**FILE:**  Milk Thistle (*Silybum marianum*)

*Hepatoprotection

*Liver*

---

**Date:** October 4, 2002

**RE:** Milk Thistle Tea Helps Protect Liver in Mice


Milk thistle (*Silybum marianum*), is a biennial herbaceous weed plant that grows in southern Europe, South America, and North America. The above-ground parts contain histamine and tyramine. The fruit (often referred to as the "seed" in commerce) contains numerous components, the most important being a group of three flavonolignans, collectively known as silymarin. Silymarin has hepatoprotective (liver protection) qualities. The object of this study was to measure the effect of an infusion tea of milk thistle fruits on enzymes relevant to liver function in mice.

The drug, methoxsalen, has hepatotoxic (liver damaging) action and is suitable for studying hepatoprotective effects in animals. Methoxsalen injures the hepatocytes (liver cells), causing a significant increase in serum levels of the enzyme, glutamic-oxaloacetic transaminase (SGOT). Methoxsalen also inhibits cytochrome P450 enzyme activity. These liver enzymes are important for metabolizing and detoxifying substances. Mice were fed milk thistle fruit “tea” (100 ml water, 5 g fruits) 24 and 2 hours before methoxsalen injection and a third infusion was given with the methoxsalen. The animals were killed four hours later and the levels of glutathione (an amino acid important for liver metabolism), cytochrome P450, and SGOT transaminase were measured.

Orally administered milk thistle infusion alone caused a significant decrease of glutathione content in the liver compared to livers of mice treated with saline (control). Methoxsalen treatment further reduced glutathione levels. When milk thistle was given with methoxsalen, milk thistle significantly improved the glutathione levels (p<0.05); however, the glutathione levels remained below the control level.

The affect of milk thistle infusion on cytochrome P450 was inconclusive.

As expected, methoxsalen treatment increased SGOT levels. Treatment with the milk thistle infusion prevented a statistically significant increase in SGOT level (p<0.05). This indicates that milk thistle infusion is hepatoprotective when methoxsalen is the hepatotoxic agent.
The findings from this study are not of major significance and the clinical relevance is not clear. Other more concentrated milk thistle preparations have shown significant hepatoprotectant effects in animals and humans. Most of these preparations are an extract with a concentration of flavonolignans at 70-80%. Such concentrations based on the results of previous research suggest that flavonolignans may be partially metabolized in the gut, thereby necessitating higher concentrations to reach the liver. This study suggests that a more single preparation (water infusion) may also provide some hepatic benefits.

—Heather S. Oliff, Ph.D.