

Natural Miracles: What Functional Foods Can Do for You?

By Leila Kiani

Introduction

About 2,500 years ago Hippocrates had a profound idea: “Let food be thy medicine and medicine be thy food.” Now consumer interest following this idea supports a healthier life by choosing specific foods that provide additional benefits beyond their basic nutritional needs. Potentially all foods have nutritional value, aroma and taste, but now people are looking for other physiological properties such as acting as an antioxidant, boosting the immune system, aiding digestion, and having anti-cancer properties. For example, shiitake, an edible mushroom that can be served fresh, cooked, dried, powdered and pickled, has many of these properties.

Here is a breakdown of shiitake’s nutritional value. You can see that shiitake is highly nutritional, along with the worth of its vitamins and minerals. However, this article will show you the many non-nutritional health benefits—that is benefits that enhance basic health such as heart, brain, and immune functions—of an enormous variety of natural foods, including shiitake.

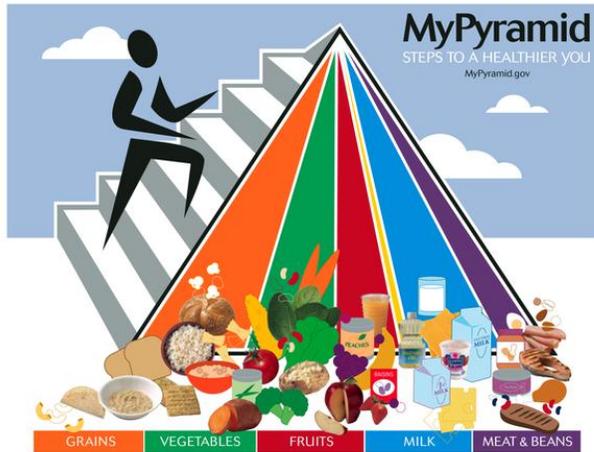
Table 1: Nutrients per Serving for Mushrooms, shiitake, dried (1).
Amounts per 1 mushroom (4g)

Food Energy	
Amounts Per Selected Serving	%DV
Protein	0.3 g
Total Carbohydrate	2.6 g
Dietary Fiber	0.4 g
Folate	5.7 mcg
Magnesium	4.6 mg
Phosphorus	10.3 mg
Potassium	53.7 mg

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Health benefits make some kind of foods “Functional Foods,” which help you to gain a healthy body beyond the value of nutrition. Wellness is under the individual’s control through choosing good foods, and the easiest way to do this is by following the food pyramid’s recommendation.



United States Department of Agriculture
<http://www.mypyramid.gov/professionals/index.html>

This article focuses on functional effects of fruits and vegetables and what you add as spices or additives to foods. It also has a short summary of the benefits of other non-fruit and vegetable foods such as mushrooms and blue-green algae.

Phytochemicals

Research and development in food science is helping to identify many functional foods, because they can provide health benefits by reducing risk and enhancing the body’s ability to manage chronic disease; so quality of life will be improved with the help of science (3).

There are many forms of functional food, but they are usually categorized in these two sections:

- Conventional foods: They have bioactive components linked to positive health promotion and are mostly used by consumers. For instance, soy proteins or cranberries are powerful, health-enhancing conventional foods.
- Fortified foods: They are used for specific reduction of disease or increasing health benefits by adding to a daily diet. Examples include calcium-fortified orange juice or eggs with increased levels of omega-3 fatty acids.

So depending on the vitamin or mineral range necessary for each day, foods (conventional or fortified) can be selected for maximum value. As you see in table 1, foods and isolated food components can reduce the risk of disease (3).

Table 2: Example of Functional food components currently marketed (3).

Functional Component	Health Benefits	US Regulatory Status of Claim
Soluble Oat Fiber	Coronary Heart Disease	<i>FDA Approved Health Claim</i>
Soy Protein	Coronary Heart Disease	<i>FDA Approved Health Claim</i>
Calcium	Osteoporosis	<i>FDA Approved Health Claim</i>
Folate-Enriched Foods	Neural tube defects	<i>FDA Approved Health Claim</i>

Cardiovascular disease and cancer are the first and second causes of death in the United States and in most industrialized countries. People who regularly eat fruit and vegetables are at low risk of cancer, cardiovascular disease, stroke, Alzheimer's, and some of the functional declines associated with aging. Prevention is a more effective strategy than treatment of chronic diseases (4).

