



Herbal Antioxidant: An Emerging Health Protector (Veggie route to healthy living)

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ABSTRACT

In spite of several defense mechanisms existing in the physiological system of the body, the free radicals add on to hepatic damage, hypertension, Alzheimer's disease, Parkinson's disease and many more. Various herbs have been reported to contain number of bioactive moieties that render them powerful antioxidants, and have been cited as promising biochemical aids in the treatment of carcinogenic activities, atherosclerosis, and diabetes – posing antimicrobial, anti-inflammatory and neuro protective abilities. The model role of antioxidants has been approved to reduce the rate of particular oxidation reactions in a specific context, involving transfer of electron from a key substance to an oxidizing agent. Antioxidants scavenge free radicals and thus inhibit the oxidative mechanisms that lead to degenerative disorders. Reactive oxygen species like H_2O_2 and hydroxyl ions (-OH), which are highly unstable, damage cells by chain reactions. Researches of eminent scholars indicate that consumption of antioxidants – rich food stuffs reduces damage to cell membrane and certain biochemicals e.g. nucleic acids. They have been found to prevent, or even reverse various diseases that result from cellular damage and also to an extent slow down the natural ageing process. Since ancient times, Ayurvedic formulations have been used to cure several ailments with minimal side effects, as the herbs mentioned in the texts and manuscripts are considered safe for human consumption. Recent findings have indicated that there is inverse relationship between the dietary intake of antioxidant rich foods and the incidence of human disease. Thus antioxidants play a vital role in checking oxidative stress taking place in physiological processes. Studies are being carried out in various organizations to know about the details of antioxidative properties and pharmacological action of constituents in various herbs, vegetables and fruits. The enzymatically potential antioxidants hitherto known are superoxide dismutase, catalase and glutathione peroxidase. In the non-enzymatic category, there are vitamin-A, vitamin-C, flavonoids, β -carotenoids, uric acid (urates), ubiquinone and other synthetic compounds viz. DHEA, melatonins etc. The goal of present paper is to recommend the research for the development of inexpensive, highly available and effective naturally aesthetic antioxidants from biodiversified medicinal flora of the modern era, which is in fact an utmost need of hour.

Key words: Eco-friendly compost; Biopesticides; Phytochemicals; Aonla; Aloe vera; Viniferin; Polyphenols; Reseveretol; Oligomeric procyanidines, Lingra, Monolaurin, Vit. C

INTRODUCTION

An apple a day keeps the doctor away! Most of us grew up with this old adage. But in accordance with the reports of new researches, the key to good health is to combine certain fruits and vegetables in diet to ward off modern day diseases. It has been established that there are synergistic antioxidants benefit when certain vegetables herbs and fruits are eaten up together. It thus observes, "An onion, a tomato and pomegranate a day keeps the doctor away" Prof. Michael Aviram, head of LRL at the faculty of medicine TIT Provides backing to the age old belief that one should eat all vegetables (of course grown in soil having use of bio fertilizer, vermi compost, and bio pesticide, neem based) to stay health.

Although oxygen is essential for life, it can have adverse effects on our body. In the normal physiological process of using oxygen chemical changes occur that create reactive unstable moieties called free radicals. Simply put they are chemically misbalanced and prone to attack healthy tissues damaging cell membranes, and interfere in the exchange of ions through cell membranes of genetic material that is DNA.

However, cells have special agents for combating radicals are called antioxidants. A great deal of recent research sug-

gests that antioxidants may play important role in preventing or delaying, the onset of heart diseases, cancer and other illness, and even halt the damage to the cells, thereby showing the effect of ageing. A survey of the literature on the antioxidants reveals that three house nutrients viz. vit C, vit E & beta-carotenes (a plant based substance from which vit. A is formed) are crucial disease fighters. The Se and Zn also act as antioxidants that help prevent damage of cells incurred due to oxidants. Enzymes and certain other compounds (such as glutathione) manufactured by the cells themselves also function as antioxidants. Whole fruits and vegetable contain a wide range of natural antioxidants. In supplement form, however antioxidants provide only limited benefits since they usually contain a specific isolated antioxidant (Maheshwari, 2005).

