

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

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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



*Silymarin is derived
from the
Milk Thistle plant*

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.³¹ Another study done in September 2008 identified the strong efficacy of silymarin in prostate cancer prevention and intervention, as reported

in previous studies.³²

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 prostate¹⁸, colon¹⁹, ovarian²⁰, skin²¹, lung²², breast²³, and cervical cancers²⁴ in preliminary studies. In the cases of prostate and ovarian cancer, human clinical trials are currently underway both in the USA and Europe.