

JBP

Journal of Biochemicals and Phytomedicine

eISSN: 2958-8561



# Milk Thistle Oil and Its Beneficial Effects on the Liver and Hepatic Diseases

Petro Oliinyk <sup>1\*</sup> 

<sup>1</sup> Danylo Halytsky Lviv National Medical University, Lviv, Ukraine

## ARTICLE INFO

### Article Type:

Letter to Editor

### Article History:

Received: 20 Mar 2024

Revised: 25 Mar 2024

Accepted: 1 Apr 2024

Available online: 30 Jun 2024

### Keywords:

Medicinal plant,  
Milk thistle,  
Essential oil,  
Liver diseases,  
Treatment

### \* Corresponding authors:

E-mail: petrolinik1@gmail.com

## ABSTRACT

The plant *Silybum marianum*, commonly known as milk thistle, has been recognized for its natural medicinal properties since ancient times in the Mediterranean region and continues to be used in both traditional and modern medicine. This letter highlights the effects of milk thistle oil and its role in liver protection. The active compound, silymarin, is noted for its strong antioxidant properties, which help protect liver cells from oxidative damage by inhibiting lipid peroxidation and reducing free radicals. Additionally, silymarin aids liver health by reducing inflammation and enhancing protein synthesis. Evidence suggests that milk thistle oil can lower liver enzymes in patients with non-alcoholic fatty liver disease (NAFLD) and improve clinical symptoms of conditions such as hepatitis C and liver cirrhosis. Thus, milk thistle oil, with its antioxidant and anti-inflammatory properties, can be an effective adjunct treatment for preventing and managing liver diseases. However, further research is needed to better understand the mechanisms of action and clinical applications of this plant.

### Please cite this paper as:

Oliinyk P. Milk thistle oil and its beneficial effects on the liver and hepatic diseases. Journal of Biochemicals and Phytomedicine. 2024; 3(1): 1-2. doi: 10.34172/jbp.2024.1.

## Dear Editor,

Milk thistle oil is derived from the seeds of *Silybum marianum* and is recognized for its medicinal properties, especially as a valuable herbal remedy for liver health in both traditional and modern medicine. This plant has been used medicinally since ancient times in the Mediterranean region. This article will explore the active compounds in milk thistle oil, its mechanisms of action on the liver, and the existing scientific evidence in Mediterranean region (Pradhan & Girish, 2006).

## Active Compounds

Milk thistle oil contains several active compounds, the most notable of which is silymarin. Silymarin is a complex of flavonoids, including silibinin, silidianin,

and silicristin, known for their strong antioxidant properties. Silibinin, the most active component of silymarin, plays a crucial role in protecting liver cells (Pradhan & Girish, 2006).

## Mechanism of Action of Milk Thistle Oil on the Liver

Silymarin's antioxidant properties help protect liver cells from oxidative damage by inhibiting lipid peroxidation and reducing free radical production (Polyak et al., 2010). Additionally, silymarin acts as an anti-inflammatory agent by inhibiting inflammatory signaling pathways, thereby preventing liver tissue inflammation (Loguercio & Festi, 2011). The compound

also enhances protein synthesis and cell repair, improving overall liver cell health. Furthermore, it provides additional protection by inhibiting the entry of toxins into liver cells (Feher & Lengyel, 2012).

### Traditional and Modern Effects of Milk Thistle Oil on the Liver

In traditional medicine, milk thistle oil has been used effectively for treating liver problems such as hepatitis and liver cirrhosis, and for enhancing overall liver function and digestion (Odetti et al., 1995). Modern studies have confirmed the beneficial effects of silymarin in improving liver function. For instance, research indicates that silymarin can reduce liver enzymes such as ALT and AST in patients with non-alcoholic fatty liver disease (Stiuso et al., 2015).