Some of the herbs that have proven antioxidant properties are *Curcuma longa* (turmeric) *Allium cepa* (garlic), *Gloriosa superba* (Kulhari), *Terminalia arjuna* (Arjun), *Eugenia jambalova* (Jamun), *Ocimum sanctum* (Basil), *O. bacillicum* (Holy basil), *Withania somnifera* (Ashwagandha), *Tinospora cordifolia* (Tinospora),



Glycyrhiza glabra (Mulethi), *Asparagus racemosus* (Shataanasi), *Zingiber officinalis* (ginger) and *Aloe barbedanse* (Aloe vera). Besides tomato, guava onion, watermelon, and tea servings have also been found to contain antioxidants. The powerful anticancer and anti-inflammatory activities of cumene longa are assigned to be due to a constituent curcumin which is known as a potent inhibitor of lipid per oxidation and scavenger of oxygen free radicals. Cumin has also been found effective in delayed hyper sensitive reactions without toxic effects (Dheer et al., 2005).

The antihypercholesteronic activity of *Terminalia arjuna*, anti-inflammatory activity of *Boswellia serrata* and the anti-diabetic potential of *Glycyrhiza glabra* are well documented as powerful antioxidants (IJCP, 1995) Indian species viz. clove, cinnamon, pepper mint, etc. have been found to show anti-oxidant properties by Cadenas, 1989. Aonla (a rich source of Vitamin C) has been considered as potential antioxidant as it helps prevent lipid per oxidation fights injections diseases and aids functioning of CNS. Agarwal & Rao (1998) investigated that lycopene (a principal pigment of ripe tomato and straw berries acts against oxygen to fight cancer, heart diseases, ageing etc).

Hibiscus sadariffa (gonguru) an annual dicotyledenous herbaceous shrub of family Malvaceae is commonly used to make gellies, jams and beverages. In the Ayurvedic literature different parts of this plant have been recommended as a remedy for various ailments such as hypertension, pyrexia and liver disorders. Melatonin, a hormone secreted by pineal gland is the most effective antioxidant since it easily penetrates cell membranes (especially in brain) and cross the blood brain barrier very effectively to provide protection against free radicals unlike vit. C or glutathione, which are only active in aqueous phase and vit. E, which is only effective in lipid phase, melatonin is effective in both aqueous and lipid phases.

Anthocyanins flavanoids along with others have been identified as contributors to the observed medicinal effect of *Hibiscus sadariffa*. These antioxidants have been shown to offer protection against atherosclerosis and cancer. It is well documented that most medicinal plants are enriched with phenolic compounds and bio flavanoids that represent potent antioxidants.

There is currently a growing body of evidence. That supplementing the human diet with anti-oxidants is a major benefit for health and well being. In accordance with a report published in journal of Neurology, eating vegetables appears to help keep the brain young and may slow the mental decline sometimes associated with growing old. Green leafy vegetables including spinach, kale and collards containing more vit. E than fruits, when are eaten with healthy fats such as salad oils help the body absorb vit. E and other antioxidant thereby keeping cholesterol low and arteries clear which is both contribute to brain health said Maratha Clave Morris, a researcher at the Rush Institute for Health ageing at CRUMC.

What is your idea of good health? A balanced diet with lots of fruits and vegetables, regular exercise, no smoking, no alcohol, etc. Now add coconut to this and see the big difference.

This may sound bizarre. After all for the past three de-

cadec there has been so much misinformation on coconut oil and its properties. Recent studies however have happily reaffirmed the traditional wisdom about the nourishing, healing and rejuvenating properties of coconut. Look for a moment at the natural fibre in the kernel, the medium chain fatty acids in the coconut oil and the minerals and nutrients in the water of the tender nut- and you have most of what you need to keep your brimming with life and health.

Interestingly people across the globe in 93 countries spanning 6 continents had coconut as an essential part of their diet. They lived long and healthy, free from most of degenerative diseases that are prevalent today.

In our fast paced lives, it's to forget about maintaining a healthy diet and exercising regularly, let alone relaxing and taking time out to do things we enjoy.

And if we don't take precautions, we may feel worn out, with little energy for loved ones and our health can suffer, sometimes badly.

It is here that the good old 'Coconut' nature's own gift for mankind can help you how get more out of life and maintain your wellness, with a range of health benefits that will sure put you on the road to a healthier lifestyle. Many have already switched to coconut and if you haven't switched yet, it's time you make your choice and start experiencing the goodness of coconut from today.

Coconut is now gaining repute for its medicinal values. Modern medical science has recognized its curative powers. Many published studies in medical journals show that coconut, in one form or another provides a wide range of health benefits...

