

Important Anti Cancer & Cardio Protective Herbs and Spices!

Anise

(Pimpinella anisum)

Healing essence of anise:

Anti-cancer

Cardioprotective

Antioxidant

Anise is a Mediterranean spice that, in the West, is used mainly to flavour confectionery. In its native countries it is an important flavouring for alcoholic drinks like raki, ouzo and pernod. Traditionally it is used to treat coughs.

Medicinal properties:

Anise contains limonene which is known to have an inhibitory effect against a number of cancers.

It also contains eugenol which inhibits platelet aggregation. This makes it a valuable spice to take in the prevention of cardiovascular events such as heart attack and stroke.

Important phytonutrients:

Antioxidants: Caffeic acid, camphene, chlorogenic acid, eugenol, myristicin, rutin.

Others: Bergapten, limonene, pinenes, terpinols.

Basil

(Ocimum basilicum)

Healing essence of basil:

Anti-viral

Antioxidant

Cardioprotective

The leaves of the basil (or sweet basil) plant are used extensively as a condiment in both Eastern and Western cuisine. This spices traditional non-culinary uses are as a digestive aid and an antiseptic. The benefits of basil are due to a number of its phytonutrients that have been well researched in other spices and are known to have important medicinal properties.

Medicinal properties:

Basil contains several potentially beneficial anti-microbial compounds.

Ursolic acid and apigenin demonstrate strong activity against the herpes viruses, and apigenin is also effective against hepatitis viruses.

Linalool helps fight adenoviruses that are responsible for the common cold and other respiratory infections like croup.

The antioxidant, eugenol inhibits platelet aggregation and therefore gives protection against heart disease and thrombotic stroke.

Important phytonutrients:

Antioxidants: Apigenin, carophyllene, eugenol, geraniol, methyl eugenol, ursolic acid

Others: Cineol, citral, linalool, methyl chavicol, methyl cinnamate.

Bay Leaf

(Laurus nobilis)

Healing essence of bay leaf:

Anti-cancer

Antioxidant

Anti-inflammatory

Cardioprotective

Bay leaf benefits recipes and is used to flavour meats, poultry, seafood and many other dishes. The essential oil derived from this spice is also used in the perfume and confectionery industries. In some societies, it has symbolic importance and in the ancient Olympic Games the winner of each event was crowned with a garland of bay (laurel) leaves.

Medicinal Properties:

Cancer

Bay leaf contains caffeic acid, quercetin, eugenol and catechins, all of which have chemoprotective properties against several types of cancer. Another one of its phytonutrients, parthenolide, has been shown to specifically inhibit the proliferation of cervical cancer cells by inducing apoptosis, inhibiting tumour-associated angiogenesis and reducing the activity of the tumour promoter, NF- κ B.

Cardiovascular Disease

Benefits of bay leaf include its protection against cardiovascular disease. It is an important component of Mediterranean seasonings and contains valuable compounds that contribute to the cardiovascular health benefits associated with the Mediterranean diet.

The phytonutrients, caffeic acid, rutin, and salicylates all have cardioprotective effects that contribute to a reduced risk of heart attack and stroke.

Inflammation

Bay leaf has traditionally been used as a treatment for arthritis and other inflammatory conditions.

This ancient knowledge about the plant has now been borne out by studies showing that parthenolide, which is contained in bay, is a COX-2 inhibitor and thereby an effective anti-inflammatory agent.

Important phytonutrients:

Antioxidants: Caffeic acid, camphene, carvacrol, catechins, coumaric acid, cyanidine, eugenol, kaempferol, mannitol, myrcene, proanthocyanidins, quercetin, rutin, salicylates, terpinenes, thymol

Others: Cineole, geraniol, linalool, limonene, parthenolide.

Black Pepper

(Piper nigrum)

Healing essence of black pepper:

Anti-cancer

Antioxidant

Synergistic spice extraordinaire

Black pepper is derived from the fruit of a climbing vine native to southern India and Sri Lanka. White pepper is likewise made from this fruit but is processed differently. Used almost universally, it is one of the most common condiments worldwide and figures prominently in most curry recipes. It is also frequently included in the prescriptions of Ayurvedic and other traditional health practitioners. Its spicy tang is due to its most important and well-researched compound, piperine.

Medicinal Properties:

Cancer

Increases bioavailability

By increasing the bioavailability of other anti-tumourigenic spices such as turmeric, black pepper dramatically increases their potency and effectiveness against various types of cancer.

Direct anti-cancer activity

In addition to this important property, it also counteracts cancer development directly. Its principal phytochemical, piperine, inhibits some of the pro-inflammatory cytokines that are produced by tumour cells.

Interferes with cancer cell signalling

In so doing it interferes with the signalling mechanisms between cancer cells, thereby reducing the chances of tumour progression.

Collectively, these properties make black pepper one of the most important spices for preventing cancer.

Oxidative Stress

Black pepper contains several powerful antioxidants and is thus one of the most important spices for preventing and curtailing oxidative stress.

In addition to their direct antioxidant properties, several of these compounds work indirectly by enhancing the action of other antioxidants.

This makes it a particularly valuable spice in minimising the damage caused by a diet rich in saturated fats, one of the main causes of oxidative stress. The high levels of cholesterol and triglycerides associated with oxidative stress inhibit the efficacy of important antioxidants like glutathione, superoxide dismutase, catalase, glutathione peroxidase, vitamin C and vitamin E.

However, in the face of this potentially destructive process, black pepper actually maintains and enhances the levels and efficacy of these important antioxidant compounds.

Immunomodulation

Black pepper exhibits immunomodulatory properties and is capable of boosting the number and the efficacy of white cells, thereby assisting the body to mount a very powerful defence against invading microbes and cancer cells.

Bioavailability enhancement

Piperine increases the bioavailability of valuable phytochemicals present in other spices and can boost the activity of biochemically active compounds contained in green tea, turmeric and a variety of other spices by up to several hundred percent, depending on the molecule concerned. It does this via two principal mechanisms. First, it promotes the rapid absorption of certain chemicals from the gastrointestinal tract, protecting them from being broken down by chemicals in the intestinal lumen and by enzymes that occur in the cells lining the intestines. Secondly, once the compound has entered the blood stream, piperine provides protection against oxidative damage by liver enzymes. In this way it enables us to reap optimum benefits from the medicinal phytochemicals found in other dietary spices.

Important Phytonutrients:

Antioxidants: Caffeic acid, camphene, carvacrol, coumaric acid, eugenol, gamma terpinene, hyperoside, isoquercitrin, kaempferol, linalyl acetate, methyl eugenol, myrcene, myristicin, quercetin, quercitrin, rhamnetin, rutin, ubiquinone

Others: α -pinene, bisabolone, borneol, carvonecineol, caryophyllene, caryophyllene oxide, humulene, limonene, linalool, phellandrene, pinenes, piperine, sabinene, terpinene.

Caper

(*Capparis spinosa*)

Healing essence of Caper:

Anti-diabetic

Anti-cancer

Capers are the flower buds of a shrub native to the Mediterranean and Middle East and are usually pickled before being eaten or used as condiments. The most important phytonutrients present in capers are isothiocyanates, which are similar to those found in other spices of the brassica family; mustard, horseradish and wasabi. The isothiocyanates in brassicas have been found to have strong anticancer properties and, although the use of this spice in preventing cancer has yet to be investigated, it is likely to exhibit similar effects.

Contemporary

research into the healing properties of capers has, however, focused principally on its use as a blood lipid lowering and antidiabetic agent.

Medicinal Properties:

Cardiovascular disease and blood lipids

Caper has shown potential in preventing heart disease with its strong blood lipid-lowering activity in individuals with abnormally high lipid levels. Only four days after beginning a regular dose of capers, blood cholesterol and triglyceride levels start to fall. After two weeks of this treatment, they have dropped considerably and often reach normal levels in some individuals.

Cardamom

(*Elettaria cardamomum*)

Healing essence of cardamom:

Antioxidant

Anti-inflammatory

Cardioprotective

Cardamon is one of the most important spices in many Eastern cuisines and is used in some Middle Eastern countries for flavouring coffee. It is also a renowned breath freshener. As one of the most expensive of the spices, cardamon is exceeded in price only by saffron and vanilla.

Medicinal properties:

Cardamon contains several important antioxidants, notably the anti-inflammatory and cardioprotective salicylates.

Like basil, cardamon also contains linalool which is an antiviral agent.

Important phytonutrients:

Antioxidants: Caffeic acid, camphene, cyanidin, gamma-terpinene, gamma-tocopherol, salicylates

Others: Cineole, camphor, linalool, palmitic acid, cymene, stearic acid, terpinene, vanillic acid.

Capsicum, Chillies and Red Peppers

(*Capsicum* species)

Healing essence of chillies and red peppers:

Anti-cancer

Antioxidant

Analgesic

Chillies are capsicums, “New World” spices that are represented by many diverse species and cultivars, including (Capsicum frutescens), paprika and red peppers (Capsicum annum). The quantities of the various phytochemicals found in capsicums vary considerably between the different cultivars.

Chillies, for example, tend to have very high concentrations of capsaicin which is the compound that gives plants of this genus their strong flavour and irritant effects.

Paprika and sweet red peppers contain smaller quantities of capsaicin, but higher concentrations of another important phytochemical called capsiate. There has to date been relatively little research into the effects of capsicums on chronic diseases, but new research showing a positive effect on liver, lung and prostate cancers is likely to prompt further investigation into their preventive effects.

Medicinal Properties:

Cancer

Capsaicin, the antioxidant phytochemical found in particularly high quantities in the hot peppers, has important anti-tumourigenic properties, specifically as a powerful inducer of apoptosis in liver cancer cells.

More recent research has shown that capsaicin protects against both lung and prostate cancer.

Obesity and weight loss

Both capsaicin and capsiate raise the body's metabolic rate and increase the rate of fat “burn-off”.

Capsaicin has the additional benefit of suppressing the appetite through its direct effect on the brain's satiety centre and by stimulating the release of anorectic hormones, like cholecystokinin, by the intestines.

Analgesia

A considerable body of research has shown capsicums to be very effective in the treatment of acute and chronic pain – notably the pain associated with shingles and arthritis. With respect to this property, it is likely that capsaicin acts as a counter-irritant (when applied in the form of a cream) or a stimulant of the body's natural endorphin painkillers.