Table 3: Examples of Functional Components (5)

<i>Carotenoids</i>		
Beta-carotene Lutein, Zeaxanthin Lycopene	carrots, kale, tomatoes	maintain healthy cells
<i>Flavonoids</i>		
Anthocyanins Flavanols Flavanones Flavonols Proanthocyanidins	berries, tea, citrus fruits	antioxidants, may help brain and heart, maintain cells
<i>Isothiocyanates</i>		
Sulforaphane	broccoli	detoxification; antioxidants
<i>Minerals</i>		
Calcium Magnesium Potassium	spinach, potatoes	may reduce osteoporosis and high blood pressure and help muscle & nerve function
<i>Phenolic Acids</i>		
Caffeic acid, Ferulic acid	apples, pears, coffee	antioxidant; may help vision & heart
<i>Plant Stanols/Sterols</i>		
Free Stanols/ Sterols Stanol/Sterol esters	corn, wheat, fortified food	may reduce coronary heart disease

In addition to vitamins and minerals, fruits and vegetables contain a variety of biological metabolites that are named "phytochemicals". These compounds have various biological effects, such as reducing the risk of some diseases (6).

Table 3 shows some major components in fruits and vegetables that may enhance some food (as fortification). These active ingredients (as listed below) may control or prevent some diseases (5, 7, 12, 13 and 14):

- I. Carotenoids
- II. Isothiocyanates
- III. Antioxidants (Phenolic acids)
- IV. Flavonoids

I. Carotenoids

These ingredients are found in tomatoes and tomato products, chili sauce, seafood cocktail sauce, watermelon, pink grapefruit and other sources. Several studies have linked the consumption of tomatoes and tomato products with a decreased risk of these diseases:

1. lung, bladder, cervix, skin, breast and colorectal cancers because of their anti-oxidant and anti-proliferative properties.
2. Cardiovascular disease, because they may inhibit cholesterol synthesis and enhance LDL (bad cholesterol) degradation.

Studies have also shown that the processing of tomatoes and of tomato products, such as sauces, soups and juices, increases the bioavailability of lycopene (7).

II. Isothiocyanates



Just Hungry
<http://www.justhungry.com/images/asparagus.jpg>

The consumption of cruciferous vegetables has been associated with a reduced risk of cancer of the lung, stomach, colon and rectum and also reduced risk of coronary heart disease. These vegetables include broccoli, cauliflower, kale, turnips, collards, brussel sprouts, cabbage, radish, turnip, and watercress.

These effects have been attributed to their high concentration of glucosinolates. When chewing raw vegetables an enzyme (myrosinase) hydrolyses glucosinolates to isothiocyanates, (glucosinolates are precursors of isothiocyanates).

Isothiocyanates can reduce poisonous effects of carcinogens and act by inhibition of cell proliferation and induction of apoptosis. Researchers at the Johns Hopkins University School of Medicine in Baltimore studied the metabolism of isothiocyanates and found that they were about six times more bioavailable than glucosinolates.

Broccoli is a “super” food. A compound found in broccoli and broccoli sprouts (sulforaphane) has been shown to be more



CelebrityDietDoctor
<http://www.celebritydietdoctor.com/wp-content/uploads/2007/05/broccoli.jpg>

Released October 2007

effective than modern antibiotics against the bacteria *Helicobacter pylori*, which causes peptic ulcers. Moreover, tests in mice show that the compound offers tremendous protection against stomach cancer (15).

III. Antioxidant vitamins

Vitamin A, beta-carotene (a vitamin A derivative), vitamin C, and vitamin E are types of antioxidants which can help reduce oxidative damage done by free radicals in the body. Antioxidant vitamins may prevent or protect against cancer, cardiovascular disease, asthma, pulmonary function problems, diabetes and weight loss. They may also protect eyesight, help protect the brain, and promote gastrointestinal health.



