Colour fights cancer!

Free Radicals and Phytochemicals Demystified

It took a while but the message is slowly getting out on the importance of antioxidant phytochemicals (or phytonutrients) in the diet. Phytonutrients are the nutritional elements that give fruit and vegetables their distinctive colours, odours and tastes. They mainly act as ***antioxidants*** which help form the body's defense against free radical damage to cells.

Free radicals are unstable chemicals formed in the body during normal metabolism or exposure to environmental toxins like pollution and cigarette smoke. Now free radicals are not all bad news. They help us generate energy and fight infections, but too many free radicals can attack healthy cells causing them to age prematurely. The action of rust is probably the best illustration of how excess free radicals work in the system.

Our bodies are being exposed constantly to an increasing amount of free radicals at precisely the same time our diets in the protective cell pigments are decreasing. Free radicals have been shown to cause or complicate most (but especially chronic) diseases such as cancer, heart disease, arthritis and cataracts. Antioxidants enhance the body's immune system and help to protect the body from the day-to-day onslaught of free radicals.

Vitamin C and E are in the front line as a defence against free radicals but they are far from the whole story. It's becoming clear that antioxidants work best in combination.

Many phytonutrients have been shown to retard one or more steps of the carcinogenic process in animals and humans. Depending on the system used, phytonutrients can directly inactivate mutagens and carcinogens and retard other cancer processes by sending growth restricting messages from healthy cells to pre-malignant cells.

Yellow, Orange, Red and Green Phytonutrients:

- Protect and repair cell DNA
- Improves exercise capability
- Preserve communication between cells
- Protect against cardio-vascular disease
- Stimulate immune surveillance (like white blood cells)
- Protect against cataracts and macular degeneration of the eyes
- Powerful scavengers of oxygen free radicals therefore anti-aging

The classes of phytonutrients that are reported to block one or more stages of the carcinogenic process include:

- Carotenoids
- Sulforophane
- Lycopenes
- Ellagic Acids and Anthocyanins
- Lutein

Carotenoids: A range of carotenoids are now thought essential for antioxidants to be effective. Carotenoids are the substance that gives fruits and vegetables their orange, yellow and red colours. They protect the plants in nature from ultraviolet radiation and do the same for anybody ingesting the plants as well. Green leafy vegetables are also high in carotenoids but the colour is masked by the stronger green pigment of chlorophyll. Several carotenoids have proved to retard cancer cell growth. These include lung, stomach, cervix, breast, oral and bladder cancer.

Sources: carrots, pumpkin, sweet potato, spinach, spirulina, cantelope, and sea vegetables.

Sulforaphane: One of 3 sulfur containing food phytochemicals that stimulate production of detoxification enzymes which guard against toxic chemicals and switches off mutagens and carcinogens in the developing stages of many cancers.

Sources: broccoli, garlic, onions, leeks, shallots

Lycopene: A red carotenoid that's a potent antioxidant and protects a wide range of cells from early destruction and cancerous changes. Effective guardian against the impact of radiation, also prevents heart attacks and strokes.

Sources: Tomato (cooked and eaten with some fat will release much higher levels of lycopene) Watermelon, Pink Grapefruit, Apricots

Ellagic Acid and Anthocyanins: Belong to a group of beneficial food factors called polyphenols. Inhibit development of lung and skin tumors. Prevents creation of certain carcinogenic states 'nipping the process in the bud' by acting as a free radical scavenger preventing damage to cell membranes, preventing tumor production

Sources: All berries, walnuts, Green Tea, Apples, Grapes

For cancer and disease prevention, research has established the need for at least one serve daily preferably from a variety of colour sources

Lutein: This powerful carotenoid helps extinguish peroxide free radicals and prevents heart disease, reducing the impact from exposure to electromagnetic radiation and the major prevention of macular degeneration and other eye diseases. Protects the macula of the eye from macular degeneration very common in old age.

Sources: Red Algae (Duniellia salina), Spinach, Peas, Egg Yolks, Squash