There is also some evidence that chillies can help to control the symptoms of irritable bowel syndrome.

Important phytonutrients:

Antioxidant: Caffeic acid, capsaicin, chlorogenic acid, coumaric acid, ferulic acid, hesperidin, lutein, myrcene, quercetin, rutin, salicylates, scopoletin

Others: Beta-carotene, capsiate, capsidol, limonene, zeaxanthin.

Caraway

(Carum carvi)

Healing essence of caraway:

Anti-cancer

Anti-diabetic

Caraway, which is believed to have been used for a longer than any other European spice, is derived from the seeds of a biennial plant native to Europe and Asia. It is used in a variety of confectioneries, and is frequently added to cream cheese, breads and meat dishes. Infusions of caraway have traditionally been used as a digestive aid, and to relieve stomach pain, menstrual cramps, sore throats and coughs.

Medicinal Properties:

Cancer

Caraway contains high levels of phytonutrients which reduce the activity, by up to ten times, of a class of enzymes that convert food-derived molecules and other ingested compounds into carcinogenic toxins. The potentially destructive molecules may originate from a variety of sources, including food contamination by agricultural and food-processing chemicals or atmospheric pollutants. Suppression of these enzymes helps to prevent a variety of cancers. In addition, other compounds found in this spice have been found to specifically inhibit the proliferation of liver cancer cells. These seeds are also one of the richest sources of limonene, a compound common to several spices that inhibits the initiation of cancers of the lung, breast and stomach and liver by inducing apoptosis in malignant cells. The potency of limonene may be increased dramatically in the presence of other synergistic phytonutrients, confirming the benefits of ingesting spices in their whole form, and preferably with other spices.

Diabetes

Caraway is effective in lowering abnormally high glucose levels in diabetics. Raised glucose levels may be normalised after only two weeks after starting treatment with this spice, but it does not appear to affect normal blood glucose levels.

Natural hormones

Caraway seeds are a rich source of phytoestrogens and are a useful addition to the diets of women who have low estrogen levels. This spice can thus be helpful in easing menopausal symptoms.

Important phytonutrients:

Antioxidants: Caffeic acid, camphene, carvacrol, coumaric acid, gamma terpinene, hyperoside, isoquercitrin, kaempferol, myrcene, myristicin, quercetin, scopoletin

Others: Carveol, carvone, limonene

Chicory

(Chichorium intybus)

Indian Name- Kasni

Healing essence of Chicory:

Chicory is one of the richest sources of vitamin A which is very useful for the eyes. The addition of juices of carrot, celery and parsley to chicory juice makes it a highly nourishing food for optic nerve and the muscular system. It can bring amazing results in correcting eye defects. Half a litre to one litre daily of this combination has frequently corrected eye troubles within a few months, to the extent that normal vision was regained, making the use of glasses unnecessary.

Chicory is a perennial herb with a long tap root. It has condensed, round stems, numerous light or dark green leaves and pale blue flowers. The leaves have a bitter taste; flowers open at sunrise and close at dusk. The young leaves, preferably blanched, are eaten in salads. They may be mixed with other greens to minimize their strong flavour. The mature green leaves are sometimes used as a cooked vegetable. The root, when roasted and ground, is often used as an ingredient to mix with coffee, or is taken as a beverage on its own.

Medicinal Properties:

The flowers, seeds and roots of this herb are medicinally used in the treatment of liver disorders. About 30 to 60 ml of decoction of the flowers, seeds or roots can be used three times daily, with beneficial results, in the treatment of torpidity or sluggishness of the liver, biliary stasis or, stoppage of bile, jaundice and enlargement of spleen. Endive or chicory juice, in almost any combination, promotes the secretion of bile and is, therefore, very good for both liver and gall bladder dysfunctions.

Chicory is a natural laxative. It is, therefore, beneficial in the treatment of chronic constipation.

A decoction of chicory seeds is useful in treating obstructed menstruation.

The herb chicory, in combination with celery and parsley, is very helpful in anaemia. It is an effective blood tonic. The combined juices of chicory, carrot and celery are most helpful in asthma and hay fever, provided milk and foods containing concentrated starches and sugars such as white rice, white flours, macaroni, sweets, pastries and cakes are eliminated from the diet. Powder of the dry root in doses of half a teaspoon, mixed with honey if taken thrice daily, is a good expectorant in chronic bronchitis.

Chicory leaves consist of moisture 93.0 percent, protein 1.7 percent, fat 0.1 percent, fibre 0.9 percent and carbohydrates 4.3 percent per 100 grams. Its mineral and vitamin contents are calcium, iron, phosphorous, carotene, riboflavin, niacin and vitamin C.

Chicory flowers contain a glucoside chichorin and bitter substances, lactucin and intbin. Seeds contain bland oil and roots contain nitrate and sulphate of potash, mucilage and some bitter principle.

Cinnamon

(Cinnamomum zeylanicum)

Healing essence of cinnamon:

Anti-cancer

Antioxidant

Anti-inflammatory

Anti-diabetic

Cardioprotective

Cinnamon is a spice obtained from the bark of Cinnamomum zeylanicum, a tree that is indigenous to Sri Lanka and now cultivated in several other tropical countries too. It is often confused with a product derived from the tree Cinnamomum aromaticum that has a similar flavour and medicinal properties to "true" cinnamon. Both of these spices are widely available in most countries. It was used by the ancient Egyptians along with other spices in their embalming and mummification of the dead, its antibacterial and antioxidant properties assisting in the preservation of the bodies. It has also been used as a traditional medicine to treat a variety of ailments including colds and digestive problems, as a perfume, and for flavouring wines. Today it is used primarily as flavouring for confectionery and as a fashionable spice in tea and coffee. Intense medical interest has, however, been stimulated by the recent discovery of its potent antidiabetic effects. This property has been attributed to hydroxychalcone and other polyphenols found in this spice (e.g. caffeic acid, isoeugenol, proanthocyanidins) that also have antioxidant and lipid-lowering properties.

Medicinal Properties:

Diabetes

Insulin sensitivity

Cinnamon is a powerful inducer of insulin sensitivity making it an effective treatment for both Type II diabetes and metabolic syndrome. In these conditions, cell receptors become insensitive to insulin, making it difficult for glucose to enter the cell. This leads to cell starvation and high blood sugar levels which are responsible for the dire health consequences associated with these diseases. It enhances the activity of the enzymes that increase cell receptor insulin sensitivity, and inhibits those that have the opposite effect.

Clinical Trials

Recent landmark clinical trials have shown that the daily addition of as little as one gram of this spice to the diet leads to a reduction of blood glucose levels of between 18 percent and 29 percent in Type II diabetics. This impressive drop in blood sugar levels is a gradual process, taking up to 40 days to occur, but it is also long-lasting. When the diabetic patients on the trial (whose blood glucose levels had dropped to normal) stopped taking it, these lower levels were sustained for up to 20 days. This suggests that it has the effect of gradually changing the cellular response to insulin and, in so doing, avoids the wide fluctuations of insulin and blood sugar levels that lead to the dangerous episodes of hyperglycaemia and hypoglycaemia commonly seen in poorly controlled diabetes.

Stable blood glucose levels

In this context it is notable that, even if cinnamon is not taken every day, one does not see the dangerous fluctuations of blood glucose levels associated with erratic ingestion of oral antidiabetic medication.

Blood lipid control

This spice has the additional benefit of lowering blood lipids, which is an important means of controlling the disease. Diabetics have a higher than average risk of developing hypertension, stroke and heart disease, and it is essential to rigorously control the blood pressure, cholesterol and triglyceride levels in these patients. There are no contemporary antidiabetic drugs that lower both blood sugar and blood lipids. Therefore, in addition to their diabetic medicines, diabetics generally have to take one of the statin drugs to keep their cholesterol, lipoprotein and triglyceride levels normal.

Multiple benefits for diabetics

Cinnamon, however, provides all these properties in a single package. It is, moreover, a powerful antioxidant which is beneficial in Type II diabetes, as many sufferers are overweight and under constant oxidative stress.

Cardiovascular Disease

Cinnamon has a powerful effect on abnormally high blood lipid levels.

The same clinical trials mentioned in the previous section also showed that Type II diabetics who took as little as one gram daily for more than 40 days experienced a substantial improvement in their blood lipid profiles.

Sustained reduction of cholesterol and triglyceride levels

Cholesterol levels declined by 13 percent to 26 percent, triglyceride levels plummeted by between 23 percent to 30 percent, and LDL levels sank by between 10 percent to 24 percent.

Interestingly the levels of HDL, which is a beneficial lipoprotein, remained constant. As in the case of glucose, the improved blood lipid levels were sustained for a period of up to 20 days after cessation of the cinnamon treatment.

These impressive figures are easily comparable with the most effective statin drugs on the market. It can also help non-diabetics with high blood lipid levels to reduce the risk of developing heart disease and stroke.

Antioxidant activity

Cinnamon contains some of the most varied and potent antioxidants of all plants, making it an important food in the control of oxidative stress and thereby the wide range of chronic diseases that are associated with oxidative damage.

Important Phytonutrients:

Antioxidants: Caffeic acid, camphene, coumaric acid, epicatechin, gamma-terpinene, isoeugenol, linalyl-acetate, mannitol, methyl-eugenol, myrcene, phenol, proanthocyanidins, vanillin

Others: Cinnamaldehyde, cinnamic acid esters, coumarin, eugenol, hydroxychalcone, safrole, salicylates.

Citrus Zest

(Citrus species)

Healing essence of citrus:

Anti-cancer

Antioxidant

Anti-inflammatory

Cardioprotective

Citrus zest is the skin of fruits such as oranges, lemons, limes, grapefruit, tangerines and mandarins. They are some of the most numerous and widely consumed fruits in the world today, and lemon skin in particular is used widely as flavouring.

Zesty citrus peels

As well as being eaten as fruits and juices, citrus peels, which contain the greatest concentration of their valuable phytonutrients, are frequently used as "citrus zest", seasonings that add flavour to a variety of preserves, and sweet and savoury dishes.

Until recently, the perceived medicinal properties of citrus have been associated primarily with vitamin C (ascorbic acid), which occurs in high concentrations in all of the citrus species.

Oranges are considered the “gold standard” in terms of food vitamin C content and the use of limes by the British navy to prevent its sailors developing the vitamin C-deficiency disease, scurvy, is one of the most well known historical uses of food in a medicinal context.