Cornell University
Cooperative Extension
<http://counties.cce.cornell.edu/yates/squash%20j0313789.jpg>

For instance there are many types of antioxidants in:

fruits

- *oranges*
- *grapefruits*
- *tangerines*
- *lemons*
- *limes*
- *papaya*
- *strawberries*
- *cantaloupe*
- *Mango*
- *Kiwi*
- *Apple*
- *Apricot*
- *Avocado*

vegetables

- *tomatoes*
- *broccoli*
- *green and*
- *red bell peppers*
- *raw lettuce*
- *other leafy greens*
- *Spinach*



Lettuce
Krieger's Health Foods Market
http://www.kriegersmarket.com/images/gr_link/lettuce_romaine.jpg

Large scale studies have shown low blood levels of carotenoids correspond with greater cancer risk. Researchers have found that carotenoids in dark green leafy vegetables can inhibit the growth of certain types of breast cancer cells, skin cancer cells, lung cancer and stomach cancer (16).



Spinach
Singari Vijay
<http://www.nandyala.org/mahandandi/images/vegetables/spinach1.jpg>

Finally, beta-carotene's anti-inflammatory effects may reduce the severity of conditions like asthma, osteoarthritis, and rheumatoid arthritis, which all involve inflammation.

The consumption of apples corresponds with reduced risk of some cancers, cardiovascular disease, asthma, and diabetes. Apples have been found to have very strong antioxidant activity, inhibit cancer cell proliferation, decrease lipid oxidation, and lower cholesterol. Apples contain a variety of strong antioxidants (17).

The total antioxidant activity of 100 grams of whole apples (with the peel) was found to be equivalent to the antioxidant effect of about 1500 mg of vitamin C. However, the amount of vitamin C in 100 g of apples is only about 5.7 mg. Nearly all of the antioxidant activity from apples comes from a variety of other compounds (18).

IV. Flavonoids

These occur in all groups of fruits and vegetables, such as berries, cherries, cranberries, red grapes, apples, citrus, broccoli, and some spices such as cinnamon. The phytochemical called *anthocyanidins* that exists specially in blueberries can neutralize free radical damages to the collagen matrix of cells and tissues that can induce glaucoma, peptic ulcers, varicose veins, hemorrhoids, cataracts, heart disease and cancer. Anthocyanins, the blue-red pigments, can improve the wholeness of support structures in the veins and the entire vascular system (19).

These are some benefits of Flavonoids:

- bolsters cellular antioxidant defenses
- may contribute to maintenance of brain function
- may contribute to maintenance of heart health
- neutralizes free radicals
- may contribute to maintenance of urinary tract health

The Color of a Healthy Diet

Eating enough fruits and vegetables is recommended by nutritionists, and it sounds like a lot each day. But, for example, eating some banana or apple in the morning along with your cereals and milk or having a cup of fruity yogurt at snack time, eating green salad with a slice of avocado with your lunch, and having some berries or oranges as your afternoon snack, will give your day a complete regimen of food to promote your health.

Table 4 shows how food choices depend on color and functional effects (7):

Table: 4 (7):

Colour Code Groups of Fruits and Vegetables		
Colour	Phytochemical	Fruits and Vegetables
Red	Lycopene	Tomatoes and tomato products (soups, juice, pasta sauce)
Red/Purple	Anthocyanins and Polyphenols	Berries, grapes, red wine
Orange	Alpha and Beta Carotene	Carrots, mangoes, pumpkin
Orange/Yellow	Beta-cryptoxanthin and Flavonoids	Cantaloupe, peaches, oranges, papaya
Yellow/Green	Lutein and Zeaxanthin	Spinach, avocado, honeydew
Green	Glucosinolates and Isothiocyanates	Broccoli, cabbage, cauliflower
White/Green	Allyl Sulphides	Leeks, onion, garlic, chives

So what we get by now is that color is the most effective way for choosing fruit and vegetables. Why?

Choosing foods by their color is the key factor of this section. Unfortunately, “most Americans eat only two to three servings of fruits and vegetables per day without regard to the phytochemical contents of the foods being eaten” (7). The color of fruits and vegetables correlates with their phytochemical composition; furthermore all phytochemicals have antioxidant effects. So selecting fruits and vegetables based on their colors acts as a nutrition guide for consumers that helps people change their dietary patterns. Ideally, fruits and vegetables should contain each of the seven color groups each day (7).

Make your food colorful

As Table 4 shows, there are seven major colors for fruits and vegetables.

➤ Red

Eating red fruits and vegetables such as tomatoes and tomato products, strawberries, and watermelon, helps the body to prevent cancer because of Lycopene. Lycopene may in-

hibit cholesterol synthesis and enhance LDL degradation. Tomato products are more effective than tomatoes themselves.

➤ Red/ Purple

Foods like berries, grapes, and red wine, because of their anthocyanins and polyphenols, help maintain brain function and protect coronary heart diseases.

➤ Orange

Foods like carrots, mangoes and pumpkins, because of their carotene compounds, can help neutralize free radicals that may damage cells, bolster cellular antioxidant defenses, and can be made into vitamin A in the body.

➤ Orange/ Yellow

Flavanoids in cantaloupe, peaches, oranges, papaya and more may contribute to maintenance of heart health, and neutralize free radicals that may damage cells, and bolster cellular antioxidant defenses.

➤ Yellow/ Green

Foods like spinach, avocado, and honeydew contain Lutein and Zeaxanthin that may contribute to maintenance of healthy vision.

➤ Green

Broccoli, cabbage, and cauliflower may enhance detoxification of undesirable compounds, because of their Indoles and Glucosinolates.

➤ White/ Green

Leeks, onions, garlic, and chives contain Allyl sulphides that contribute to these foods' strong odor. They inhibit cell proliferation of cancer cells and studies show that they may be useful for *in vivo* clinical use against *Helicobacter pylori* infections.

Mushrooms, Spices and Algae:

This section provides a short survey on other foods and food products that have active ingredients with health benefits, consisting of mushrooms, spices, and seaweeds.

Mushrooms

In Asia, especially China, mushrooms are used for their health promotion benefits. And shiitake has been used for thousands of years (17).

Mushrooms are endowed with plentiful nutritional and functional benefits. Their protein, essential amino acids, minerals and fiber are really valuable, and their functional effects are very useful. Recent studies have revealed these benefits of mushrooms:

- Probiotic effects to help strengthen the body (see earlier Probiotics Discovery Guide)
- Host Defense Potentiators (HDP) which can have immune system enhancement properties
- Cancer treatments in many countries (Japan, Russia, China and the USA) because they have polysaccharide compounds with antitumor effects
- Immunity building and longevity promotion
- Fatigue relief and energy increase
- Heart disease prevention by lowering cholesterol and blood pressure and through anticoagulant properties
- Fatigue fighting and strength building
- Chronic hepatitis B infection decrease
- Potent antioxidant (for which they are a top food source)

Research also shows that *Ganoderma* mushrooms have these uses (20):

- prevent viral diseases
- detoxify the liver
- have a positive effect on insomnia
- help cure high blood pressure
- treat diabetes



The Energy Blog
http://thefraserdomain.typepad.com/energy/images/shiitake_mushroom_1.jpg

The most popular mushrooms, which have long been used for both nutritional and medicinal effects, are *Lentinus edodes* (Shiitake mushroom), *Ganoderma lucidum*, *Trametes versicolor* (Turkey Tail mushroom), and *Flammulina velutipes* (winter mushroom). They all have been shown to boost the host's immune system and they can treat many kinds of diseases (17, 20, 21 and 22).

Lentianin is an active compound in mushrooms that helps the immune system to be more powerful. Lentianin may help to overcome diseases, especially infectious diseases, such as influenza or other viral diseases, even HIV (17).

Lentianin, which has a polysaccharide structure "beta-glucan," also has anti-cancer effects.

Another compound in mushrooms, called "eritadenine," helps to reduce cholesterol and has been studied in a large number of animals (17).

L-ergothioneine in mushrooms is a powerful antioxidant. Research has shown "that mushrooms contain higher concentrations of L-ergothioneine than either of the two dietary sources previously believed to contain the most: chicken liver and wheat germ" (17).



bFeedMe
<http://www.bfeedme.com/the-shiitake-mushroom-what-you-need-to-know/>

Spices (food additives)

These are the spices most used in food preparation (25):

- fenugreek seeds (*Trigonella foenumgraecum*)
- garlic (*Allium sativum*)
- onion (*Allium cepa*)
- turmeric (*Curcuma longa*)
- cumin seeds (*Cuminum cyminum*)
- ginger (*Zingiber officinale*)
- mustard (*Brassica nigra*)
- curry leaves (*Murraya koenigii*)
- coriander (*Coriandrum sativum*)
- basil
- oregano
- garlic
- turmeric
- rosemary



Alibaba.com
Saffron
<http://img.alibaba.com/photo/11961341/Saffro>

These food additives help to improve health due to their antidiabetic potential and also their hypoglycemic effects on controlling diabetes. Furthermore, the phenolic compounds in spices give flavor, taste, aroma, and color to food.

However spices do much more. They can fight many diseases, such as cancer, diabetes and high blood sugar, as well as improving overall health. Ginger has been shown to help control inflammation, which can contribute to the development of ovarian cancer cells. In multiple ovarian cancer cell lines, ginger induces cell death at a similar or better rate than the platinum-based chemotherapy drugs typically used to treat ovarian cancer. Another example is capsaicin, the compound that makes peppers hot, which can shrink pancreatic tumors.

Adding spices such as basil, oregano, garlic, turmeric, and rosemary to your diet may reduce the risk of chronic health problems. Two common spices with powerful effects are saffron and turmeric.

Saffron: An Anti-Depressant Herb

Saffron is used for (24):

- digestive problems
- treat menstrual disorders
- difficult labor
- inflammation
- depression
- vomiting
- throat diseases
- control bleeding



Saffron-First
<http://saffron-first.com/images/saffron.gif>

In small doses, Saffron promotes production of gastric juices. But pregnant women need to beware. Large doses cause contractions in the smooth muscle of the uterus and may induce abortion. (24)

The medicinal properties attributed to saffron are extensive. Topically, it is applied to improve overall skin condition and to treat acne (19). And internally it is used to:

- improve blood circulation
- regulate menstruation
- treat digestive disturbance
- ease cough and asthmatic breathing

- reduce fever and inflammation
- calm nervousness
- alleviate depression

In Tibet, saffron is often an ingredient in medicinal incenses; it is considered a tonic for the heart and the nervous system. The active ingredients may be beneficial in inhibiting growth of cancer cells (19).

Turmeric

This food is very low in Cholesterol and Sodium. It is also a good source of Vitamin C and Magnesium, and an excellent source of Dietary Fiber, Vitamin B6, Iron, Potassium and Manganese (1).



Ayurveda
<http://www.ayurhelp.com/images/tumeric1.jpg>

Turmeric is more commonly used as a spice than as a medicine, though it does seem to have anti-inflammatory properties. Among its many mildly medicinal effects are antitumor



Temple Spice
http://www.temple spice.com/product_images/tumericL.jpg

and antibacterial activity, relief of liver damage, and stimulation of bile production. The medicinal part of the plant is its fleshy underground stem (24).

Turmeric is a mild digestive, being aromatic, a stimulant and a carminative. An ointment base of the spice is used as an antiseptic in Malaysia. Turmeric water is an Asian cosmetic applied to impart a golden glow to the complexion. Curcumin has been shown to be active against *Staphylococcus aureus* (pus-producing infections) (25).

The volatile oil fraction of turmeric has demonstrated significant anti-inflammatory activity in a variety of experimental models. Even more potent than its volatile oil is curcumin, the yellow or orange pigment thought to be turmeric's primary pharmacological agent. In numerous studies, curcumin's anti-inflammatory effects have proved comparable to the potent drugs hydrocortisone and phenylbutazone as well as over-the-counter anti-inflammatory agents such as Motrin. Unlike these drugs, which are associated with significant toxic effects, including ulcer formation, decreased white blood cell count, and intestinal bleeding, curcumin produces no toxicity (18).



