

Active Ingredients of D-Tox 21

Silymarin:

Silymarin is a group of flavonoids or flavonolignans from the seeds of milk thistle, a plant related to artichokes and daisies. An extract of milk thistle seeds contains 80 percent silymarin with silidiamin, and silicristin being the active ingredients. Of these, silibinin is the most active and the one considered responsible for the health benefits attributed to silymarin, especially when it comes to liver protection and enhancing the detoxification of many dangerous toxins such as those from snakebites and mushroom poisoning. Extract of milk thistle has been used medicinally for almost two thousand years.

Hundreds of scientific research studies have confirmed the remarkable ability of silymarin to protect the liver from all kinds of toxic and carcinogenic agents.

Dr. K. Flofa at the Oregon Health Sciences University found that silymarin not only protects the liver cells against toxic damage but also helps to stimulate the liver to regenerate. In a double-blind controlled study, silymarin was found to significantly reduce the mortality of patients with liver cirrhosis. In another double-blind controlled study, silymarin was shown to decrease serum enzymes SGPT (Serum Glutamic Pyruvate Transaminase) and SGOT (Serum Glutamic Oxalacetic Transaminase), which are associated with liver damage.

Many recent studies have shown that silymarin prevents cancers of the liver, skin, stomach, colon, lung, breast, and prostate. With regard to skin cancer, Dr. mukhtar and his associates at case Western University found that silymarin provides very effective protection against both ultraviolet light and chemical carcinogenesis.

Silymarin protects against the development of cancer by increasing the detoxification activity of Phase II enzymes including Glutathione-S-Transferase (GST) and quinone reductase and conversely by inhibiting both Phase I enzymes and β -glucuronidase. Silymarin is also a potent antioxidant, which counteracts many different types of free radicals. It increases the activity of the antioxidant enzymes such as SOD and glutathione peroxidase as well as levels of glutathione, all of which are critical to many detoxification reactions.

In culture tests on human cancer cells performed by Dr. Agarwal and coworkers, silymarin has been shown to be an effective inhibitor of the growth of prostate, breast, and cervical carcinoma cells through its ability to modulate important signal transduction pathways in cells. Silymarin is protective against heart disease, because of its inhibiting effect on the synthesis of cholesterol and its ability to prevent the oxidation of vLDL and LDL cholesterol. It helps with diabetes by enhancing insulin activity and preventing high levels of blood glucose, which can damage proteins and give rise to free radicals (glycation). Silymarin is also protective against inflammation and is an effective chelator of iron.

Among detoxification supplements, silymarin is one of the stars in preventing toxic overload to our bodies; in warding off disease; and in counteracting bacteria, viruses, and inflammation.

Ellagic Acid:

Ellagic acid, found in a variety of fruits, nuts, and vegetables-including blackberries, raspberries, strawberries, cranberries, walnuts, and pecans-is a relatively stable flavonoid or polyphenol that is very helpful in overall detoxification.

Ellagic acid acts as a detoxifying agent in protecting against many different kinds of cancer and other diseases. It works by binding to reactive carcinogens, either produced by our cells or from external sources, and inactivating them before they can infiltrate DNA and cause mutations. Because of this effect, ellagic acid increases the activity of Phase II detoxification enzymes including GST and quinone reductase, and it has known antioxidizing properties.

Dr. Conney and associates at Rutgers University and the National Cancer Institute and Dr. Mukhtar and associates at Case Western University found ellagic acid to be a potent inhibitor of skin cancer caused by some of the strongest reactive intermediates of carcinogenic polycyclic aromatic hydrocarbons (PAHs) that we know about.

Dr. Stoner and coworkers at Ohio State University Cancer Center also found that ellagic acid prevented the induction of both lung and esophageal cancer induced by other classes of carcinogens. Ellagic acid has also been found to be effective in counteracting liver cancer brought on by a cancer-causing aromatic amine agent.

In clinical studies conducted on women with a genetic risk of cervical cancer at the Medical University of South Carolina, ellagic acid was shown to decrease cancer risk. In cervical cancer cell studies in culture, ellagic acid induced cell death (apoptosis), which may be the way ellagic acid kills cancer cells. Similar results were found using prostate, breast, pancreas, esophageal, skin, and colon cancer cells.

In other studies, ellagic acid promoted wound healing and reduced liver fibrosis. It provided protection against chromosome damage, DNA damage, and lipid peroxidation induced by radiation. These protective effects may be related to its antioxidizing activity.

