

Health benefits of whey

In a review entitled 'Functional properties of whey components, and essential amino acids: mechanisms underlying health benefits of whey for active people' Ewan Ha and Michael B. Zemel of USA have concluded that whey protein and amino acid supplements are positioned as high quality protein and amino acid sources and as a potential means to enhance lean body mass in conjunction with appropriate training. Benefits of whey may extend beyond muscle anabolism. The calcium and mineral mix found in certain whey products can potentially mediate body composition by shifting nutrient partitioning from adipose to lean tissue. Individual amino acids and bioactive compounds isolated from whey may also improve immune function and gastrointestinal health.

Whey proteins and amino acid supplements have a strong position in the sports nutrition market based on the purported quality of proteins and amino acids they provide. Recent studies employing stable isotope methodology demonstrate the ability of whey proteins or amino acid mixtures of similar composition to promote whole body and muscle protein synthesis. Many bioactive components derived from whey are under study for their ability to offer specific health benefits [Ha & Zemel, *J Nutritional Biochem*, 2003,14(5), 251-258].

Green tea cancer preventive beverage

Green tea is a unique cancer preventive medicine with two facets as beverage and drug. Herbal remedies, including green tea are nothing new, but by introducing the concept of cancer prevention Fujikia and others from Japan demonstrated that green tea saves people's lives. Green tea can also prevent life-style related diseases and other modern maladies, and that it has life-prolonging effects.

Green tea and (2)-epigallocatechin gallate (EGCG) are now acknowledged cancer preventives in Japan. For the general population, the scientists recommend 10 cups of green tea daily supplemented with green tea tablets. For cancer patients, undergoing regular treatment, it is found that green tea and a cancer preventive drug, sulindac, have synergistic preventive effects (Fujikia *et al*, *Cancer Letters*, 2002, **188**, 9-13).

Spray drying of betalain dye from red beet roots



Betalain is an excellent natural dye obtained from the beet root juice. Beet roots are processed for juice production using water or acidulated water by mechanical expression or diffusion techniques. The juice is then centrifuged,

pasteurized and concentrated yielding approximately 70% sugar and 0.5%- 1% betalain. Spray drying of the juice with suitable cost-effective and edible carrier is essential for using beet root dye as powder in dairy and frozen products.

The experiments done by Koul and others at Regional Research Laboratory, Jammu describes the process of spray drying of betalain dye from red beet roots using different carriers. The carriers used are malto dextrine, gum acacia and soluble starch. Effect of these carriers, in varying percentages, with

freshly extracted beet root juice was studied during spray drying. The chamber temperature of spray drier was maintained in the range of 150°-165°C. The studies showed that with decrease in percentage of carriers in the juice, the percent yield of betalain increased. This was observed by optical density and betalain content estimation. The shelf life studies of this spray dried betalain dye powder, over 180 days showed that the dye is quite stable in the temperature range of - 4°C to 20°C (Koul *et al*, *Indian J Chem Tech*, 2002, **9**, 442-445).



Colorants from natural sources are used in manufactured foods to make them more appealing. Among the natural colorants, extracts obtained from annatto (*Bixa orellana* Linn.) have been used in many-processed foods, especially dairy products. Because annatto colours are comparatively inexpensive, and much large annatto cultivation guarantee its stable supply, the annatto extracts became a very attractive and convenient colour source. The concern that exposure to environmental chemicals could induce deleterious alterations in the DNA of humans led to introduction of requirements for testing the mutagenic properties of chemicals, including food additives. On the other hand, due to the relationship between food, nutrition and cancer, the latter being a largely preventable disease, attention has been focused on whether naturally occurring

Mutagenicity and antimutagenicity of annatto food colour

compounds can modify the mutagenic and carcinogenic effects of environmental contaminants.

The yellow-red pigment obtained from annatto seeds is a mixture of carotenoids such as bixin, norbixin, β -carotene, cryptoxanthin, lutein, zeaxanthin and methylbixin. It is known that diverse carotenoids protect against chemically-induced transformation of cultured cells and prevent or modulate the genetic damage caused by some known mutagens/carcinogens. Considering these aspects, the economic importance of annatto, and the fact that bixin (the main colorant of annatto) is one of the most effective biological singlet molecular-oxygen quenchers de Lima and others from Brazil evaluated possible toxicological or protective potential of annatto colour powder against induced DNA damage.

The micronucleus test was performed in bone marrow cells from Swiss male mice treated with one of the

three concentrations of annatto (1330, 5330 and 10,670 ppm), incorporated into the diet. The animals were fed with the diets for 7 days and sacrificed 24 h after the last treatment. For the evaluation of the antimutagenic potential of annatto, at day 7, the animals received an intraperitoneal injection of cyclophosphamide (50 mg/kg body weight). Under the concentrations tested annatto did not present mutagenic or antimutagenic activities on the mice bone marrow cells. However, an increased frequency of micronucleated cells was observed when the highest concentration (10,670 ppm) was administered simultaneously with cyclophosphamide. In conclusion, the data indicate that annatto colour, for the conditions used, is neither mutagenic nor an inhibitor of induced mutations, although it should be used carefully since high doses may increase the effect of a mutagen (de Lima *et al*, *Food Chem Toxicol*, 2003, **41**, 189-192).

Natural dyeing of egg

Eggs can be dyed for making them attractive. The dye used for this purpose are natural and harmless. To start the process of dyeing get the eggs ready by washing in mild soap and warm water to remove any residue. Longer boiling or soaking will make the colour deeper. Eggs keep better the longer they are boiled. Half hour boiling is sufficient to maintain texture or taste. Use a teaspoon of vinegar to help set the dye in these; add it at the same time you add the egg.

For making these eggs light green use the water from canned or fresh cooked spinach and boil eggs in it or pick a few dandelion leaves to boil them in. Add carrot tops, celery seed or orange peel to water for imparting pale yellow colour to eggs. Ground turmeric or onion skins for deep yellow; coffee and tea for tan. For blue colour boil red cabbage leaves in water, then use the cool liquid to dye boiled eggs. Or let the eggs set in juice drained from canned blueberries. To obtain pink colour use the liquid from canned or pickled beets, or boil along with a fresh beet, or chopped rhubarb stalks, red onion skins and lavender from purple grape juice (<http://frugalliving.about.com/library/bleggcolors.htm>).