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Studies Show the Top Health Benefits of Milk Thistle

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STORY AT-A-GLANCE

- Milk thistle seeds contain silymarin, a chemical compound with medicinal benefits, including protecting liver health; studies suggest it helps boost the production of glutathione in the liver
- Silymarin is also known to lower blood sugar, increase breast milk production, protect skin from UVB radiation and reduce clinical signs of acne vulgaris
- Identified actions of silymarin appear protumor, but the compound demonstrates antineoplastic properties and researchers suggest it is chemoprotective, contributing to counteracting chemoresistance and increasing chemosensitivity
- Animal models demonstrate that the active compound in milk thistle can also lower amyloid plaque aggregates commonly found in Alzheimer's disease and other types of dementia; it may also lower estrogen-deficiency bone loss common in menopause
- Milk thistle is an invasive weed that may be banned from growing in your area. A single flower can produce nearly 200 seeds that germinate in temperatures ranging from 32 to 86 degrees Fahrenheit. You can often buy the plant and seeds at a health food store, and there are several ways to use them at home

Milk thistle (Silybum marianum) — also known as Mary thistle and holy thistle — is a common flowering herb[1] in the Asteraceae family. For many people, the plant is nothing more than an invasive weed. Yet, the herb possesses remarkable medicinal value. It has been used in traditional Chinese, European and Ayurvedic medicine for more than 2,000 years.[2] It's highly regarded for its anti-inflammatory, antioxidant and antiviral properties.

Some people consider planting it at home, but you must check with your local cooperative extension to ensure that it is not banned in your area. If you are allowed to plant it, be aware that milk thistle is highly invasive and can quickly spread throughout your and your neighbor's yards.

A single flower head has nearly 200 seeds that can germinate in temperatures ranging from 32 to 86 degrees Fahrenheit. Once the plant is established, it's difficult, if not impossible, to stop it from spreading. It is also crucial to note that milk thistle is toxic to livestock, so planting it near farms that raise cows or sheep is dangerous.

The medicinal properties of milk thistle are attributed to a chemical compound known as silymarin. These are a group of flavonoids that have several health benefits. Although all parts of the plant are edible, silymarin is only found in the seeds.

The herb was known for centuries as a liver tonic since the active ingredient has liver protective properties. Researchers theorized that the mechanism of silymarin's active cellular protection is an adjustment of cell transporters, estrogenic and nuclear receptors. It's also been found to inhibit apoptosis.[3] Using a milk thistle supplement is not for everyone.[4]

- **Allergies —** Since it is part of the ragweed family, those with an allergy should avoid it.
- **Estrogenic —** Women who are pregnant, nursing or trying to become pregnant should not take the supplement or eat the herb. Also, people with a history of hormone-related cancers, such as breast, uterine or prostate cancers should not use milk thistle.
- **Lowers glucose —** Silymarin is known to reduce fasting blood sugar levels. Those who are diabetic or have low blood sugar should not use milk thistle without supervision from their doctor and strict glucose monitoring.

Milk Thistle Supports Liver Health

According to the American Cancer Society,[5] liver cancer affects an estimated 41,260 Americans every year and the prevalence is rising. According to the American Liver Foundation,[6] nearly 100 million people in the U.S. have nonalcoholic fatty liver disease (NAFLD) and it's the most common form of liver disease in children.

Your liver has two main lobes and each of those has eight segments.[7] Each segment has approximately 1,000 lobules that connect to small ducts. Your liver is responsible for filtering the blood, regulating many chemical levels and excreting bile into your intestines to help break down fat. The liver produces cholesterol, stores and releases glucose and regulates blood clotting.

For thousands of years, milk thistle has been used to support the liver and in modern times silymarin has been used to treat alcoholic liver disease and hepatitis.[8] Silymarin helps suppress cellular inflammation[9] and inhibits the mammalian target of rapamycin (mTOR), a pathway that, when over-activated, increases your risk of cancer.[10]

Most glutathione, also known as the master antioxidant, is produced intracellularly in the liver.[11] It is not only a free radical scavenger but is integral to survival, necrosis and apoptosis.[12] Animal studies have demonstrated that silymarin can increase the total glutathione content in the liver.[13] One review of the literature[14] reported a case report of a 61-year-old male with Parkinson's disease who's protocol included dietary supplements, such as N-acetylcysteine and Silybum.

Blood Sugar, Breast Milk and Skin Respond to Milk Thistle

Silymarin is known to lower blood sugar levels. A 2016 literature review[15] published in the Journal of Diabetes Research evaluated five randomized controlled trials that included 270 patients. They found that routine administration of silymarin resulted in a significant reduction in fasting blood glucose levels and hemoglobin A1c levels and had no effect on lipid profiles.

A 2020 meta-analysis of data[16] from 16 qualified studies with 1,358 patients compared silymarin to control and found silymarin significantly reduced fasting blood glucose

levels, hemoglobin A1c, total cholesterol, triglycerides and C-reactive protein. This study showed no impact on biomarkers indicating liver and kidney function. The researchers believed that silymarin could be an effective therapy in the management of diabetes.

Silymarin is a galactagogue, or a chemical compound that helps increase the production of breast milk. Researchers in a 2008 study treated 50 women for 63 days with a silymarin supplement. The results demonstrated that those who received silymarin had an increase in daily milk production of 85.94%. They also reported none of the women dropped out and no one had an unwanted side effect.[17]

Another study[18] in 2016 enrolled 100 mothers of premature children; 50 received silymarin and 50 received a placebo. The data showed milk production was significantly greater by Day 7 and on Day 30. At the end of the study, 45 of the mothers receiving silymarin were able to reach their target milk supply compared to 25 of the mothers of premature infants receiving the placebo. Again, there were no adverse reactions noted.

Silymarin has been studied over the past decade for its UVB protective properties. More recently, researchers have found silymarin and the flavonolignans found in the milk thistle plant have the potential to inhibit the enzymes that break down collagen, thus contributing to reduced visible skin aging.

One 2019 lab study[19] found silymarin and the flavonolignans examined had anti-collagenase and anti-elastase activity suggesting that they may be useful to protect the skin against the harmful effects of UVB radiation and to slow photoaging.

Studies in 2019 and 2022 evaluated the efficacy of silymarin in the treatment of acne vulgaris. The 2019 study[20] compared silymarin to treatment with doxycycline, analyzing the skin using the Global Acne Grading System (GAGS) and Acne Severity Index (ASI). Researchers found the response to silymarin was not significantly different from doxycycline in the GAGS index but lower in the ASI. There was also a synergistic effect when the two were used together.

The 2022 study[21] also demonstrated that 0.5% silymarin antioxidant serum improved clinical severity and related skin biophysical parameters of the participant's acne on the

modified GAGS and Global Evaluation Acne (GEA) scale. Additionally, it was noted that there were no adverse events associated with using silymarin as compared to the known effects antibiotics have on the gastrointestinal microbiome and antibiotic resistance.

Milk Thistle May Prevent and Inhibit Tumor Growth

Current Western medicine relies on the damaging effects of chemotherapy, radiation and surgery to treat tumor growth and malignant cancers. For over a decade,[22] researchers have found silymarin exerts significant antineoplastic effects, both in the lab and in vivo cancer models. This includes breast, colon, prostate, bladder, lung, skin and kidney cancers.

In 2022,[23] researchers noted that some of the fundamental reasons why silymarin is not used in cancer treatment might be that it is easily accessible, a weed and a nutraceutical rather than a pharmaceutically derived drug. The writers noted this likely "led to medical professionals to view its anticancer effects with skepticism."

They wrote that many of the identified actions to promote ribosomal synthesis in mitochondrial membrane stabilization may appear pro-tumoral, but the compounds in silymarin have clear anticancer effects. A 2020 paper[24] found that silymarin not only has antineoplastic properties but helps protect normal cells against the damaging effects of chemotherapy, contributing to counteracting chemoresistance and increasing chemosensitivity.

Silymarin's chemotherapeutic protective properties were explored in the treatment of gastrointestinal cancers in a 2021 paper.[25] The researchers suggested that silymarin and silibinin (an active compound in silymarin) could be used to reduce the side effects of chemotherapy and radiation treatments and increase the anticancer effects when used in conjunction with those modalities.

Researchers have also studied the efficacy of silymarin and silibinin in the prevention of cancer cell growth. One 2007 study[26] found extensive preclinical findings that support

the anticancer potential in skin and prostate cancer, and a 2013 study[27] proposed there are mechanisms against lung cancer.

Animal Studies Show Reduced Amyloid Plaques and Bone Loss

According to the Alzheimer's Association,[28] more than 6 million Americans currently have Alzheimer's disease, and they anticipate this will rise to 13 million by 2050. Currently, Alzheimer's or another type of dementia kills more people than prostate cancer and breast cancer combined.

The combination of financial, emotional and community burden from Alzheimer's disease and other dementias is incalculable. It is crucial to find ways of preventing the disease and slowing its progression in those who have it. One 2010 study[29] analyzed silymarin in an animal model and found that it attenuated the amyloid beta plaque and improved behavioral abnormalities in the mice.

In 2011,[30] researchers analyzing silibinin, found that the data supported its use as a therapeutic agent in the treatment of Alzheimer's disease as the lab study found it inhibited amyloid beta aggregation in a dose-dependent effect.

Finally, a 2019 animal study[31] linked silymarin to the regulation of gut microbiota to positive therapeutic intervention for the behavioral symptoms of Alzheimer's disease. Using silibinin and silymarin administration, data indicated it mitigated memory deficits and reduced amyloid plaque and found these compounds reduced microbiota diversity and regulated several key bacterial species that are associated with the development of Alzheimer's disease.

Bone loss is another health condition that can accelerate as you age. A 2013 animal study[32] showed that silymarin-rich extract reduced estrogen deficiency-induced bone loss, which has significant implications for post-menopausal women. In 2022,[33] using an animal model, researchers demonstrated that silibinin could reverse bone loss triggered by iron overload.

How to Use It

High-quality, organic milk thistle is inexpensive and readily available at your local **health food store**. Store your extra seeds in the freezer to keep them fresh longer. Below are some ways you can incorporate this unique herb into your diet:[34]

- **Powdered —** Use a mortar and pestle to crush milk thistle seeds into a powder that can be added to soups, stir-fries and other dishes.
- **Salads —** Because the entire plant is edible, you can add milk thistle flowers, leaves, roots and stalks to salads or incorporate them into cooked dishes.
- **Smoothies —** For a healthy liver smoothie, soak 2 tablespoons of ground milk thistle seeds in filtered water overnight. The next morning, add the milk thistle seeds, soaking water, lemon juice to taste, one-third cup of lycium berries and 1.5 cups of ice to your blender and combine until smooth.
- **Snacks —** Although you may find it's an acquired taste, you can snack on whole milk thistle seeds.
- **Tea —** You can crush milk thistle seeds, dried leaves or both to make a loose tea blend you can steep in an infuser with hot water; add a healthy sweetener of your choice to tone down the somewhat bitter flavor, or pair it with a peppermint tea for a different flavor.[35]

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