Indian Food,
 Namaskaar Inc.
<http://indianfoodsite.com/images/spices-im/tumeric.jpg>

In summary these are some benefits of active ingredients of Turmeric:

- Effective Treatment for Inflammatory Bowel Disease
- Relief for Rheumatoid Arthritis

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- Prevention of Cancer
- Inhibition of Cancer Cell Growth and Metastases
- Risk reduction for Childhood Leukemia
- Improved Liver Function
- Cardiovascular Protection
- Protection against Alzheimer's Disease

Recent studies show Possible Benefits from Curcumin (26)

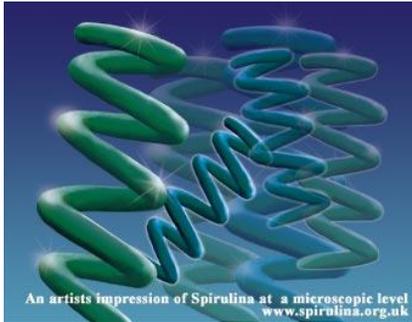
Condition	Findings
Rheumatoid arthritis	An Extract of turmeric root inhibited joint inflammation and destruction in rats
Alzheimer's disease	In test-tube studies, curcumin helped immune cells degrade components of Alzheimer's Plaque
Colon Cancer	In cell cultures, curcumin blocked activity of a hormone tied to development of colon cancer
Colorectal polyps	A combination of curcumin and the plant compound quercetin reduced the size and number of precancerous lesions in five patients
Myeloid leukemia	Curcumin at high doses in cell culture spurs degradation of a protein, p53, that prevents replication of cancer cells or induces their death
Colon cancer	Curcumin inactivates p53's tumor suppressor role in colon cancer cells
Breast cancer	Curcumin inhibits several chemotherapeutic drugs from inducing cell death both in cell culture and in animal models

Algae (Spirulina)

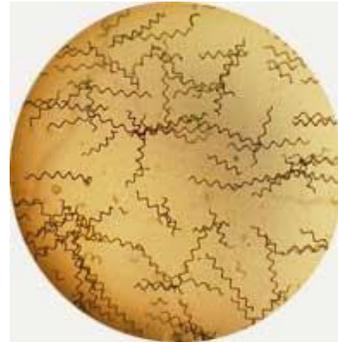
What is Spirulina?

Spirulina is blue-green algae. For its culture warm, fresh alkaline water is necessary. Its name is from the Latin word that means "helix" or "spiral" because microscopy figures show that its configuration is like a spiral. Spirulina is a super food because it has most of the necessary nutrients to meet bodily needs. It is sometimes called the "food for the fu-

ture.” In comparison to meat (22 percent protein) spirulina has 65 to 71 percent complete protein and all essential amino acids (27).



Spirulina World, Evolutionary Health.org Ltd
spirulina.org.uk



Spirulina World, Evolutionary Health.org Ltd

What is Spirulina?

Spirulina is a sea plant that contains both chlorophyll (green) and phycocyanin (blue) pigments which make it blue-green algae (27).

Spirulina has been used as a dietary supplement in many countries; NASA has chosen it as astronauts' food in space.