### Studies and Scientific Evidence

Numerous clinical studies have shown that milk thistle oil and silymarin can improve liver function in patients with hepatitis C, non-alcoholic fatty liver disease, and liver cirrhosis (Younossi et al., 2013). One study found that daily consumption of silymarin for eight weeks resulted in reduced liver enzyme levels and improved clinical symptoms in patients with non-alcoholic fatty liver disease (Huseini et al., 2012). Additionally, laboratory studies have demonstrated that silymarin can prevent liver fibrosis and, in some cases, help reverse liver damage (Ahmad et al., 2016). These findings suggest that silymarin and milk thistle oil can play a significant role in the prevention and treatment of liver diseases.

In conclusion, milk thistle oil, particularly the silymarin it contains, is recognized as a valuable adjunct therapy for improving and protecting liver health. The antioxidant, anti-inflammatory, and protective properties of these compounds, supported by extensive scientific evidence, highlight the high potential of this plant in preventing and treating liver diseases. Nevertheless, further studies are needed to gain a deeper understanding of the precise mechanisms of action and clinical applications of milk thistle oil.

### Conflict of interest

There are no conflicts of interest.

### Acknowledgement

None.

### Consent for publications

The author approved the manuscript for publication.

### Funding/support

None.

### Authors' contributions

The author provided the manuscript entirely.

### Ethical considerations

All ethical issues (including plagiarism, misconduct, data fabrication, falsification, double publication, or

redundancy) have been thoroughly observed by the author.

### References

- Ahmad W, Butt MS, Hussain MB, Sultan MT, Mushtaq Z, Zahoor M, et al. Silymarin: a potent hepatoprotective agent. *International Journal of Food Properties*. 2016;19(1):1090-1100. DOI: 10.1080/10942912.2015.1026438.
- Feher J, Lengyel G. Silymarin in the prevention and treatment of liver diseases and primary liver cancer. *Current Pharmaceutical Biotechnology*. 2012;13(1):210-217. DOI: 10.2174/138920112799234344.
- Huseini HF, Larijani B, Heshmat R, Fakhrzadeh H, Radjabipour B, Toliat T, et al. The efficacy of silymarin in decreasing liver enzymes in patients with nonalcoholic fatty liver disease: a randomized controlled clinical trial. *Phytotherapy Research*. 2012;26(9):1381-1385. DOI: 10.1002/ptr.4633.
- Loguercio C, Festi D. Silybin and the liver: from basic research to clinical practice. *World Journal of Gastroenterology*. 2011;17(18):2288-2301. DOI: 10.3748/wjg.v17.i18.2288.
- Odetti P, Angelini G, Brunelli P, Marinari UM. Diabetes and liver. Glucose- and lipid metabolism. *Drugs & Aging*. 1995;7(3):159-173. DOI: 10.2165/00002512-199507030-00001.
- Polyak SJ, Morishima C, Lohmann V, Pal S, Lee DY. Identification of hepatoprotective flavonolignans from silymarin. *Proceedings of the National Academy of Sciences of the United States of America*. 2010;107(13):5995-5999. DOI: 10.1073/pnas.0914116107.
- Pradhan SC, Girish C. Hepatoprotective herbal drug, silymarin from experimental pharmacology to clinical medicine. *Indian Journal of Medical Research*. 2006;124(5):491-504. DOI: 10.4103/0971-5916.90985.
- Stiuso P, Scognamiglio I, Murolo M, Ferranti P, De Simone C, Rizzo MR, et al. Hepatoprotection by silymarin involves suppression of ROS-dependent ER stress and mitochondrial dysfunction. *Chemico-Biological Interactions*. 2015;242:28-36. DOI: 10.1016/j.cbi.2015.03.013.
- Younossi ZM, Zheng L, Stepanova M, Venkatesan C, Mir HM, Hossain N, et al. Silymarin is associated with reduction in liver-related mortality in hepatitis C patients: A propensity score analysis. *Liver International*. 2013;33(5):772-776. DOI: 10.1111/liv.12026.

Copyright © 2024 The Author(s). This is an open-access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.