Allyl Sulfides:

Of the allium vegetables, garlic appears to provide the greatest protection against cancer, so it makes sense to look at extracting it as a supplement. Intact garlic cloves contain allium, a colorless and odorless compound. When garlic is disrupted or crushed, an enzyme converts allium to allicin, which gives garlic its characteristic odor but which is unstable and is spontaneously converted to more stable detoxification-supportive allyl sulfides.

Of these, allyl disulfide, diallyl sulfide, and diallyl disulfide compounds have proved to inhibit the induction of skin, esophageal, stomach, lung, colon, and cervical cancer by a wide variety of chemical carcinogens. Allyl sulfides have an inhibitory effect on the metabolism of carcinogenic nitrosamines, they significantly enhance Phase II detoxification especially related to GST, and several of them display direct antioxidizing activity. Both glutathione peroxidase and glutathione reductase levels as well as glutathione levels are increased by allyl sulfides, which also leads to greater antioxidant activity.

Dr. Michael Wargowich and coworkers at the South Carolina Cancer Center have done extensive research on the protective effect of garlic allyl sulfides on esophageal and colon cancer in the presence of chemical

carcinogens, and found that their inhibiting effect was almost 100 percent. Elsewhere, human studies have found garlic sulfur compounds to have an effect on decreasing biomarkers related to colon and esophageal cancer.

Possibly due to its antioxidant properties, garlic sulfur compounds have been shown to have a protective effect on cardiovascular disorders, especially those related to narrowing of arteries (atherosclerosis), and some studies have even found that allyl sulfides are effective in lowering bad cholesterol (LDL and vLDL) while increasing good cholesterol (HDL).

It has long been known that garlic is an effective antibacterial and antifungal. Recent studies have shown this to be due to the antioxidant activity of the allyl sulfides.

Carnosol & Ursolic Acid:

Extract of Rosemary

The major constituents of rosemary leaves are the terpenoids: carnosol, carnosic, and ursolic acid. Due primarily to the antioxidant properties of carnosol and carnosic acid, extract of rosemary leaves has been used to prevent the oxidation of both animal fats and vegetable oils. Carnosol and ursolic acid are potent both as anti-inflammatory agents and stimulators of Phase II detoxification, especially related to increasing GST and glucuronidation. Doctors Fiander and Schneider of the National Research Council of Canada found that when compared with twenty different natural and synthetic compounds carnosol was the most effective in enhancing GST. Carnosol and ursolic acid are also very effective in preventing lipid peroxidation and DNA damage caused by radiation, chemical carcinogens, and tumor promoters.

Because of the many positive effects on all aspects of detoxification, rosemary leaf extract containing carnosol and ursolic acid is a potent antimutagenic and anticarcinogen. Recent studies by Dr. Conney and coworkers at Rutgers University have shown that a rosemary extract inhibits stomach, lung, colon, breast, and skin cancers induced by a wide variety of cancer-causing agents. When it comes to supplementing, it's probably better to take the extract than the isolated pure forms of carnosol and ursolic acid. As a prophylactic against skin cancer induction by PAHs, for example, rosemary extract has been shown to have stronger inhibitory effect than carnosol or ursolic acid alone. This suggests that a combination of these compounds or a combination plus other constituents in rosemary are responsible for its inhibitory effect on cancer.

Methylsulfonyl Methane:

Detoxification of Heavy Metals

Detoxification of heavy metals such as lead, mercury, cadmium, and nickel is a complex function. The body processes metals through a particular metabolic pathway, depending on whether they appear as organic or inorganic compounds or as the elemental metals. characteristically, heavy metals accumulate slowly in the body and have half-lives that may span many years. This causes a disruption of homeostatis or normal cellular and organ function, which can lead to a disease state.

Heavy metals can alter normal mineral balance, suppress the immune system, and do damage to the brain, heart, kidneys, and liver. Heavy metals are more absorbable on an empty stomach, so it is always advisable to eat regularly and avoid skipping meals. Not surprisingly, fruits and vegetables are at the top of my list of foods I recommend be eaten with great frequency because we know that many phytochemicals contained in them, including polyphenols and silymarin, are able to bind (chelate) heavy metals and help prevent absorption. Even if heavy metals are absorbed, sulfur- and sulfhydryl-containing amino acids, such as L-methionine and cysteine, are very effective components in their detoxification.

Glutathione, a sulfur-containing molecule, is one of the key agents in the body for the detoxification of heavy metals. Methylsulfonyl-methane, which occurs naturally in the body, in addition to being an effective free radical scavenger, is an excellent source of sulfur for this purpose.

Methylsulfonyl-methane is very effective antioxidants and detoxifiers of heavy metals.