

Antiageing agent from Arecanut

Triterpene, steroid saponins and sapogenins of plant origin are claimed to be effective for the treatment/prevention of panniculopathy oedemato-fibro sclerotica, but the mechanisms by which these compounds are active have never been elucidated. To develop active agents for skin anti-ageing, Lee and others from Korea screened the inhibitory effects of 150 medicinal plants on elastase activity and found a significant inhibitory effect of Arecanut, *Areca catechu* Linn. extracts on the ageing and inflammation of skin tissues. They evaluated the inhibitory effects of these plant constituents on the activity of elastase and hyaluronidase, which are involved in the turnover of the main components of the skin matrix.

To isolate and identify the compounds having biological activity, extracts were further purified by each fraction



Arecanut dried



Arecanut green

of solvents, silica gel column chromatography, preparative TLC and reversed-phase HPLC. The peak in HPLC, which coincided with the inhibitory activity against elastase, was identified as a phenolic substance by using various colorimetric methods, UV and IR. IC_{50} values of this phenolic substance were 26.9 mg/ml for porcine pancreatic elastase and 60.8 mg/ml for human neutrophil elastase. This phenolic

substance showed more potent activity than that of reference compounds, oleanolic acid and ursolic acid. The phenolic substance also effectively inhibited hyaluronidase activity.

The results demonstrate that the phenolic constituents are more active among the naturally occurring substances used for the potentially cosmetic prevention/treatment of liposclerosis, because it inhibits both the enzyme systems involved in the degradation

of the main constituents of the perivascular matrix. In particular, the remarkable inhibition of elastase by phenolic substance may protect the major proteins of

the extracellular matrix, activate its reconstruction, and indirectly improve the tone of the capillary walls. Thus the phenolic substance purified from Arecanut has an anti-ageing effect by protecting connective tissue proteins [Lee *et al*, *Int J Cosm Sci*, 2001, 23(6) 341-346].

Antioxidant effects of barley

Lipid peroxidation causes deterioration of foods and makes them unacceptable to consumers. Lipid peroxidation is strongly associated with ageing and carcinogenesis. It is therefore necessary to suppress lipid peroxidation in food, preserve the nutritive and aromatic qualities, and maintain the food's safety and wholesomeness. Antioxidants are the



substances that, when present at low concentrations compared to those of oxidizable substrate significantly delay or prevent the oxidation of that substrate. Hence, antioxidants are widely used in food

manufacturing to inhibit lipid oxidation.

Barley, *Hordeum vulgare* Linn. is used extensively in industrial commodity and fermentation products. Fermented barley scavenges superoxide anion radical. An antioxidative compound, 2'',(3'')-O-glycosylisovitexin exists in barley leaves. Roasted barley is in daily use in beverages in China for centuries. Duh and others studied the antioxidant activity of roasted barley and also the effects of roasting temperature on the antioxidant activity of barley.



The antioxidant effects of water extracts of roasted barley (WERB) were investigated under different roasting temperatures and compared with those of the water extracts of unroasted barley (WEUB). Both WERB and WEUB exhibited significant antioxidant activities in linoleic acid and liposome model systems. Although WERB and WEUB afforded considerable protection against the damage of deoxyribose and proteins, the antioxidant efficiency of roasted samples was weaker than that of the unroasted samples because of the reduction of antioxidant components (catechin, tocopherol, and leutin) with increasing roasting temperature. Unroasted samples were more effective in reducing power, quenching free radical, hydroxyl radical, and chelating iron than the roasted samples [Duh *et al*, *J Agric Food Chem*, 2001, 49(3), 1455-1463].

Inhibition of cholesterol auto-oxidation by rice bran oil

Crystalline cholesterol and aqueous cholesterol dispersions readily undergo oxidation at relatively mild temperatures when exposed to air, with the oxidation reactions producing a variety of products. Some cholesterol oxidation products (COP) have been shown to be cytotoxic, atherogenic, mutagenic, and carcinogenic. These COP are formed in foods containing cholesterol during the cooking process or during prolonged storage. Eight common auto-oxidation products of cholesterol have been identified among which 7-ketone derivative of cholesterol, 7-ketocholesterol is found at high concentration in certain foods like muscle tissue.

There are two practical approaches to lower the cholesterol oxide contents in meat products. The first is to increase the level of endogenous

antioxidants in muscle cell membranes by dietary supplementation of antioxidant compounds, primarily vitamin E. The vitamin E supplementation of animal diets has been shown to be effective in reducing cholesterol oxide levels in cooked pork, raw and cooked veal, and vacuum-packed cooked beefsteaks. However, dietary supplementation with vitamin E or other antioxidant compounds incurs greater feed costs, which may not be acceptable to animal producers. Another alternative is



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to add antioxidant compounds directly to meat products. The inclusion of the purified non-saponifiable fraction of rice bran oil into food products may be a compelling way to obtain natural antioxidants.

Rice bran oil contains potentially important cholesterol oxidation-lowering agents in the non-saponifiable fraction (4.2% of oil by wt) that includes tocopherols (T), tocotrienols (T3) (0.08%), and especially γ -oryzanol (1.6%). Oryzanol is a mixture of ferulate esters with sterols and triterpene alcohols, predominantly campesterol, 24-

methylene cycloartenol, and cycloartenol. Compared with other cereals, rice bran has a high level (3.5g/kg bran) of oryzanol. Kim and others from Louisiana State University Agricultural Center, USA studied the inhibition of cholesterol autooxidation by non-saponifiable fraction from rice bran oil (700, 1400, and 2100 ppm) in an aqueous model system for 16 hr at pH 5.5 and 80°C. Antioxidant effectiveness was investigated by following the loss of cholesterol and the formation of 7-ketocholesterol. The changes in levels of vitamin E vitamers and γ -oryzanol in the system were determined during cholesterol autooxidation.

This study showed an antioxidative effect of non-saponifiable fraction from rice bran oil in suppressing cholesterol auto-oxidation. The addition of natural antioxidants, such as the non-saponifiable fraction in rice bran oil, at high levels into a food system may bring several benefits. It may increase the nutritional value of the food and allow it to play a role as a functional food as well as inhibit auto-oxidation [Kim *et al*, *J Am Oil Chem Soc*, 2001, **78**(7), 685-689].

Fruit

Watermelon to solve male impotence

Aftab Ahmed, Head of Business Development for Naturally Vitamins at Scottsdale, Arizona, USA has found that watermelon, *Citrullus lanatus* (Thunb.) Matsum. & Nakai may be the answer when it comes to treating male impotence. Watermelons contain the amino acid citrulline, which has libido-enhancing properties and is the key ingredient in the dietary supplement, stimulin, produced by natural Vitamins.

Citrulline is easily and completely absorbed into the blood stream. Once there, it triggers the production of the neurotransmitter nitric oxide, which, in turn, increases blood flow throughout tissues in the body including erectile tissues in male organs [J Sci Industr Res, 2001, **60**(5), 432].