As we learn more about plants and the chemicals they contain, it is becoming clear that many other phytonutrients found in citrus zest contribute towards the extensive health benefits that are often still attributed to vitamin C.

Medicinal properties:

Cancer

As anticancer agents, citrus fruits have been subject to considerable research and have been shown to work against a number of cancer types. The fibre in citrus, called pectin has also been studied and found to reduce the progression of advanced prostate cancer. Pectin can also lower the risk of a recurrence of mouth and throat cancers.

Citrus zest prevents cancer through the mechanisms outlined below.

Antioxidants: Antioxidants are also powerful antimutagens, protecting our DNA from cancer-causing damage, and citrus fruits contain high concentrations of flavonoid antioxidants as well as a number of other potent antioxidant compounds. Lycopene, in particular, which is has been shown to protect against prostate and other cancers, is found in large quantities in citrus fruits.

DNA repair: The antioxidant naringenin not only helps prevent DNA damage, but also enhances DNA repair thereby reducing the chances of cancer development.

Cancer cell death: The phytochemical, nobilitin destroys cancer cells in two ways. It acts as a cytotoxin, killing cancer cells directly, and it can also work indirectly, inducing apoptosis and interfering with the cell cycles involved in certain types of liver cancer. It has also been shown to be effective in preventing the onset of cancers of the colon, breast and some leukaemia's. It also exhibits synergism with certain anticancer drugs and reduces the resistance that cancer cells develop to these conventional treatments.

Inhibition of tumour growth: Coumarins exhibit antitumor properties as does tangeretin, which can inhibit the proliferation of tumours by interfering with the signalling mechanism between the tumour cells.

Toxin inhibition: The phytochemicals naringenin and quercetin protect us against NNK which is one of the most potent inducers of lung cancer. NNK is a strong tobacco-related environmental carcinogen to which both smokers and non-smokers are exposed. These two compounds work by inhibiting the activity of liver enzymes that convert NNK it into a carcinogenic metabolite.

Cardiovascular disease and blood lipids

The polyphenol flavonoids, especially those found in grapefruit, are effective in lowering abnormal cholesterol and triglyceride levels, as is citrus pectin which also contributes to the cardioprotective effects of the polyphenols.

Citrus flavonoids are powerful antioxidants – even more so than vitamin E – and when taken in their natural form their effects are enhanced by the presence high levels of vitamin C found in citrus. In this way citrus also helps to reduce the oxidation of LDL cholesterol which is associated with the development of atherosclerosis.

Antimicrobial properties

Grapefruit seed extract has been found to be effective against more than 800 bacterial and viral strains, 100 strains of fungi, and a large number of single and multi-celled parasites – even when the microbes are diluted several hundredfold, to the point where there is no toxicity to human cells. This suggests that when regularly ingested, these seeds can help our bodies ward off infections, even in their earliest stages.

Important phytonutrients:

Citrus zest contains the following important phytonutrients:

Antioxidants: Ascorbic acid, genistic acid, lycopene, naringenin, neohesperidin, rutin, tangeretin

Others: Auraptine, hesperetin, limonin, lutein, nobiletin, pectin, quercetin, zeaxanthin.

Clove

(*Syzygium aromaticum*)

Healing essence of clove:

Antioxidant powerhouse

Cloves are the fruit of a tree indigenous to Indonesia.

They have the highest antioxidant activity of all foods including all fruit and vegetables (American Journal of Clinical Nutrition 2006)

In addition to their culinary uses, they have mild analgesic properties and oil of clove has long been used in dentistry as a treatment for toothache.

Medicinal Properties:

Cloves are loaded with many highly effective antioxidants including procyanidin and quercetin that give this spice the distinction of having the highest antioxidant activity of all foods!

There is also evidence that eugenol and acetate inhibit platelet aggregation and thus protect against heart attacks and thrombotic strokes.

Important phytonutrients:

Antioxidants: β -caryophyllene, ellagic acid, eugenol, eugenol acetate, hyperoside, isoeugenol, isoquercitrin, kaempferol, methyl eugenol, myricetin, oleanolic acid, pedunculagin, procyanidin, quercetin, rhamnetin

Others: Eugenin, eugenyl acetate, syringic acid.

Coriander/Cilantro/Chinese Parsley

(*Coriandrum sativum*)

Healing essence of coriander:

Anti-cancer

Antioxidant

Anti-diabetic

Cardioprotective

Chelating agent

Coriander is indigenous to southern Europe, but it is used widely in Asiatic and South American cuisine as well as that of the Mediterranean region. Its leaves are used to garnish salads and the roots feature regularly in Thai cooking. However, the small fruits (often called seeds) are the most important part of the plant and are a crucial ingredient of curry powders. It is also used in a range of savoury dishes, desserts and confectioneries, as well as in liqueurs and perfumes. The same is true from a medicinal perspective, as the fruits contain the highest concentrations of all the important phytonutrients that occur in this plant. While there is still limited understanding of the mechanisms through which it acts, initial research indicates that it is effective as both a treatment and preventive agent for several chronic diseases.

Medicinal Properties:

Cancer

Coriander's anti-tumourigenic properties have been demonstrated in relation to colon cancer. It works by protecting against the damaging effects of lipid oxidation associated with this malignancy.

It is highly probable that it also contributes to the low incidences of several of other cancer types seen in the populations of Eastern nations that consume large quantities of this spice.

Cardiovascular disease and blood lipids

It lowers cholesterol and triglyceride levels, helping to reduce the risk of atherosclerosis and thereby heart attack and stroke. It does this through two mechanisms: by inhibiting the uptake of these lipids in the intestines, and by enhancing their breakdown and excretion.

Diabetes

Coriander has dual blood glucose-lowering effects in diabetes.

It works both by enhancing the secretion of insulin from the pancreas and exhibiting insulin-like activity at cellular level.

Chelation

Compounds found in coriander leaves are powerful chelators of toxic heavy metals.

They have been shown specifically to help and to eliminate lead deposits from the kidneys and bones.

Important phytonutrients:

Antioxidants: Caffeic acid, camphene, chlorogenic acid, isoquercitrin, myrcene, quercetin, rutin, vanillic acid

Others: Angelicin, apigenin, beta-sitosterol, borneol, camphor, cineole, cinnamic acid, geraniol, limonene, myristicin, terpenenes.

Cumin

(*Cuminum cyminum*)

Healing essence of cumin:

Anticancer

Anti-oxidant

Anti-inflammatory

Cumin is a seed-derived spice native to the eastern Mediterranean has a millennia-long and diverse history of use by humans. In ancient Egypt, cumin was added to food as a condiment and used in the mummification of the dead.

The Romans and ancient Greeks likewise used it in cooking and also for cosmetic purposes, and it is mentioned in the Bible as a form of payment. Today this spice is an important component of a variety of cuisines, including Middle Eastern, Indian, North African and South American. From a traditional medical perspective, it has been used both as an analgesic and to treat indigestion.

Although the scientific research into the medicinal properties of this spice is limited, cumin contains a number of effective antioxidants, some of which have been well researched, and early studies show promising anticancer and anti-inflammatory characteristics.

Medicinal Properties:

Cancer and antioxidant effects

Cumin has been shown to have strong anti-tumourigenic properties and, although the mechanisms underlying this effect are not yet clear, they are in all likelihood due to the presence of the antioxidants and other anticancer compounds, such as limonene, that occur in this spice. In addition to their direct antioxidant action, some of the compounds found in this spice have been shown to act synergistically to enhance the activities of two of the body's own antioxidants, superoxide dismutase and catalase.

Anti-inflammatory properties

Cumin's traditional use as a pain killer has been borne out by contemporary research that has shown it to be very effective in treating painful inflammatory conditions. It works as an anti-inflammatory analgesic not only when taken orally but gives relief when applied topically over painful, inflamed tissue.

Important phytonutrients:

Antioxidants: Eugenol, gamma-terpinene, luteolin, myrcene, terpinolene

Others: Bornyl-acetate, carophyllene, carveol, cineole, dipentene, farnesol, limonene, pinenes, terpenes.

Curry leaf

(Murraya koenigii)

Healing essence of curry leaf:

Anti-cancer

Antioxidant

Anti-viral

The curry leaf comes from a shrub native to India and is an important ingredient of spicy Eastern dishes.

Ironically, it is seldom added to the "curry powders" used in the West, which generally consist of a combination of other spices such as cumin, coriander, black pepper, ginger and fenugreek.

Medicinal properties:

The curry leaf contains the antiviral compounds linalool and limonene that have also demonstrated protective effects against some cancers.

Important phytonutrients:

Antioxidants: Carophyllene, carvacrol, mahanimbene, mahanine, myrcene

Others: Limonene, linalool, pinenes.

Dandelion

(Taraxacum officinale)

Indian Name- Kukraundha or Kanphool

Healing essence of Dandelion:

It benefits both liver and gall bladder in their vital role of handling fats within the body and aiding the detoxifying role of the liver. It is, therefore, useful in the disorders of these organs. Combined with the juice of watercress and with a diet without meat or much sugar and starch, it helps to make the liver and the gall bladder normal, and exercises a beneficial effect upon the nervous system. Sufferers from hepatitis can generally benefit from dandelion tea.

Dandelion is a hardy perennial herb with therapeutic properties. The flower stems of this plant grow up to a height of 30 cm. The sharply-toothed leaves form flat rosettes on the ground. The fleshy hollow stem carries a single bright yellow flower.

Medicinal properties:

The readily available organic magnesium in dandelion makes the juice of the leaves, with or without the roots, valuable for all bone disorders. It is often mixed with juices of the leaves of carrots and turnips for treating these disorders.

The tea made from the buds, flowers, fresh leaves or even blanched leaves of dandelion, can be very useful in cases of urinary disorders.

It is also useful in the treatment of warts. The milk from the cut end of dandelion should be put on the wart twice or thrice a day.

It can be used as a general body tonic for its influence in supporting waste functions of bowels, bladder and skin, which are the hard-working eliminating organs of our body.

Dandelion contains almost as much iron as spinach, four times the vitamin A content of lettuce and is a very rich source of magnesium, potassium, vitamin C, calcium and sodium. It consists of protein, fat and carbohydrates.

Its mineral and vitamin contents are calcium, magnesium, phosphorous, iron, sodium, potassium, thiamin, riboflavin, vitamin A and C.