- The lauric acid in coconut oil is use by the body to make the same disease fighting fatty acid derivative monolaurin that babies make from mother's milk.
- Improves anti-inflammatory response of the immune systems.
- Inactivates various microorganisms such as bacteria, yeast, fungi, etc.
- Its consumption increases energy and normalizes blood sugar.
- Restores thyroid functions and increases the metabolic rate.
- Improves digestion and bowel function.
- Functions as a protective anti-oxidants.
- Helps protect the body from harmful 'free radicals' that promote premature ageing and degenerative diseases.
- Reduces symptoms associated with psoriasis, eczema and dermatitis.
- Supports the natural chemical balance of the skin.
- Provides protection from damaging effects of ultraviolet radiation from the sun.
- Doesn't produce harmful effects when heated to normal cooking temperature.
- The water of tender coconut has been billed "the world's safest soft drink".
- It is traditionally considered a wound healer, especially effective in preventing the formation of scars if applied topically.
- The best reason to love the magic fruit is its delicious



taste and flavor.

Tree melon- papaya is the fruit of *Carpenteria* tree of *Caricaceae* family. Originally from Southern Mexico and neighbouring countries, the papaya plant is now cultivated in most tropical countries. Christopher Columbus reportedly called it "*the fruit of angels*" and not without reason! The papaya is regarded as a fair source of iron and calcium, a good source of vitamins A, B, E and a good source of vitamin C and beta-carotene, very powerful anti-oxidants which help prevent the oxidation of cholesterol. Papaya's fibre is able to bind cancer causing toxins in the colon. In addition papaya's folate, vit. C, beta-carotene and vit. E, have each been associated with a reduced risk of colon cancer. These nutrients provide synergistic protection for colon cells from free radical damage to their DNA. Fibres may also help with the symptoms of those suffering from irritable bowel syndrome (IBS). Extracts of ripe and unripe papayas fruits and of the seeds are active against gram-positive bacteria. The substance has protein like properties. The fresh crushed seeds yield the aglycone of glucotropaeolin benzyl isothiocyanate that is bacteriostatic, bactericidal and fungicidal. The major components of tea viz. thioflavins and flavanoids have been found to scavenge free radicals, which aids lipid peroxidations platelets oxygenation and accelerate onset of LDL - oxidation (Serafini et. al., 1997). Gurdeep et. al., 1998, found that volatile oil obtained from Ajwain, Holy basil, Cumin and peppermint possess better antioxidant properties than synthetic oxidants and are helpful in improving pharmaceutical formulation which otherwise would undergo oxidative decomposition.

In accordance with a report of a researcher N Joy Dubost (Pennsylvania) some species of mushrooms viz. shitake & oyster were found to contain antioxidants green chilli, tomato, pumpkin, carrot and green pods.

Antioxidants in supplement form don't measure up to the benefits that come from eating the whole vegetables or fruits from which they are derived.

The technician researchers found that ingesting combination of certain antioxidants yield better results than these antioxidants severally, as vit E fights specific free radicals only. When vit. E is combined with other anti oxidants like beta carotene lycopene and some flavanoids found in tomatoes, the benefits are far greater than those vitamin E taken alone, because these is a synergistic, co-operative inter action between certain antioxidants, says this report published in Journal of free radical Research. Aviram was the first to prove that red wine reduces cholesterol oxidation and arteriosclerosis which lead to heart diseases. The researches are now putting down the beneficial effect of red wine to the fact that it contains tanins, viniferin, resveratrol and poly phenols which have anti oxidant properties and have been shown to stifle tumor or development and growth in experimental research. A report of researcher M Falchi, UM published in the journal of Agriculture and Food Chemistry. For the development of blockages in the coronary arteries, one of the initial steps is the oxidation of LDL cholesterol also known as bad cholesterol. This oxidized LDL cholesterol is taken up by certain special cells and is deposited in the inner lining of the arteries, starting the pro-

cess alter sclerosis. Alcohol especially is thought to prevent this oxidation from taking place. These are flavanoids also found in grapes, leading to suggestion that it may be non alcoholic portion of the wine, namely grape juice which may be providing the anti oxidant effects. The study, however does not imply that people should start consumption of any kind of alcohol is found to be harmful and might cause other types of cancers. There is a strong evidence that regularly drinking large amounts of alcohol increases the risk of cancer of mouth, larynx, pharynx and oesophagus and leads to adverse effects like high B.P. stroke heart rhythm disturbances, cardiomyopathy and liver problems such as cirrhosis, in accordance C a report of specialist prof. Tim Key, published in British Medical Journal (London). Dark soya sauce derived from fermented soya beans widely used in Asia may prove to be more effective than red wine in combating human cell damage as reported by researchers in Singapore (The Economic Times New Delhi 6-6-06)