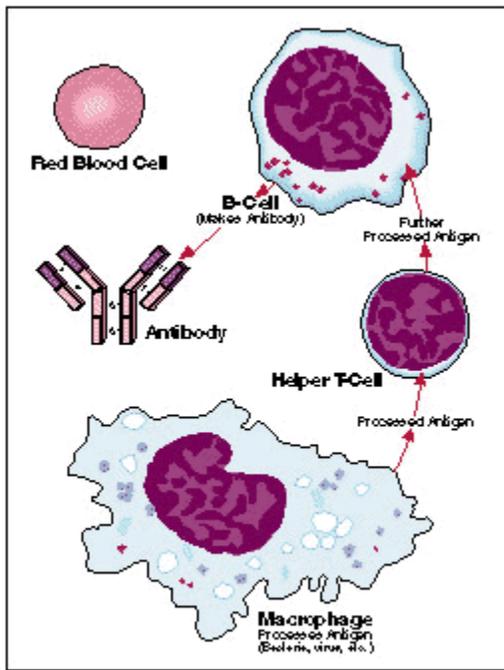
- Spirulina's most important components are (28):
- vegetable protein (3~4 times higher than fish or beef),
- Multi Vitamins (especially vitamin B 12), which are particularly lacking in a vegetarian diet.
- Minerals (including Iron, Potassium, Magnesium Sodium, Phosphorus, Calcium etc.)
- High volumes of gamma-Linoleinic acid (which is helpful for reducing cholesterol and protecting against heart diseases).
- Phycocyanin, a pigment which can only be found in Spirulina (28).

The good news is that many essential nutrients recommended by experts to help protect our bodies are concentrated in Spirulina. It contains the most powerful combination of nutrients ever known in any grain, herb or food (29).

Studies (not completed yet) are showing that spirulina has these health benefits (30):

- Therapeutic effects on hyperlipidemia and obesity
- Decreased total serum cholesterol and low-density lipoprotein cholesterol, while increasing high-density lipoprotein
- Significant reduction of body weight after inclusion in the diet for four weeks
- Boosted immune system

Spirulina also benefits the immune system and other systems crucial to human health. For instance, “feeding studies show that even small amounts of Spirulina build up both the humoral and cellular arms of the immune system” (30). Spirulina prevents invasion of the body, boosting the cellular immune system, including a variety of cells that “circulate in the blood and are especially rich in body organs like the liver, spleen, thymus, lymph nodes, adenoids, tonsils and bone marrow” (29).



Key players in immunity that are stimulated in the presence of spirulina or its extracts.

Spirulina Phycocyanin Builds Blood

Spirulina dark blue-green color indicates that “it is rich in a brilliant blue polypeptide called Phycocyanin. Studies show that Phycocyanin affects the stem cells found in bone marrow. Stem cells are ‘Grandmother’ to both the white blood cells that make up the cellular immune system and red blood cells that oxygenate the body” (29).

Easy to take any time for more vitality

Three to ten grams of spirulina contains the daily necessary compounds for the body so if you cannot prepare enough regular food for each day you can use spirulina daily along with

all the food you eat. It works well as a supplement to provide for your nutrition deficiency: “Tablets are convenient anytime, between, before, or with meals. Many people enjoy mixing Spirulina powder, which can dissolve in a green fruit juice smoothie, as an instant breakfast, or a vegetable juice smoothie, as a snack in the afternoon” (29).

Conclusion

Prevention is better than cure

There is a very simple way to prevent many diseases. Eating well is best. Many foods are available to provide enough nutrition each day and to provide additional health benefits. We all should eat enough variety, and the right varieties, to maintain a high level of anti-oxidants, fight cancers and inflammation, build up a strong immune system, maintain our youth, and keep up other benefits.

Eat well every day by choosing a variety of fruits and vegetable, or their juices, make frequent meals with healthy spices such as turmeric, saffron, cinnamon, and oregano, and exercise regularly. Don't forget to have the Super Food "spirulina" every day. Doing this will make everybody a wellness person.

This Discovery Guide has only few examples of fruits, vegetables and spices that are useful for the body; there are far more foods with numerous benefits. Remember that picking all different colors of fruits and vegetables is helpful for consuming almost all necessary compounds. So choose a variety of foods every day and throughout your life!