Dill

(*Anethum graveolans*)

Healing essence of dill:

Antioxidant

Cardioprotective

Dill seeds – and to a lesser extent the leaves of this plant – are used widely in European cuisines; to flavour eggs, meats, salads, confectioneries and pickles. Its oil is used in some detergents and soaps. As a traditional medicine, dill is used to treat indigestion and infant colic.

Medicinal Properties:

Dill contains many valuable antioxidants, including eugenol which may inhibit platelet aggregation. It also contains limonene which exhibits preventive properties against some types of cancer.

Important phytonutrients:

Antioxidants: Anethole, beta-sitosterol, caffeic acid, carvacrol, chlorogenic acid, eugenol, ferulic acid, kaempferol myrcene, myristicin, quercetin, quercitrin, scopoletin

Others: Alpha-linolenic acid, bergapten, carvone, esculetin, geraniol, glucoside, limonene, pinenes, terpineol, umbelliferone.

Fennel

(*Foeniculum vulgare*)

Healing essence of fennel:

Anti-cancer

Antioxidant

Fennel's strong-tasting seeds, which have a similar flavour to aniseed or liquorice, are used in many European dishes, to flavour fish, bread and confectioneries. The more subtly flavoured stalks are widely used as a vegetable and in salads.

In ancient Greece fennel was known as 'marathon', because it grew at the famous battle site, and it was used as a symbol of victory.

Medicinal Properties:

Fennel contains a variety of important antioxidants, including limonene, which has anti-cancer properties.

Important phytonutrients:

Antioxidants: Caffeic acid, camphene, ferulic acid, kaempferol, myrcene, myristicin, coumaric acid, protocatechuic acid, quercetin, rutin, scopoletin, vanillic acid, vanillin

Others: Bergapten, cineole, cinnamic acid, imperatorin, limonene, pinenes, psoralen, scoparone, terpinenes, trigonelline, umbelliferone.

Fenugreek

(*Trigonella foenum graecum*)

Healing essence of fenugreek:

Cardioprotective

Anti-cancer

Anti-diabetic

Anti-oxidant

Performance enhancer

The seeds are the most valuable part of the fenugreek plant and have long been used as a nourishing dietary spice in its native Middle East, India and the Far East. It is also an important constituent of curries.

In traditional medicine, it has been used to treat a number of conditions including diabetes, sore throats, and in poultices used to treat sores and abscesses.

Recent investigations into the medicinal properties of this spice suggest it is important not only as a preventive for chronic diseases such as diabetes, but also for enhancing normal physiological processes, especially with respect to athletic performance.

Medicinal Properties:

Cardiovascular Disease and Blood Lipids

Cholesterol

Fenugreek has a strong modulating effect on blood lipid levels and can substantially reduce the risk of atherosclerosis. In diabetics, who usually suffer lipid imbalances, it has demonstrated a remarkable ability to lower cholesterol, triglycerides and LDL levels while raising HDL levels.

Blood thinner

Another one of its properties is the reduction of platelet aggregation which, in turn, dramatically reduces the risk of abnormal blood clotting associated with heart attacks and strokes.

Like most spices, it also contains many important antioxidants and has the added benefit of protecting other dietary and internally produced antioxidants from free-radical damage. This has important cardioprotective benefits, as well as helping to fortify the body against a range of other chronic conditions.

Diabetes

Fenugreek, which has comparable antidiabetic potency to cinnamon, is one of the most valuable spices for the control of glucose metabolism and thus the prevention and treatment of Type II diabetes.

Insulin resistance

Working in a similar way to the common antidiabetic drug glibenclamide, it lowers cellular insulin resistance and controls blood glucose homeostasis. It has been shown to lower blood glucose levels of Type II diabetes by as much as 46 percent.

Increase in antioxidants

It also increases the levels of several important antioxidants and reduces the damaging oxidation of lipids associated with diabetes. As an added bonus, the seeds are a very rich in a type of dietary fibre that modulates post-prandial blood glucose levels by delaying the absorption of sugar in the intestines.

Cataracts

It is also effective against diabetes-related cataracts which occur commonly in diabetics. The enzymes that control glucose uptake into the lens of the eye do not function normally in diabetics and, as a result, glucose and its metabolites, fructose and sorbitol, accumulate in the lens tissues.

The lenses of diabetic patients are also prone to damage by enzymes that would normally protect against destructive free radicals, and a combination of these factors leads to the gradual opacification of the lens known as a cataract. It has been shown to partially reverse both the metabolic changes in the lens and to reduce the density of the cataract, it is likely to be even more effective as a preventive agent against cataract formation in diabetics.

Athletic Endurance

One of the greatest difficulties facing athletes who compete in endurance events is maintaining a readily available supply of energy in the body.

In order to achieve this, muscle carbohydrate stores, in the form of glycogen, must be continuously replenished.

In an event lasting more than one-and-a-half hours, glycogen stores become depleted, and for the remainder of the event the athlete has to rely on external sources of energy, such as high carbohydrate drinks, which are inferior to glycogen as an energy source.

Post-event re-synthesis of glycogen is also very important, and the two hours immediately following prolonged exercise is the crucial time for this process to occur.

Glycogen replenishment

Fenugreek has been shown to have a strong effect on glycogen replenishment; increasing post-event re-synthesis by over 60 percent in some endurance athletes. While its effects on glycogen re-synthesis during an event have yet to be tested, it is likely to exhibit a similarly beneficial effect during, as well as after, exercise.

Natural Hormones in Fenugreek

It is one of the richest sources of phytoestrogens and is thus a very useful spice for women who have low oestrogen levels.

Phytoestrogens are also thought to help protect against certain types of cancer, and fenugreek may well be proven to have anti-tumourigenic effects should this property be investigated in the future.

Nutrient Content

Fenugreek is one of the richest sources of selenium, which is among the most important antioxidant micronutrients. When consumed regularly, selenium appears to have a protective effect against a range of cancers, including those of the colon, lung and prostate. Recent evidence also shows that selenium helps to prevent the progression of HIV and other chronic viral illnesses.

Important phytonutrients:

Antioxidants: Apigenin, coumaric acid, genistein, isoorientin, isoquercitrin, isovitexin, kaempferol, lignin, luteolin, orientin, phytic acid, quercetin, quercitrin, rutin, selenium, superoxide-dismutase, vitexin

Others: Diosgenin, fenugreekine, trigonelline.

Garlic

(*Allium sativa*)

Healing essence of garlic:

Anti-cancer

Cardioprotective

Antioxidant

Anti-diabetic

Immunomodulator

Garlic, which is the bulb of a plant native to the Himalayas and Siberia, is among the world's most important spices – both from a culinary and a medical perspective. Used across the globe as pungent food flavouring, in many societies it is employed as an important medicinal spice with an array of traditional uses.

These include its use as an antiseptic, anti-asthmatic, anti-rheumatic and as a treatment for coughs and colds.

Over the centuries, it has also been employed against specific disease scourges, notably leprosy, plague and smallpox.

It is one of the most thoroughly studied of all the spices, and its age-old medicinal reputation has been shown to be well deserved. It is an invaluable source of numerous important phytonutrients and contains over 25 valuable antioxidants.

It is also an effective therapeutic and preventive agent against several acute conditions as well as a range of our most serious chronic diseases.

Medicinal Properties:

Cancer

The regular consumption of garlic has a protective effect against a number of different malignancies, including cancers of the colon, breast, bladder, liver, prostate, lung, and leukaemia.

While not all the chemoprotective mechanisms through which it works are understood, it is known to suppress COX-2 activity which is associated with inflammation and malignancy.

It also inhibits *Helicobacter pylori* infection of the stomach, preventing ulceration caused by this bacteria and thereby reducing the risk of stomach cancer.

Its anti-tumourigenic properties are, in part, due to its protective effect against some harmful ingested toxins.

Aflatoxin, for example, is a liver carcinogen derived from the *Aspergillus flavus* fungus that grows on poorly stored grains, groundnuts and other crops. This puts societies that have inadequate storage facilities particularly at risk of developing liver cancer.

Two of its principal compounds (diallyl sulphide and diallyl disulfide) render aflatoxin harmless by modulating its metabolism and accelerating its breakdown in the liver. It is highly probable that the allyl sulphides and other compounds found in garlic plants also protect us against a range of other carcinogenic substances.

Cardiovascular Disease and Blood Lipids

Garlic has long been used as an alternative treatment for the conditions underlying cardiovascular disease, and numerous studies have shown that this remarkable spice reduces all the major risk factors for the disease. It works through the following mechanisms:

Lowers blood lipids:

It reduces both cholesterol and triglyceride levels thereby reducing the risk of atherosclerosis.

Reverses atherosclerosis:

It has a direct effect on atherosclerosis by inhibiting and even reversing the deposition of cholesterol in the arterial endothelial layer.

Reduction of platelet stickiness:

By preventing the excessive aggregation of platelets, it can reduce the risk of both heart attacks and thrombotic strokes. This property has been attributed principally to the compound, ajoene.

Lowers blood pressure:

Garlic stimulates the synthesis of nitric oxide which is an important chemical involved in the vascular dilatation mechanism.

Aphrodisiac?

By increasing the levels of nitric oxide in the blood, it increases vasodilatation and thereby lowers blood pressure.

Interestingly, reduced nitric oxide levels are also associated with erectile dysfunction, and drugs such as Viagra work by increasing nitric oxide levels. Thus its reputation in folk lore as an aphrodisiac may be justified after all.

Diabetes

Garlic has blood glucose-lowering properties and also has the ability to reduce the raised blood lipid levels that are commonly found in diabetic patients.

Alzheimer's Disease

Little is understood about the processes involved in Alzheimer's disease, but one of the few pathological mechanisms known to be common to these patients is the formation of amyloid plaques in the brain.

Promising laboratory studies show that this spice can reduce amyloid deposition by up to 30 percent, suggesting that, along with turmeric, it is an important spice to use in the prevention, and possibly the treatment of, this disease.

Obesity

Garlic has several properties which make it an important substance in the management of obesity and is a valuable component of any weight loss strategy. These properties include the following:

Reduction of fat absorption: It contains ajoene which is an inhibitor of lipase, a pancreatic enzyme that breaks down dietary fat. Inhibition of lipase by garlic interferes with the absorption of dietary fat and thereby reduces the calorific intake of high-fat meals.

Appetite control: Leptin is a signalling hormone produced by fat cells that influences the appetite. However, some individuals do not respond normally to leptin, resulting in an insatiable appetite and obesity. By increasing the brain's sensitivity to leptin, this spice can assist such individuals to reduce their food intake.

Immunomodulation

Many of garlic's preventive and therapeutic effects are, directly or indirectly, attributable to its immunomodulatory properties. For example, some of its compounds stimulate the proliferation of several white blood cell lines and induce the infiltration of tumours by white blood cells such as natural killer cells and macrophages.

They also stimulate the release of tumour necrosis factor, interferon and other cytokines that are crucial to the prevention and spread of cancer.

Antimicrobial Effects

Garlic is one of the most potent antimicrobial spices. It is capable of killing a wide range of bacteria, fungi and viruses, and studies are presently being undertaken to investigate its effectiveness against some of our more dangerous viral diseases. These include hepatitis, HIV, and the opportunistic bacterial and fungal infections commonly seen in AIDS patients.

Notes on the medicinal use of garlic:

There are several preparations on the market that make a number health claims. Some of these products have been subjected to clinical trials and are probably as effective as the natural spice. However, while techniques such as aging the extract may improve some of its properties, other phytochemicals are lost during these processes. Thus the final product may not provide the broad spectrum of protection offered by the unadulterated spice.

Dosage:

It is important to take this spice in moderation as there are reports of adverse effects when high quantities of this plant have been ingested. A sensible guideline is to take no more than the maximum amount that would be used in a recipe that calls for significant quantities of this spice. In the context of prevention, one or two cloves a day should be adequate.

Control of "unsociable" side effects:

The negative effects of garlic on breath can be overcome to a certain extent by ingesting garlic in small amounts on a regular basis rather than larger, single doses of this spice.

Important Phytonutrients:

Antioxidants: Allicin, alliin, allyl-mercaptan, apigenin, caffeic acid, chlorogenic acid, coumaric acid, diallylpentasulfide, diallyl-trisulfide, ferulic acid, glutathione, hydroxy benzoic acid, kaempferol, lignin, myricetin, oleanolic acid, phytic acid, quercetin, rutin, s-allyl-l-cysteine, s-allyl-cysteine-sulfoxide, salicylic acid, sinapic acid, taurine, vanillic acid

Others: Ajoene, arginine, cycloalliin, diallyl disulfide, diallyl sulphide, tryptophan.

Ginger

(Zingiber officinale)

Healing essence of ginger:

Anti-Alzheimer's

Cardioprotective

Anti-diabetic

Anti-cancer

Anti-oxidant

Anti-inflammatory

Ginger is one of the most popular of all the spices and is derived from the root of a plant indigenous to Asia which is now cultivated across the globe for use in an enormous variety of foods, drinks and traditional medicines.

It is added to sweet and savoury dishes, condiments, confectioneries, sweets, and is a component of many traditional cuisines, including Chinese, Indian, Japanese and Thai.

It has also been used in perfumes, cosmetics and is a valued medicinal plant.

It is used in folk medicine to treat colds and influenza and is an effective anti-emetic used in the treatment of both motion sickness, and the nausea and vomiting associated with pregnancy.

Numerous studies investigating ginger's medicinal properties have also shown it to be effective in the prevention and treatment of many of our more serious chronic degenerative diseases.

Medicinal Properties:

Cancer

Several phytonutrients found in ginger have demonstrated strong anti-cancer activities in both laboratory and clinical studies. While its anti-tumourigenic effects have yet to be fully understood, they are thought to involve the following mechanisms:

Anti-inflammatory:

Cancer is often associated with inflammatory processes and ginger's potent anti-inflammatory activity reduces the risk of inflammation-induced malignancy. Ginger is an effective COX-2 inhibitor, curtailing the activity of potentially damaging COX-2 enzymes, the overproduction of which may cause harm to several tissue types.

Cancer cell death:

The pungent vanilloids, gingerol and paradol found in ginger, are very effective in killing cancer cells. They achieve this both by direct cytotoxic activity against the tumour and indirectly by inducing apoptosis in the cancer cells.

Reducing tumour initiation and growth:

The compound, zerumbone antagonises the processes of both tumour initiation and promotion. It does this by inducing antioxidant enzymes and by weakening the pro-inflammatory signalling pathways associated with communication between cancer cells.

Prevents DNA damage:

Melatonin is an antioxidant produced by the body that is also found in some plants, such as this. It has the valuable property of being able to access most parts of the body, including brain and nervous tissue, and protects DNA against carcinogenic free-radical damage.

Antibacterial: This spice can eliminate all strains of *Helicobacter pylori*, the bacteria that are responsible for the majority of peptic ulcers, gastritis and stomach cancer.

Cardiovascular Disease

Ginger helps prevent cardiovascular disease via several mechanisms. It has been shown to lower dangerously high cholesterol and triglyceride levels, while raising the levels of beneficial HDL. These lipid-modulating effects are partly due to the inhibition of fat absorption from the intestines. In addition, its cardioprotective effects are enhanced by its ability to reduce platelet stickiness and in so doing further reduce the risk of heart attacks and thrombotic strokes.

Diabetes

Although there has been relatively little investigation into the antidiabetic properties of ginger, promising early studies show that it can increase insulin sensitivity. This suggests that, in all likelihood, it is a valuable prophylactic spice against Type II diabetes.

Alzheimer's Disease

Two of its most important antioxidants, curcumin and gingerol, have been shown to inhibit and even reverse the deposition in the brain of the amyloid plaques that are associated with Alzheimer's disease.

Moreover, zingerone, another of its antioxidants, neutralizes the powerful oxidant, peroxynitrite, which has also been implicated as an aggravating factor in Alzheimer's and other neurodegenerative diseases such as Parkinson's disease.

Obesity

Dual anti-obesity effect

The compounds gingerol and shogaol increase the metabolic rate and thus help to "burn off" excessive fat. They also help to suppress the absorption of calorie-dense dietary fats from the intestines. For these reasons regular intake of ginger should aid in countering excessive weight gain and obesity.

Anti-oxidant effects

This spice is a source of a large number of important antioxidants that, amongst other activities, reduce lipid oxidation by enhancing the activities of crucial internally produced antioxidants, such as superoxide dismutase and melatonin. Melatonin, in particular, is not only a highly effective free-radical scavenger itself, but also stimulates production of the main antioxidant enzyme of the brain, glutathione peroxidase.

Anti-inflammatory properties

This spice's long-valued role as a treatment for arthritis and other inflammatory conditions has now been substantiated by a number of scientific studies that show how it is involved in several anti-inflammatory mechanisms.

COX-2 Inhibition

It is a strong inhibitor of COX-2 enzymes, pro-inflammatory cytokines and prostaglandins that are all important components of the inflammatory response. Abnormal tissue inflammation occurs when an excess of prostaglandins, cytokines and COX-2 enzymes are released by cells in joint tissue. The more of these molecules that are released, the more inflammatory cells and chemicals are attracted to the joints where they cause pain and damage to the joint surfaces. These substances are integral to inflammatory mechanisms that can involve many tissue types, as well as the condition known as chronic systemic inflammation.

Several modern COX-2 inhibitor drugs are used to treat arthritis and other painful inflammatory diseases. These were developed in an attempt to replace the older non-steroidal anti-inflammatory drugs such as ibuprofen and indomethacin, which can have serious side effects including stomach ulceration and bleeding. Unfortunately, although the newer drugs do have fewer side effects, there is some evidence that they may aggravate cardiovascular disease and precipitate strokes.

Ginger, on the other hand, has none of these side effects. Ironically it has actually been shown to be a valuable treatment for gastrointestinal conditions, as well as lowering the risk of heart attack or stroke.

Antimicrobial effects

The hydrochloric acid found in the stomach is a powerful defence against ingested pathogens and rapidly destroys almost all organisms that are taken in with food.

Helicobacter pylori, however, is an unusually resilient bacterial species that thrives in the hostile, extremely acidic environment of the stomach. Once established, this bacteria causes a range of problems including indigestion, oesophagitis, gastritis, stomach and duodenal ulcers, and stomach cancer.

Ginger has traditionally been used as a treatment for stomach ailments, and it has recently been shown to kill all nineteen pathogenic *Helicobacter pylori* species.

The regular ingestion of this spice should help to kill these dangerous bacteria before they become established, and thereby pre-empt the need for antibiotics which destroy many valuable intestinal bacteria, in addition to their intended targets.

Important Phytonutrients:

Antioxidants: Caffeic acid, camphene, capsaicin, chlorogenic acid, coumaric acid, curcumin, delphinidin, eugenol, ferulic acid, gingerdiol, gingerol, isoeugenol, kaempferol, melatonin, myrcene, myricetin, quercetin, shogaol, vanillic acid, vanillin, zingerone

Others: Geranial, neral, paradol, phellandrene, zerumbone, zinziberene.

Liquorice

(*Glycyrrhiza glabra*)

Healing essence of licorice:

Anti-cancer

Anti-inflammatory

Anti-ulcer

Immunomodulator

Licorice is a spice derived from the roots of a plant that originated in China. It has been used for thousands of years as a food additive and as a medicine, the latter as a treatment for sore throats, bronchitis, gastritis, constipation and other conditions.

Today licorice is used extensively to flavour confectionery, sweets, alcoholic drinks, beverages and various dishes in both the East and the West. It is also a constituent of many cough syrups and throat lozenges.

Promising new research suggests that liquorice is an effective agent against several pathological mechanisms, cancer and several other chronic diseases.

Medicinal Properties:

Cancer

Colorectal cancer

Cancer of the colon is the second most common cause of cancer deaths in the USA and there are few preventive strategies available to help fight this scourge. Studies have shown that bioactive compounds found in some spices and other foods may help to counter this disease.

Licorice is the latest spice to be studied in this context.

One of its compounds, called glycyrrhizic acid, helps to prevent the formation of colon tumours by inhibiting the enzyme 11 β -hydroxysteroid dehydrogenase type 2 (11 β HSD2).

One of the principal pathological processes underlying cancer is inflammation; and it is the presence of too much 11 β HSD2 in the colon that aggravates the inflammatory component of colorectal cancer. Common anti-inflammatory Cox-2 inhibitor drugs such as Celebrex work by blocking the inflammatory process generated by the 11 β HSD2 enzyme. Glycyrrhizic acid however works by blocking 11 β HSD2 itself, thereby preventing the formation of the inflammatory compounds themselves.