Coffee is not usually thought of as health food but a number of recent studies suggested that it can be highly beneficial drink. Researchers have found strong evidences that coffee reduces the risk of several serious ailments including diabetes, heart ailments, cirrhosis of liver. Among them is a systematic review of studies published last year (05) in the journal of AMA, which concluded that habitual coffee consumption was consistently associated with a lower risk of type - 2- diabetes. Coffee contains antioxidants that help control to cell damage that contribute to the development of the disease. It is also a source of chlorogenic acid, which has been shown in animal experiments to reduce glucose concentrations. Caffeine perhaps coffee's main ingredient seems to have little to do with it. Studies that looked at decaffeinated coffee alone found the same degree of risk reduction. In a report that combined statistical data from many studies, researchers found that people who drank 4-6 cups of coffee a day had a 20% reduced risk compared with who drank >6 cups had a 30% risk reduction. Some studies show that cardiovascular risks also decrease with coffee, consumption. Using data on > 27000 women ages 55 to 70 in the IWHs who were followed for 15 yrs. Narwegi, a researcher found that woman who drank 1-3 cups a day reduced their risk of cardiovascular diseases by 24% compared with those drinking no coffee at all. But as the quantity increased the benefit decreased. At >6 cup a day the risk was not significantly reduced still, after controlling for age, smoking and alcohol, women who drank 1-5 cup a day caffeine, tea or decaffeinated reduced their risk of death from all causes.

In findings which appeared in May 05 in the Journal of Clinical Nutrition, suggest antioxidants may dampen inflammations reducing the risk of disorders related to it like cardiovascular disease. Several compounds of coffee contribute to its antioxidant capacity including polyphenols, volatile aroma compounds and oxazoles that are efficiently absorbed in another analysis, published in July 05 in the same journal, researchers found a typical serving of coffee contains more antioxidants than grape juice, give berries and oranges. It is surprising that coffee quantitatively is the major contributor of antioxidants in the diet to the in Norway and in the USA said



Prof. Pune Blomhaff, senior author of both studies (Dept of Nutrition, UOC).

A large number of people in the Himalayan region, particularly in remote areas, depend on a variety of plants. In far-flung rural settlements, where vegetable cultivation is not practiced and market supplies are not organized local inhabitants depend on indigenous vegetables, both cultivated in kitchen gardens and growing wild. Among them is lingra (*Diplazium esculentum*). Lingra fronds grow in all moist, humus rich places under forest canopy and even on road sides at altitudes ranging from 1,900m-2900m above sea level; they are also easily found in Dehradun, Shimla, Gangtok and other state level markets of hill states. The fern is an essential part of cuisine in the Himalayan region, especially from March to July. The fronds are collected by women when they go to forests to collect fuelwood and fodder. People in urban areas grow lingra in their kitchen gardens (in hill culture kitchen gardens are a must have for every house).

Lingra has 80 per cent water content 8 per cent carbohydrate and nearly 8 per cent protein content. The shoots and fronds of lingra have an iron content of 0.56 per cent. A comparison of mineral contents of these wild edible species has revealed that lingra has much higher calcium content. The fronds are reported to cure epilepsy, urinary diseases, stings & bites, rheumatism and leprosy. Lingra is also used as a remedy against constipation and as a general health tonic. It's not just food. It serves other functional purposes as well in every day life. When there are torrential rains in the hills and logging off trees for fodder and cattle bedding (to keep warm) is not possible, inhabitants of Kedamath valley and moist valleys of Utrakhnad use the mature fronds for the purpose and later produce manure by mixing with cow dung.

Extract of green tea and genestine from soya are two ingredients that are getting a lot of attention for their antioxidant properties and ability to repair UV damage as well. "Healthy seed oils, such as grape seed oil, olive oil* and coco butter can be made cold water dispersible" this opens the gate to completely new types of formulas and formulation techniques. Grape seed oil is devised to enhance skins resistance to oxidative damage using grapes potent antioxidants.

Jojoba oil based products featuring di unsaturated and oxidation resistant esters impart luxurious feel. Linolic acid present in pistachio seed oil provides moisturizing effects to the skin and increases skin hydration. Hemp seed refined oil loaded with omega-6-fatty acids has reduced scaling and cracking of skin and enhances soothing of skin. It replenishes the scalp, enhances spreading of sunscreen, modifies greasy feel of some styling aids and also serve as a shining lubricator and counter acts the driving effects of biomoacid dye solvents found in lipsticks. Nurture oat oil a rich antioxidant inhibits lipid per oxidation treats winter xerosis and protects catalase against degradation UV radiations. Aloe vera now a days is achieving the popularity due to its anti oxidative and neuro chemical properties as is being used in curing inflammation, gastro intestinal disorders and boosting of immune system.

*Nutritionally olive oil contains 120 calories and 14 grams of fat per table spoon; however, the fat is mostly

monounsaturated, which has a beneficial effect on blood cholesterol levels and is easily digested. In countries where olive oil plays an important role in diets, such as Greece, Italy and Spain, there is low incidence of cardiovascular diseases. The mild vegetable mucilage in olive oil also protects the body's digestive tract. Ancient civilizations used olive oil, well- to help heal wounds. Today olive oil is prized as a moisturizer and skin remedy. *Taken internally, it stimulates metabolism, promotes digestion and lubricates mucous membranes.* Olive oil contains 77 per cent monounsaturated fatty acids 14 per cent saturated fatty acids and 9 per cent polyunsaturated fatty acids, plus vegetable mucilage and vitamin E (an oxidant). In addition monounsaturated fatty acids are less easily damaged by oxygen than other types fat. They are less likely to produce free radicals which damage cell membranes and contribute several diseases.

A part of the same botanical family as onions, scallions and garlic, chives (*Allium schoenoprasum*) grow from small bulbs and have a long history of culinary and medicinal uses. In the Middle Ages, chives were promoted as a cure for melancholy and believed to drive away evil spirits. Today we know that chives and chives flowers are high in vitamin C, folic acid and potassium. Therefore, they should be routinely added to recipes to help restore vital nutrients lost in cooking. This herb's tangy, aromatic taste comes from its high concentration of sulfur compounds and other essential oils, which are also partly responsible for its healing properties. Chives ease stomach distress, protect against heart disease and stroke and may help the body fight bacteria that can cause disease. In addition, the herb may increase the body's ability to digest fat. *The medicinal properties of chives are as varied as their uses in the kitchen. Chives stimulate the appetite and promote good digestion. They can be used to ease stomach upset, clear a stuffy nose, reduce flatulence and prevent bad breath. Combined with a low- salt diet, they help lower high blood pressure. Plus, they have a mild diuretic effect, as well as some antibacterial properties.*

Chives are valued for their many essential minerals, including cardiac- friendly potassium, bone-strengthening calcium and blood making iron. And unlike most other members of the onion family, chives are high in folic acid, vitamin A and vitamin C. in fact, just 3^{1/2} oz. of chives supplies enough vitamin C to meet daily requirement of 60 mg.

Conclusively it is suggested that one should opt for nature to get benefit from health point of view. Our parents used to tell us to take the fruits and vegetables available in the particular season. The nature is of immense importance that it has gifted us with such a diversified vegetables and fruits, which help prevent fatal health disorders.

Real men eat meat, right & wrong. Far from macho, meat makes us less of a man. Evidences reveal that vegetarians make better lovers. All body organs depend on blood supply, when arteries to the heart get jammed the ticker stops. Similarly with what's it do within the arteries start to clog. The organ takes longer to play. Once the obstruction worsens, were no longer up to the job. Sacked from the sack. In America where people live on steak and hamburger 1 in 4 over 60 yrs. old man are completely impotent and by age 23,



3 out of 4 men have at least one major arterial blockage, turning from red to white won't help either both chicken and fish have plenty of cholesterol and fat. Turning veggie on the other hand reverse arterial blockage restoring our latinsque libido plus providing looks to match since the average men who turns veggie becomes 10% leaner. Plant foods, are not only low in calories themselves but their natural starches stimulate two natural hormones in our body which accelerate our colon burning metabolism. Going veggie could mean we get to keep our hair on longer. In Japan as the diet has become westernized, i.e. more flesh and fat, baldness is more common especially in younger man. Meat hastens hair loss because testosterone produced by a meat based diet also causes over production of cells in the prostate gland. An overgrown prostate pinch off urinary flow causing a condition that leaves us taking trips to the loo all night. Going veggie also brings us closer to the new age material as research has shown that the more fiber in a man's diet, the less likely is to be aggressive and domineering animal foods do not contain any fibre at all so the more we fill up on them, the less fibre in our digestive tract which means we end up a bullying boor. So there it is the most effective sexual aid is not a little blue pill but those greens on the grocery shelf. Face it, feel as, real man eat ghas-phoos.

ABBREVIATIONS:

UOO(University of Oslo), AMA(American Medical As-

sociation, UOA(University of Arizona), IWHS(Iowa Women Health Study), CHD(Coronary Heart Disease), DNA(Deoxyribose Nucleic Acid), LRL(Lipid Research Laboratory), TIIT(Technion Israel Institute of Technology), HORL(Heamatology and Oncology Research Laboratory), TU(Tufts University), LDL(Low Density Lipid), UOC(University of California), CRUMC(Chicago Research University Medical Centre),UM (University of Milan), CNS(Central Nervous System)

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