Silymarin: A Potent Antioxidant, Liver Protector, and Anti-Cancer Agent

Silymarin is a unique flavonoid complex—containing silybin, silydianin, and silychrisin—that is derived from the milk thistle plant. These unique phytochemicals from the milk thistle have been the subject of decades of research into their beneficial properties.

Milk thistle’s common name comes from the white markings on the leaves, its milky white sap, and its traditional use by nursing mothers to increase milk. But it is best known for its use as a liver protectant and decongestant, which can be traced to the Greeks and Pliny the Elder (23-79AD), who wrote that it was excellent for “carrying off bile.” The famous English herbalist Culpepper (1616-1654) used milk thistle to cleanse the liver and spleen, and to treat jaundice and gallstones.1

In the U.S., the Eclectics—a prominent group of American doctors who practiced during the 20th century—used it for liver problems, and to treat varicose veins, menstrual problems, and kidney disorders. The plant was also cultivated as a food, providing leaves for salad, seeds for a coffee-like drink, and flowers, which were eaten as artichokes are today.1

In 1968, a group of German scientists discovered the active flavonoid complex silymarin, which provides milk thistle’s medicinal benefits.2 Since then, hundreds of studies have been done on silymarin, and it is approved in the German Commission E Monographs (the most accurate information available on the safety and efficacy of herbs) as a supportive treatment for inflammatory liver conditions such as cirrhosis, hepatitis, and fatty infiltration caused by alcohol and other toxins.3

Silymarin is used to:

- Regenerate liver cells damaged by alcohol or drugs
- Decongest the liver (A liver decongestant stimulates bile flow through the liver and gallbladder, thus reducing stagnation and preventing gallstone formation and bile-induced liver damage.)
- Increase the survival rate of patients with cirrhosis4
- Complement the treatment of viral hepatitis5
- Protect against industrial poisons, such as carbon tetrachloride (a colorless gas that leaks into air, water and soil near manufacturing and waste sites)6
- Protect the liver against pharmaceuticals that stress the liver, such as acetaminophen and tetracycline1
• Antidote and prevent poisoning from the death cap mushroom, Amanita phalloides 789

How does silymarin work?

• As an antioxidant, silymarin scavenges for free radicals that can damage cells exposed to toxins. Silymarin has been said to be at least ten times more potent in antioxidant activity than vitamin E. 101112

• It increases glutathione in the liver by more than 35% in healthy subjects and by more than 50% in rats. 13 Glutathione is responsible for detoxifying a wide range of hormones, drugs, and chemicals. High levels of glutathione in the liver increases its capacity for detoxification.

• Silymarin also increases the level of the important antioxidant enzyme superoxide dismutase in cell cultures. 14

• It stimulates protein synthesis in the liver, which results in an increase in the production of new liver cells to replace the damaged ones. 15

• Silymarin inhibits the synthesis of leukotrienes (mediators of inflammation, which can result in psoriasis, among other things). 16

Scientific studies

As we've seen, silymarin has proved to be successful in treating alcohol-related liver disease. In one study, researchers assessed the benefits of milk thistle extract on 170 patients, 91 of them alcoholics with liver cirrhosis. Subjects received 140 mg silymarin three times a day for 41 months. The four-year survival rate was 58 percent in the silymarin group and 39 percent in the placebo group. The reduced death rate among those taking silymarin was most pronounced in the alcoholic cirrhosis subgroup. There were no side effects from silymarin.4

This study is significant for several reasons. Since there were no side effects, the results support the idea that long-term treatment is beneficial and not likely to be harmful. These results also indicate that silymarin may be particularly effective for patients with alcohol-induced liver damage.

Effective in fighting several cancers
Although German scientists first discovered the protective effects of silymarin on liver function in the late 1960s, its impressive cancer-fighting properties were just discovered in the last decade. While it is not surprising that an antioxidant like silymarin would have anti-cancer effects, the molecular effects of silymarin that give it powerful anti-cancer properties have amazed even the scientific community. In the last few years, researchers have begun to discover exactly why silymarin has such broad anti-cancer properties.

