, T. M., and Tartt, J. Use of xanthan gum in dietary management of diabetes mellitus. Am.J.Clin.Nutr. 1985;42(4):597-603.
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A
RAINBO
of choices

Eating the full rainbow of foods regularly helps give your body the nutrients it needs. In addition to fiber, vitamins and minerals, naturally colored foods contain phytochemicals. These powerful nutrients are the disease-fighting substances that give fruits and vegetables their array of colors.

Each different color fruit and vegetables contains unique health components that are essential to our health. The next time you are at the supermarket or local farm stand, try to choose fruits and vegetables from each of these categories:

RED: Red apples, cranberries, red grapes, pomegranates, raspberries, strawberries, watermelon, pink or red grapefruit, tomatoes, radishes, radicchio, red peppers, red onions

YELLOW/ORANGE: Yellow apples, apricots, cantaloupe, oranges, peaches, nectarines, mangoes, grapefruit, pineapple, yellow peppers, pumpkin, sweet corn, yellow tomatoes, lemons, sweet potatoes

GREEN: Green apples, green grapes, kiwi fruit, honeydew melon, kiwi, avocado, broccoli, spinach, okra, artichoke, zucchini, lettuce, celery, asparagus

BLUE/PURPLE: Raisins, blackberries, blueberries, plums, purple grapes, eggplant and purple cabbage, purple figs

WHITE: Bananas, white nectarines, white peaches, garlic, cauliflower, mushrooms, onions, potatoes

Paul Kramer

Paul Kramer has more than 25 years of experience in nutritional product development, Network Marketing and corporate management. Paul is the author of the best-selling book, *Fighting Body Pollution,* available in eight languages worldwide. As a Nutritional Consultant, Paul is recognized as an expert in the health and wellness industry.

Paul has conducted several health and wellness seminars around the world educating individuals to live a healthier lifestyle. He is a graduate of the Advanced Holistic Nutrition program from the Canadian Nutrition Institute and currently represents Lifestyles as a member of the American Botanical Council.

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