Moreover it is unnecessary to eat large quantities of this spice in order to ward off colorectal cancer. It is preferable to take small quantities regularly with other cancer fighting spices (such as coriander, fenugreek, garlic and mustard); and eat these with a diet rich in a wide variety of fruit and vegetables. In this way the colon is protected with foods that contain a wide range of cancer fighting phytonutrients.

This spice contains many phytonutrients, including apigenin, eugenol, ferulic acid, genistein and naringenin that have proven anticarcinogenic effects.

Anti-inflammatory effects

Licorice contains several important anti-inflammatory phytonutrients that appear to work through two principal mechanisms.

They can directly inhibit an abnormal inflammatory response as well as enhance the anti-inflammatory potency of some steroids.

Immunomodulation

Glycerhizin is the major active phytochemical found in licorice and works both as an immunomodulator and as a potent antiviral agent.

It has even been shown to be effective against HIV, protecting the immune systems of HIV-infected individuals as well as lowering their viral loads.

Stomach ulcers

The long-standing use of licorice as a treatment for stomach ulcers and gastritis has been confirmed by recent studies which found that the activity of the ulcer-causing bacteria, *Helicobacter pylori*, is inhibited by several phytonutrients found in this spice.

Important phytonutrients:

Antioxidants: Apigenin, carvacrol, eugenol, ferulic acid, genistein, glycyrrhetic acid, glycyrrhetic acid, glycyrrhizin, isoquercitrin, kaempferol, lignin, lupeol, maltol, mannitol, naringenin, phenol, quercetin, salicylic acid, sinapic acid, saponins, thymol, umbelliferone

Others: Glycyrrhetic acid, glycyrrhisoflavanone, glycyrrhizan, isoflavones, licoflavones, licoricin, liquiritone.

Mint

(Menthe species)

Healing essence of mint:

Anti-cancer

Cardioprotective

Antioxidant

In addition to their important culinary uses, mint, including peppermint and spearmint, are used in both traditional medical systems and in modern pharmaceuticals.

Menthol is an ingredient in many medicines that is extracted from mint plants. The mints are also widely used as digestive aids in the form of teas.

Medicinal properties:

Certain mints, especially peppermint, have some of the most potent antioxidant activities of all spices. These include rosmarinic acid, which inhibits atheromatous plaque formation in the arteries and helps to prevent heart disease and stroke.

Mints also contain limonene that provides protection against some cancers.

Important phytonutrients

Antioxidants: Anethole, caffeic acid, carvacrol, chlorogenic acid, eugenol, hesperidin, luteolin, myrcene, p-coumaric acid, rosmarinic acid, rutin, thymol, vanillin

Others: Cineole, coumarin, hesperidin, limonene, menthol, menthone, pinenes.

Mustard

(Brassica species)

Healing essence of mustard:

Anti-cancer

Antioxidant

Anti-inflammatory

Mustard is native to the Mediterranean region and is derived from several varieties of mustard plant, each of which produces seeds of a different intensity and flavour. It belongs to the brassica family that also includes horseradish, wasabi, cabbage, Brussels sprouts, broccoli, rocket, garden cress and watercress.

In addition to being valued internationally as a spice, it has a notable history of use in traditional medicines and has been used to relieve headaches, as an emetic, for colds and flu and to treat arthritis.

More recently, interest in the brassicas' medicinal properties has focused on broccoli, Brussels sprouts and cabbage that have been shown to have tremendous anticancer properties. However, because the members of this plant family contain the same phytonutrients, such protective qualities are likely to be common to all of the brassica species.

Medicinal Properties:

Cancer

Brassicas comprise one of the most important groups of cancer preventing plants, both in terms of their diversity and efficacy.

Not only do they help to protect against a variety of malignancies, including cancer of the pancreas, prostate, breast, stomach and colon, but as little as two or three servings per month may be enough for their anticancer properties to take effect. The preventive properties of mustard and other members of this plant family have been attributed principally to several compounds, the most important of which are indole-3-carbinol and the isothiocyanate group of chemicals.

Although not all mechanisms through which brassicas exhibit anticancer effects are understood, the indoles, isothiocyanates and other compounds common to this family work in the following ways:

1. Inhibition of cancer-promoting enzymes: Brassica phytonutrients can inhibit both carcinogen-activating enzymes as well as NF- κ B, the overproduction of which is associated with many cancers including that of the pancreas.
2. Induction of apoptosis: Isothiocyanates induce apoptosis by stimulating the production of reactive oxygen molecules in cancer cells.
3. Inhibition of inter-cellular communications: By interfering with cytokine communications between cancer cells, brassica phytochemicals can slow the progression and spread of tumours.

4. Detoxification of carcinogens: Indoles and isothiocyanates help protect DNA by increasing the activity of the liver enzymes that are responsible for the detoxification of carcinogens.

5. Excretion of meat toxin: Brassicas can increase the excretion of the powerful heterocyclic amine meat carcinogen, PhIP by as much as 130 percent. This carcinogen is thought to be responsible for the increased risk of colorectal, breast and prostate cancers, all of which have been linked to excessive meat consumption.

6. Protection against hydrogen-peroxide damage: Hydrogen peroxide is a powerful oxidant that is used by some immune cells to kill invading micro-organisms. However, in excess, it can cause damage to DNA, that may lead to accelerated aging, cancer and other diseases. Brassicas have been shown to be very effective at protecting white blood cell DNA against the damaging effects of surplus hydrogen peroxide.

Antioxidants

Mustard exhibits antioxidant effects through both direct and indirect mechanisms. In addition to several antioxidant compounds that mop up free radicals themselves, they contain compounds that enhance the activity of both ingested and internally produced antioxidants.

Sulphorofane, for example, although not an antioxidant itself is an effective inducer of internally produced enzymes that, in turn, enhance the activity of the crucial intracellular antioxidant, glutathione. Sulphorofane also catalyzes the production of the powerful antioxidant bilirubin.

Antimicrobial properties

Although the primary focus of research into the brassicas such as mustard has been in relation to their anticancer properties, they have also been shown to possess strong antimicrobial properties against a variety of bacteria and fungi.

Brassicas cooked or steeped with contaminated meat for only ten minutes significantly reduce the bacterial counts in the meat, and they are likely to exhibit similar valuable effects against other food-borne pathogens.

Important phytonutrients:

Antioxidants: Benzoic acid, caffeic acid, kaempferol, quercetin, sinapic acid, vanillic acid

Others: Indole-3-carbinol, isothiocyanates (most importantly the isothiocyanate, sulphorofane)

Nutmeg

(*Myrista fragrans*)

Healing essence of nutmeg:

Antioxidant

Anti-cancer

Nutmeg is the seed, and mace the aril, of a tree native to Indonesia. Nutmeg is used to flavour confectionery as well as many savoury and sweet dishes. It also has some traditional medical uses, including as a treatment for diarrhoea.

In high doses it has narcotic effects and can induce hallucinations.

Medicinal properties:

It provides several important antioxidants, including eugenol which inhibits platelet aggregation and oleanolic acid which can lower blood lipids and therefore help to prevent cardiovascular disease.

Nutmeg also contains limonene which has preventive properties against some cancers, and linalool which has anticancer and antiviral effects.

Important phytonutrients:

Antioxidants: Caffeic acid, camphene, coumaric acid, cyanidin, delphinidin, epicatechin, eugenol, isoeugenol, kaempferol, myrcene, myristicin, myristic acid, oleanolic acid, quercetin, terpinenes, vanillin

Others: Elemicin, furfural, linalool, limonene, safrole.

Oregano

(*Oreganum vulgare*)

Healing essence of oregano:

Powerful antioxidant

Anti-inflammatory

Anti-cancer

Cardioprotective

Oregano is one of the top five antioxidant foods according to a survey that included all fruit and vegetables!

Today it is most strongly associated with the distinctive taste of pizza, has for centuries been used to flavour a variety of fish, meats and vegetable dishes in the Mediterranean region.

It also has a long history of medicinal uses, including the treatment of respiratory ailments, arthritis, wounds and indigestion. While there have been relatively few scientific investigations into its medicinal properties, it is a source of many potent phytonutrients that are known to be active against a range of pathological processes and chronic diseases.

Medicinal Properties:

Cancer

Oregano's anti-tumorigenic phytochemicals are both numerous and efficacious against a variety of cancer types.

They include the antioxidants, caffeic acid, eugenol, myrcene, oleanolic acid and ursolic acid, as well as the non-antioxidant compounds, carvone, caryophyllene, geraniol and limonene.

Cardiovascular disease and blood lipids

In addition to possessing cardioprotective, antioxidant and anti-inflammatory properties, it contains carvacrol and rosmarinic acid which specifically inhibit the formation of atheromatous plaques. This makes it an important herb in the fight against heart disease and stroke.

Oleanolic and ursolic acid, meanwhile, are effective at lowering abnormal blood lipid levels, while caffeic acid reduces platelet stickiness, and eugenol prevents the abnormal thrombus formation associated with heart attacks and thrombotic strokes.

Anti-inflammatory effects

Oregano contains significant quantities of a number of well-known anti-inflammatory compounds and is likely to have protective effects against the many chronic diseases that are associated with underlying inflammatory processes.

These anti-inflammatory compounds include caffeic acid, carvacrol, eugenol, rosmarinic acid and ursolic acid.

Important phytonutrients:

Antioxidants: Caffeic acid, carvacrol, eugenol, hydroquinone, myrcene, oleanolic acid, phenol, phytosterols, rosmarinic acid, terpinenes, ursolic acid

Others: Carvone, caryophyllene, citral, geraniol, limonene, pinenes.

Parsley

(*Petroselinum crispum*)

Healing essence of parsley:

Antioxidant

Cardioprotective

The leaves of this Mediterranean spice are commonly used as garnishes for salads and a variety of other dishes.

The roots of certain varieties are also used as a vegetable. In traditional medicine, parsley has a number of uses, including the prevention of halitosis and the treatment of bladder and kidney problems.

Medicinal properties:

Among many other potent antioxidants, parsley contains rosmarinic acid that inhibits the formation of atheromatous plaques in arteries. That makes it a valuable herb in the fight against heart disease and strokes.

It also contains the powerful anti-cancer compound, limonene.

Important phytonutrients:

Antioxidants: Apigenin, caffeic acid, caphene, chlorogenic acid, coumaric acid, kaempferol, myrcin, myristicin, naringenin, psoralen, quercetin, rosmarinic acid, rutin, terpenes

Others: Bergapten, geraniol, imperatorin, limonene, lutein, psoralen, pinenes, xanthotoxin.

Rosemary

(*Rosmarinus officinalis*)

Health essence of rosemary:

Anti-Alzheimer's

Anti-allergy

Anti-cancer

Cardioprotective

The leaves of rosemary are used to flavour a variety of dishes and beverages, and are added to some cosmetics.

In its long and colourful history, this hardy Mediterranean spice has been used, among other things, as a symbol of fidelity and a guard against evil spirits and bad dreams. It has also gained an important place in traditional medicine, including its use as an antiseptic and as a treatment for respiratory problems, stomach cramps and arthritic pain.

It is also believed to enhance the memory. More recently, it has become clear that rosemary is a valuable preventive agent against several chronic diseases and is one of several spices that contribute to the health promoting effects of the "Mediterranean" diet.

Medicinal Properties:

Cancer

This herb contains significant quantities of several antioxidants which exhibit potent anti-tumourigenic properties and make it a valuable herb to be used in the fight against cancer. These include apigenin, salicylates, caffeic acid and ursolic acid.

Cardiovascular Disease

Like oregano, it has cardioprotective, antioxidant and anti-inflammatory effects, and two of its compounds, carvacrol and rosmarinic acid, directly prevent the formation of atheromatous plaques in the arteries. Oleanolic and ursolic acid reduce the risk of atherogenesis even further by lowering abnormal blood lipid levels, while caffeic acid prevents platelet aggregation.

These and other compounds give rosemary potent preventive properties in the fight against heart disease and stroke.

Alzheimer's Disease

Rosemary provides two important anti-Alzheimer's compounds

Carnosic acid

This compound has three important properties that make it a vital neuroprotective agent:

1. Unlike many other plant compounds carnosic acid is able to cross the blood-brain barrier to protect the brain directly.
2. Carnosic acid helps dilate the left and right middle cerebral arteries – two of the major arteries carrying blood to the brain. Narrowing of these arteries with age is a common and important factor contributing to the development of neurodegenerative diseases such as Alzheimer's disease.
3. Carnosic acid increases the body's production of the antioxidant, glutathione. Glutathione is one of the most important antioxidants that help to protect the brain against free radical damage.
4. Carnosic acid is one of the first naturally occurring compounds to demonstrate a valuable characteristic called pathological-activated-therapy (PAT). A property whereby a therapeutic agent works only in the presence of the pathological process that it is capable of acting against is called pathological-activated-therapy.

Rosmarinic acid

This compound has shown promising preventive and, in some cases, therapeutic effects against Alzheimer's disease.

Although its mechanisms are not fully understood, like the phytochemicals in garlic and turmeric, rosmarinic acid prevents the deposition of amyloid plaque in the brain and may also contribute to its breakdown.

Toxins

Rosemary has specifically been shown to protect the liver from damage by environmental toxins.

More broadly, potent antioxidants present in rosemary, such as rosmarinic acid and caffeic acid, are effective scavengers of free-radical toxins and assist in the prevention of inflammatory diseases, cardiovascular disease and cancer.

Allergies

The traditional its use as a treatment for respiratory problems has now been validated by clinical studies investigating its anti-allergenic properties.

These have demonstrated that rosemary is an effective therapy for hay fever and asthma-causing allergies, and these anti-allergenic properties may well extend to other types of allergies.

Saffron

(*Crocus sativa*)

Healing essence of saffron:

Antioxidant

Anti-cancer

Blood oxygenator

Saffron, a spice that has been used to give a unique flavour and a vivid yellow colour to many dishes, has been used for centuries in traditional medical systems to treat depression and other illnesses.

Contemporary research has shown this spice to have valuable anti-depressant and anti-cancer properties. It is a yellow powder derived from the stigmata (styles) of the flowering bulb *Crocus sativa* and is cultivated on a commercial basis primarily in Iran and to a lesser extent in India, Spain and a few other countries.

Prior to the advent of cheaper, synthetic food colourings, saffron was also grown in other European countries including England.

Medicinal properties:

Depression

Although several other spices have demonstrated the potential to prevent and treat several neurological diseases saffron is the first to be tested as a treatment of depression in clinical trials. Clinical studies on patients with depression were conducted by doctors at the Tehran University of Medical Sciences. The double-blind, placebo controlled trials compared the effects of 30 mg per day of saffron powder to those of normal doses of two common anti-depressant drugs, fluoxetine (Prozac) and imipramine. In all three clinical trials they found that saffron was at least as effective as these two commonly used anti-depressant drugs in combating mild to moderate depression.

This latest research shows that along with turmeric, rosemary, sage, cardamom and garlic we have yet another spice that can help with a neurological illness - in this case, depression.

Depression affects all age groups but increases in incidence with age. In other words we can include it with other diseases associated with the aging process; such as heart disease, diabetes, Alzheimer's disease, Parkinson's disease, cancer and others.

Cancer

A number of laboratory and animal studies have shown that saffron and its constituent compounds such as safranal, the crocins and crocetin have potent anti-cancer properties. They have demonstrated efficacy against breast, liver, colorectal and pancreatic cancer cells.

Circulation

Research shows that the compound crocetin enhances the diffusion of oxygen through liquids.

In this context it has been shown to increase the uptake of oxygen from the lungs into the blood stream and it has the added benefit of enhancing blood flow to the brain.

Antioxidant Activity

Like most spices, saffron has strong antioxidant activity. Along with the crocins it contains several other antioxidant carotenoid compounds such as zeaxanthin and lycopene. Like many other spices saffron is certain to attract more scientific research. In the mean time, along with other spices, we can enjoy the flavour and colour of this interesting spice; knowing that it is keeping us happy while improving our circulation and reducing our risk of cancer.

Sage

(*Salvia officinalis*)

Healing essence of sage:

Anti-Alzheimer's

Memory enhancer

Anti-anxiety

Cardioprotective

Anti-inflammatory

Antioxidant

Sage is a common garden spice that is a native to southern Europe. Its inclusion in the recipes of countries in that region, make it a valuable contributor to the health promoting properties of the Mediterranean Diet.

Although its leaves are employed primarily as a food flavouring, it also has a long history of use as a medicine.

The word sage is derived from the Latin word "salvia" – to heal. It is not surprising therefore that, over the centuries it has been used to treat almost every type of ailment.

However modern scientific research has shown that this spice is indeed an extremely valuable medicine.

Studies have shown that it can help to combat Alzheimer's disease, anxiety, cardiovascular disease and improve memory and cognition in both young and older individuals.

It is at least as effective as non-culinary herbs such as ginkgo and ginseng – two potentially toxic herbs that are taken extensively for their purported neuroprotective and memory enhancing effect.

Medicinal properties:

Alzheimer's disease

Clinical, animal and laboratory studies have shown that sage can help both the symptoms of Alzheimer's disease and contain the pathological mechanisms underlying this neurodegenerative condition.

Old memories

Sage contains cholinesterase inhibitor compounds that give it the ability to act in a similar way to drugs currently used to alleviate some of the effects of Alzheimer's disease.

Cholinesterase inhibitors slow the breakdown of the neurotransmitter, acetylcholine, thereby improving interconnectivity between different parts of the brain. By so doing they enhance cognition and memory – functions that deteriorate in Alzheimer's patients.

Two helpful acids

More importantly, compounds in sage such as carnosic acid and rosmarinic acid both help to combat the pathological processes that underlie Alzheimer's disease.

Both of these compounds are strong antioxidants; carnosic acid is particularly useful as it crosses the blood-brain barrier to counteract free radical damage to the brain.

Carnosic acid also enhances the production of glutathione, one of the most important of the body's own antioxidants.

Furthermore, it helps to improve circulation to the brain by dilating the middle cerebral arteries. This is a very important function as a declining blood supply to the brain exacerbates the impaired neurological function caused by other pathological processes associated with neurodegenerative diseases.

Beats beta-amyloid

Sage also counters the damaging effects of beta-amyloid, the protein that clogs up the neural pathways in the brain and is the root cause of Alzheimer's disease.

Memory and Anxiety

Clinical trials have shown that sage also improves the memory of normal, healthy young adults who have no signs of neurological disease.

Becalmed

Studies have also shown it to be very effective in mild to moderate anxiety states. What fantastic spice for the modern student – memory enhancement AND relief from pre-examination anxiety!

A spicy trio for brain health

Along with its fellow Mediterranean herb, rosemary and the eastern spice, turmeric, sage is an essential food that we should all take in order to enhance our overall health, ward off Alzheimer's disease and generally improve our brain function.

Star Anise

(*Illicium verum*)

Healing essence of star anise:

Anti-cancer

Cholesterol lowering

Source of Tamiflu

Native to China, star anise is used to flavour confectionery and is a component of Chinese “five spice” powder.

Among other medicinal uses, it is used as a treatment for arthritis and colic. It is also chewed to sweeten the breath.

Its most important current medical use is as a provider of raw material for the production of the anti-flu drug,

Tamiflu. However it is not known to have antiviral properties in its unprocessed form.

Medicinal properties:

Among the spices, star anise is one of the most potent LDL cholesterol antioxidants and so plays a valuable role in preventing the development of atherosclerosis.

It also contains limonene which has anticancer properties, and linalool which possesses both anticancer and antiviral activities.

Important phytonutrients:

Antioxidants: Anethole, camphene, hydroquinone, myrcene, proanthocyanidins, rutin, terpinene

Others: Anisatin, anisaldehyde, cineole, limonene, linalool, trans-anethole

Tarragon

(*Artemisia dracunculus*)

Health essence of tarragon:

Anti-cancer

Cardioprotective

Anti-inflammatory

Antioxidant

Tarragon originates in Siberia and, although it is a fundamental component of the French Herbes de Provence, it is not as widely used as many other European herbs. This is mainly because it loses much of its flavour when dried and is best used fresh.

In traditional medicine, it has been used to treat toothache, as a digestive aid and as a mild sedative.

Medicinal properties:

Tarragon contains an abundance of antioxidants, including the anti-inflammatory, salicylic acid, and other key phytochemicals that have well-established protective effects against cardiovascular disease, cancer and other degenerative conditions.

It is one of the herbs that contribute to the health of those eating a traditional “Mediterranean” type of diet.

Important phytonutrients:

Antioxidants: Anethole, apigenin, caffeic acid, chlorogenic acid, eugenol, ferulic acid, gallic acid, luteolin, myrcene, naringenin, quercetin, rosmarinic acid, rutin, salicylic acid

Others: Cineole, coumarin, menthol

Thyme

(*Thymus vulgaris*)

Healing essence of thyme:

Anti-cancer

Anti-inflammatory

Cardioprotective

The leaves of thyme lend a distinctive flavour to a variety of Mediterranean and French dishes.

Used by the ancient Egyptians for embalming, it has, in addition to its culinary uses, been burnt as incense, given to warriors to instil courage and taken to enhance mental function.

In traditional medicine, thyme is valued as an antiseptic and has also been used to treat sore throats, arthritis, colic and fevers.

It also has cardioprotective and cancer-preventing properties that make this spice an important contributor to the beneficial health consequences of eating a "Mediterranean" type diet.

Medicinal Properties:

Cancer

Many of the phytonutrients present in thyme, notably some of its antioxidants, have well established antitumourigenic properties against a variety of cancer types.

The most important of these cancer preventing compounds include caffeic acid, eugenol, ferulic acid, kaempferol, limonene, naringenin and the salicylates.

Cardiovascular disease

Thyme contains a number of cardioprotective phytonutrients.

Alpha-linolenic acid, for example, helps to lower high blood pressure and reduces platelet stickiness, as do caffeic acid, ferulic acid, kaempferol, naringenin and thymol.

Eugenol and oleanolic acid lower cholesterol, while chlorogenic acid and rosmarinic acid have been shown to inhibit the development of atherosclerosis.

Anti-inflammatory properties

At least half of the phytonutrients present in this herb, in particular eugenol, ferulic acid, kaempferol and the salicylates, are effective anti-inflammatory agents.

Often acting synergistically, the compounds in this one spice provide valuable artillery against the numerous inflammatory processes that underlie so many of our chronic diseases.

Important phytonutrients:

Antioxidants: Apigenin, caffeic acid, chlorogenic acid, eugenol, ferulic acid, gallic acid, kaempferol, luteolin, myrcene, naringenin, oleanolic acid, rosmarinic acid, salicylates, thymol, ursolic acid, vanillic acid

Others Alpha-linolenic acid, borneol, carvacrol, citrol, geraniol, limonene, pinenes, terpenes

Turmeric

(*Curcuma longa*)

Healing essence of turmeric:

Anti-Alzheimer's super spice

Anti-cancer super spice

Anti-inflammatory super spice

Anti-oxidant

Turmeric's root is ground up to provide the yellow dye and flavoured powder known as haldi in India, and turmeric in the West.

It is cultivated and produced in several countries in south-eastern Asia and is used widely in Asian and Indian dishes: as a colouring for rice, a standard constituent of curry and as an inexpensive substitute for saffron.

It's most important phytonutrient, curcumin, is often added to food products as a colouring and to prevent their spoilage by oxidation.

Herbalists prescribe it to prevent heart disease and cancer, and to treat HIV infection and arthritis.

An increasing body of scientific research is showing turmeric to be one of the most valuable medicinal spices with potent preventive and, in some cases, therapeutic effects against a variety of serious chronic diseases such as cancer and Alzheimer's disease.

Medicinal Properties:

Cancer

Turmeric's main constituent phytochemical, curcumin, is one of the most remarkable and most studied of all the spice compounds.

In addition to its other medicinal properties, curcumin is an extremely valuable chemoprotective agent. Much of the research and interest in curcumin has centred on breast cancer, but it has also been found to have protective effects against cancers of the bladder, stomach, uterus and cervix.

When measured against other phytonutrients that protect against cancer, curcumin exhibits at least a ten times greater chemoprotective potency than its closest rival. In vitro studies have shown that a single dose of curcumin inhibits cancer cell proliferation for over six days following its administration.

Curcumin is known to protect against cancer through the following mechanisms.

Tumour suppression:

Curcumin assists the body's natural tumour-suppressing mechanisms in a number of different ways.

Cancer cell death:

Curcumin destroys cancer cells both directly, by stimulating apoptosis, and indirectly, by inhibiting telomerase activity thereby terminating the immortality so typical of cancer cell lines.

Inhibition of tumour proliferation:

Curcumin halts tumour proliferation by inhibiting DNA synthesis in the cancer cells and disrupting their mitotic replication.

Inhibition of angiogenesis:

By inhibiting the transcription capabilities of at least two major angiogenesis-inducing factors, curcumin halts the formation of the new blood vessels that are essential for tumour growth.

Anti-oestrogenic effects:

One of turmeric's most promising uses is in the prevention and treatment of breast cancer. Most breast cancers are hormone dependent, requiring oestrogen as a growth stimulant.

Tamoxifen, (one of the most used drugs in the treatment of breast cancer) works against this hormone-mediated process, interfering with oestrogen's tumour stimulating effects.

Curcumin exhibits its anti-oestrogenic effects by blocking the oestrogen-dependent receptors on tumour cells, thereby interrupting the stimulatory effects of oestrogen and slowing tumour growth. Some studies have shown that curcumin may be at least as effective as tamoxifen as an oestrogen antagonist, with none of the attendant side effects of this drug.

Some of the other compounds found in turmeric are also known to have chemoprotective effects. Therefore, when it comes to prevention, it is better to take the parent spice, turmeric, rather than the pure curcumin extract.

However, the treatment of existing breast cancer may call for more specific dosages of curcumin, the administration of which would need to be supervised by a qualified health practitioner.

Alzheimer's and Parkinson's Diseases

Curcumin exhibits several properties that make it a valuable preventive agent for these two devastating and increasingly common diseases.

Recent research, moreover, suggests that curcumin may also be able to reverse Alzheimer's disease.

Thus, although turmeric is probably most effective as a preventive agent against these illnesses, it may be also help by improving cognitive problems and preventing further deterioration of existing disease.

Curcumin works against these neurodegenerative diseases via the following mechanisms.

Inhibition of inflammation and oxidation:

The accumulation of amyloid protein in the brain is an important factor associated with Alzheimer's disease. Its deposition is associated with oxidative damage and inflammation in the brain tissues, and there is evidence that the risk of developing AD can be reduced by increased consumption of phytonutrients with antioxidant and anti-inflammatory properties.

Curcumin is both a potent antioxidant and anti-inflammatory agent and has been shown to suppress oxidative damage, inflammation and the deposition of damaging amyloid protein in the brain.

Exciting new in vitro research has also shown that curcumin can actually disaggregate existing amyloid plaques and, in so doing, may reverse the course of the disease.

Removal of toxic metals:

Another cause of amyloid deposition in the brain is thought to be due to certain metals, as higher concentrations of harmful metals have been found in the brains of AD sufferers than in non-AD individuals.

Metal molecules that find their way into the brain can both induce amyloid aggregation and have direct toxic effects on brain cells. Certain chelating agents have shown promise in the treatment of Alzheimer's disease and curcumin's chelating properties enable it to assist the body in the removal of potentially toxic metals from the brain and other tissues.

Prevention of abnormal brain cell proliferation:

The abnormal proliferation of the brain's non-neuronal cells, microglia, neuroglia and astrocytes, is another pathological process that is associated with the development of both Alzheimer's and Parkinson's diseases.

Curcumin has been shown to prevent the proliferation of these cells which, if allowed to continue growing, cause damage to the brain's neuronal tissue.

Interestingly, the action of curcumin in this context is not dose dependent; the sustained intake of small quantities is more effective than larger doses taken over a short time span.

Inflammatory Disorders

With its powerful combination of anti-oxidative and anti-inflammatory properties, turmeric is one of the most valuable spices for the prevention and treatment of disorders like arthritis and other inflammatory and autoimmune diseases.

It has been used for millennia in Ayurveda and other traditional medical systems and is considered a stalwart in the treatment of these diseases.

Much of its anti-inflammatory potency can be attributed to curcumin which is both an effective COX-2 inhibitor as well as a strong antioxidant. However, other compounds found in turmeric, in particular the salicylates, also make a valuable contribution to its anti-inflammatory activities and thereby its preventive properties against arthritis and autoimmune disorders.

Chelation of Toxic Metals

Copper and iron are both essential nutrients but if they accumulate in excessive quantities they can cause serious and sometimes irreversible oxidative damage to a variety of tissues in the body. They also induce the activity of certain cytokines associated with inflammation of many tissue types.

Curcumin is a powerful chelating agent for both metals, binding to the metal ions and allowing them to be safely excreted in the urine.

Important Phytonutrients:

Antioxidants: Caffeic acid, camphene, coumaric acid, curcumin, eugenol, gamma terpinene, protocatechuic acid, salicylates, tetrahydrocurcumin, turmerin, turmeronol, vanillic acid

Others: Curcumol, curdione, turmerone, zingiberene.

Herbs & Spices

We now know that many of the strongly flavoured plant compounds that give plants protection against insect and microbial attack are the same compounds that 'preserve' our bodies, by protecting us against degenerative diseases.

When taken alone many herbs & spices may be very unpleasant to eat. However, these foods, in the absence of tastier alternatives, were frequently the only forms of nourishment available to our ancestors. This was an unexpected dietary hardship and one that resulted in accidental, but important, self medication.

More info: <http://www.cosmicsolutions.org/health/>

Spices

In general, spices have a more pungent flavour than herbs. It is possible for one plant to provide a herb and a spice. For example, for the plant *Coriandrum sativum*, the leaves are used as the herb cilantro while the seed is used as the spice coriander.

Spices are the flowers, fruit, seeds, bark, and roots typically of tropical plants and range from brown/black to red in colour. Generally, dried and 'ground' spices are best used within 6 months, while most 'whole' dried spices will retain their flavour for about 2 years.

More info: <http://www.cosmicsolutions.org/>

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Cardio Protective: [more information](#)

Cancer Preventative: [more information](#)

It is necessary to consider that most of the fruit and vegetable species eaten by early societies were stronger tasting and not as sweet as they are today. In fact, the majority of modern plant-food cultivars bear very little resemblance to those varieties that grew thousands of years ago. The bitter, sour and astringent flavours have been bred out by generations of selective propagation.