Acknowledgment:

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References:

- 1- Nutrition Data: Nutrition Facts & calorie counter. CondéNet, Inc.
<http://www.nutritiondata.com/foods-0.html>
- 2- Functional Foods: Their role in disease prevention and health promotion.
Clare M. Hasler. *Food Technology*. Vol. 52, No.11, (63-70) 1998.
- 3- Functional Foods: Opportunities and Challenges
Report of Institute of Food Technology.
- 4- Health benefits of fruit and vegetables are from additive and synergistic combinations of phytochemicals.
Rui Hai Liu. *American Journal of Clinical Nutrition*, Vol. 78, No. 3, 517S-520S, September 2003
- 5- Functional Foods. International Food Information Council Foundation. 2006.
<http://ific.org>
- 6- Phytochemicals – a future in functional foods?
Food Science & Technology Bulletin: Functional Foods 27 June 2006
- 7- Vegetables, Fruits and phytochemicals in the prevention of diseases.
Heber David. *Journal of Postgraduate Medicine*. 2004. 50:145-149
- 8- HSCCC and Natural *Food Pigments*
Today's Chemist at Work, vol. 10, no. 7, pp. 21-22, 24, July, 2001
- 9- Food Colorings
RALOFF, J *Science News*, vol. 167, no. 2, pp. 27-29, January 8, 2005
- 10- Review: Analysis of carotenoids in orange juice
Prata, E.R.B.A.; Oliveira, L.S. *Food Science and Technology*, vol. 40, no. 9, pp. 1555-1560, November 2007
- 11- Carotenoids and cancer in animal models
Krinsky, N.I. *Journal of Nutrition*. Volume 119, Issue 1, 1989, Pages 123-126
- 12- Functional Ingredients. The Beverage Institute for Health and Wellness. The Coca-Cola Company. 2006
http://www.beverageinstitute.org/nutrition/functional_ingredients.shtml

- 13-** Lycopene. Lycopene.org. 2007
<http://www.lycopene.org/abstracts.aspx>
- 14-** Phytochemicals. Top Cultures.
<http://www.phytochemicals.info/phytochemicals.php>
- 15-** Broccoli. Marc Leduc. Healingdaily.com. 2002.
<http://www.healingdaily.com/detoxification-diet/broccoli.htm>
- 16-** Foods That Fight Cancer
American Institute for Cancer Research

http://www.aicr.org/site/PageServer?pagename=dc_foods_home
- 17-** Apple phytochemicals and their health benefits
Jeanelle Boyer and Rui Hai Liu, Nutrition Journal 2004, **3**:5
- 18-** Apples. George Mateljan Foundation.
<http://www.whfoods.org/genpage.php?tname=foodspice&dbid=15#descr>
- 19-** Berries: Cancer-fighting super foods?
Karen Collins, R.D. <http://www.msnbc.msn.com/id/13484206/>
- 20-** Mushrooms and Health. GMHP Health Products.
<http://www.health.pon.net/nmh.html>
- 21-** Shiitake Mushroom. Nutri Herb, Inc.

<http://www.nutriherb.net/shiitake-mushroom.html>
- 22-** Mushroom medicine: these earthy delicacies are not only delicious - they treat cancer, AIDS and more - includes related article on how to use mushrooms – Herbalist
Christopher Hobbs. Vegetarian Times, Nov, 1997
- 23-** Spice Information
Ray Sahelian, M.D. <http://www.raysahelian.com/spice.html>
- 24-** Saffron. PDRhealth. Thomson Healthcare. 2007.
http://www.pdrhealth.com/drug_info/nmdrugprofiles/herbaldrugs/102450.shtml

- 25-** Turmeric. Encyclopedia of spices. The Epicentre.
<http://www.theepicentre.com/Spices/turmeric.html>
- 26-** Spice Healer
Gary Stix. Scientific American. 2007. Vol 296 (2). 66- 69.
- 27-** What Is Spirulina. Natural Ways To Health
<http://www.naturalways.com/spirul1.htm>
- 28-** Spirulina FAQ's. Australian Spirulina.
<http://www.australianspirulina.com.au/spirulina/spirulina.html>
- 29-** All about Spirulina. Spirulina.com. 2004
<http://www.spirulina.com/>
- 30-** Spirulina Boosts Immune System
Carole Gan. UC Davis Health System. 2000.
http://www.ucdmc.ucdavis.edu/news/spirulina_study.html
- 31-** Dietary Guidelines for Americans: Chapter 5 Food Groups To Encourage. United States Department of Health and Human Services. 2005.
<http://www.health.gov/DietaryGuidelines/dga2005/document/html/chapter5.htm>