Among the most promising cancer fighting strategies that researchers are trying to develop are angiogenesis inhibitors (which stop the proliferation of blood vessels that feed tumors), cell cycle regulators, and selective promoters of cancer cell death. Amazingly, silymarin has been shown to possess all of these abilities. A review of research into silymarin's effects on prostate cancer concluded that silymarin has a huge potential to interfere with many molecular events involved in cancer cell growth, progression, and angiogenesis. One study done in August 2008 indicated that silymarin may inhibit metastasis in prostate cancer. Another study done in September 2008 identified the strong efficacy of silymarin in prostate cancer prevention and intervention, as reported in previous studies.

Because of this you would expect silymarin to have activity against a broad range of cancer types, and an examination of the literature shows that silymarin has impressive effects against prostate, colon, ovarian, skin, lung, breast, and cervical cancers in preliminary studies. In the cases of prostate and ovarian cancer, human clinical trials are currently underway both in the USA and Europe.

**Offers hope for the prevention of cancer ... and as an adjunct treatment**

The novel and unique ways that silymarin fights cancer means that it may offer hope not only for the prevention of cancer, but also for the treatment of cancer, both alone and when combined with existing cancer drugs. This is because silymarin has shown direct tumor killing properties of its own, and is also synergistically effective with two popular chemotherapy agents, doxorubicin and cisplatin.252617

**Why isn't silymarin being hailed as a cancer drug in the medical world?**

With such an impressive list of accomplishments you would expect silymarin to be quickly developed as a broad-spectrum cancer fighter. But as a natural, herbal product that has been used for more than 30 years primarily for liver problems, it has a strike against it. If it were a new drug that had been developed and patented by a pharmaceutical company, it would be hailed as a potential breakthrough.
in the fight against cancer. But no pharmaceutical company wants to spend millions of dollars doing research on an herb that can't be patented.

Unfortunately, interest in researching silymarin's efficacy at fighting cancer in humans has only been promoted by a small group of dedicated scientists who have recognized silymarin's novel, powerful, and multiple cancer fighting properties. One can only hope that silymarin's natural origins don't condemn it to becoming only a scientific curiosity.

**Silybin/Phospholipid Complex (Silyphos)**

Two recent innovations in silymarin supplementation have greatly enhanced the benefits we can obtain from silymarin. The first was the discovery that silybin, one of several flavonoids found in the "silymarin fraction" extracted from milk thistle, is the most potent constituent. Because of this, techniques were developed to further purify silymarin to obtain pure silybin. Because silybin is now recognized as the active flavonoid in silymarin, most recent research has utilized pure silybin rather than silymarin itself.

One of the inherent problems with oral silymarin or silybin supplementation is its very poor absorption. Recently, a new complex of silybin and natural phospholipids was developed. This improved product is known by the name of Silyphos. By complexing silybin with phospholipids, scientists were able to make silybin into a much more soluble and better-absorbed form.

This silybin/phospholipid complex (Silyphos) was found to have significantly improved bioavailability, up to ten times better absorption, and greater effectiveness. This dramatically enhances the benefits of silybin, because typical silymarin extracts and silybin are very poorly utilized when taken orally.

**How safe is silymarin?**

Milk thistle has been safely used as a medicinal herb for centuries. Although its effects can be quite dramatic, it is gentle and well tolerated.

Speak with your health care professional if you have cancer and are on chemotherapy drugs, before taking this or any other herb. Studies show that some chemotherapy drugs have a synergistic effect with silymarin and may increase the drug's effects. If you're taking drugs known to cause liver damage (like acetaminophen), silymarin may help repair and prevent future damage.

**An antidote to environmental toxins**

James Duke, Ph.D., a leading authority on healing herbs, says "Even if you don't have liver damage or liver disease, milk thistle helps improve liver function by helping the liver remove toxins from your body." In this modern world filled with environmental and chemical toxins, silymarin is an antioxidant you just might want to add to your nutritional supplement regimen.

While milk thistle and silymarin have had decades of very positive results for protecting the liver, recent studies into silybin's remarkable anti-cancer properties have provided even more compelling reasons to
consider supplementation. And now, with the advent of the more potent and much better utilized Silybin/Phospholipid Complex (Silyphos), the amazing benefits contained within the milk thistle are available to everyone.

References:


