

Milk Thistle



Natural support for liver health and detoxification*

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Milk Thistle (*Silybum marianum*) is one of the most well-researched herbals for detoxifying the liver by promoting the flow of bile and protecting hepatocytes.* Its most bioactive constituent – silymarin – consists of seven flavonolignans (silibinin, isosilibinin, silychristin, isosilychristin and silydianin) and a flavonoid (taxifolin).¹ However, nearly 70% of silymarin is active in the form of two diastereoisomeric compounds: silybin A and silybin B.¹ Silymarin is located throughout the entire milk thistle plant, but concentrated in the fruit and seeds. Designs for Health's Milk Thistle capsules offer 140 mg *Silybum marianum* seed per serving, standardized to 80% silymarin with added sunflower lecithin for superior absorption.

Advanced Solubility

Silymarin has a low bioavailability due to its insolubility in water, inefficient absorption in the intestine, and an elevated first pass liver metabolism.¹ However, combining silymarin with lecithin (phosphatidylcholine) creates silibinin glyco-conjugates, which are more than 50 times more soluble in water and improve absorption, tolerability, and efficacy.^{1,2} In addition, lecithin provides lipotropic liver support.* In a study seeking to compare the bioavailability of either 45mg silybin-phosphatidylcholine complex or 70mg silymarin found that plasma concentrations of the silybin-phosphatidylcholine complex was 9.6 times higher than non-complexed silymarin.³

Hepatoprotective Qualities*

Silymarin is most often sought after for its superior ability to protect hepatocytes and reduce liver injury from common toxins, including acetaminophen, carbon tetrachloride, radiation, iron overload, phenylhydrazine, alcohol, cold ischemia and the poisonous fungus *Amanita phalloides*.⁴ Silymarin possesses potent antioxidant properties expressed by free radical scavenging activities, inhibition of lipid peroxidation, and through increasing concentrations of endogenous antioxidant enzymes: glutathione peroxidase, glutathione reductase, superoxide dismutase and catalase.^{1, 2, 5} These activities are enhanced when silymarin is complexed with lecithin.² Silybin also modulates inflammation by decreasing pro-inflammatory signals from nuclear factor-κB (NF-κB) activation and assisting with the production of cytokines, such as tumor necrosis factor-α, interleukin (IL)-1, IL-6, and granulocyte-macrophage colony stimulating factor.¹ Other liver-supportive pharmacological activities of silymarin include antifibrotic, antiproliferative, and antiviral activities rooted in its ability to regulate cell permeability, stabilize cell membranes, stimulate liver regeneration, and inhibit deposition in collagen fibers.*^{6, 13}

Clinical Support for the Use of Silymarin in Liver Disease*

- Silymarin (700 mg of silymarin, given 3 times daily for 48 weeks) has been shown to significantly reduce liver fibrosis and mean aspartate aminotransferase (AST) to platelet ratio index in adults with biopsy-proven nonalcoholic steatohepatitis (NASH), the more severe form of nonalcoholic fatty liver disease (NAFLD).⁷

Supplement Facts

Serving Size 1 capsule

Amount Per Serving	% Daily Value
Milk Thistle (<i>Silybum marianum</i>)(seed) [standardized to contain 80% silymarin]	140 mg *

*Daily Value not established.

Other Ingredients: Microcrystalline cellulose, cellulose (capsule), sunflower lecithin, silicon dioxide, vegetable stearate.

Milk Thistle may be beneficial for*:

- Detoxification
- Liver support
- Adjunct to the treatment of liver disease including NAFLD, HBV, HCV
- Metabolic syndrome
- Diabetes mellitus

- In 8 randomized controlled trials involving 587 patients with NAFLD, intervention with silymarin significantly decreased serum levels of hepatic enzymes (ALT and AST).⁸
- Oral silymarin-phosphatidylcholine complex improves liver enzymes, insulin resistance, and liver histology in patients with NAFLD and improves fibrogenesis markers in those with hepatitis C virus (HCV).⁹
- In hepatitis B virus, the efficacy of silymarin is similar to antiviral agents in normalizing AST and ALT levels and actually enhanced the effect when used in combination with antivirals.¹
- Intravenous silybin inhibits viral replication in HCV by intervening directly in the HCV lifecycle, inhibiting HCV RNA-dependent RNA polymerase function. It also blocks HCV entry into cells and fusion of HCV with liposomes, but does not prevent HCV binding to cells.¹
- The antioxidant effects of silymarin can attenuate hepatocyte damage from oxidative stress in alcoholic liver disease.¹
- Various *in vitro* and *in vivo* studies show silybin significantly reduces the growth and proliferation of several lines of human hepatoma cells and may be useful for hepatocarcinomas.¹

Additional Clinical Uses of Milk Thistle*

- Research shows milk thistle possesses lipid-lowering, antihypertensive, antidiabetic, antiatherosclerotic, and anti-obesity properties that could help improve various markers of metabolic syndrome.^{10, 11}
- Data from clinical, *in vivo*, and *in vitro* studies show silymarin is useful in managing several complications associated with diabetes mellitus, including nephropathy, neuropathy, healing delays, oxidative stress, hepatotoxicity, and cardiomyopathy.¹²

Highlights of Designs for Health's Milk Thistle

- Standardized to 80% silymarin
- Sunflower lecithin included for superior absorption
- High efficacy
- Non-GMO ingredients

Recommended Use

- Take one capsule per day, or as directed by your health care practitioner.

For a list of references cited in this document, please visit:

<https://www.designsforhealth.com/techsheet-references/milk-thistle-references.pdf>

Dosing recommendations are given for typical use based on an average 150 pound healthy adult. Healthcare practitioners are encouraged to use clinical judgement with case-specific dosing based on intended goals, subject body weight, medical history, and concomitant medication and supplement usage. Any product containing botanical substances has the potential for causing individual sensitivities. Individual monitoring, including liver function tests, may be appropriate.

***These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.**

To contact Designs for Health, please call us at (860) 623-6314, or visit us on the web at www.designsforhealth.com.