

## Therapeutic effects and pharmaceutical products manufactured from milk thistle (*Silybum marianum*) in Iran

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Letter to editor

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### DEAR EDITOR

*Silybum marianum* is a dicotyledon and gamopetalous herb. This species is an annual or biennial plant of the Asteraceae family that can grow in warm climates with sandy soils. The height of these plants is varied between 150 and 250 cm. The leaves are wide and fragile which in earlier steps of growing season reveal as a rosette on the ground. *Silybum marianum* or milk thistle gets its name from the milky white fluid that comes from the plant's leaves when they are crushed. Petioles are long, oval and prickly (Figure 1).<sup>1</sup>

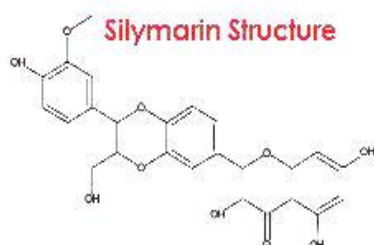


**Fig 1:** *Silybum marianum* plant

*Silybum marianum* also known as Maritighal (Persian), Milk thistle fruit (English); Akub (Arabic), Chardon – marie (French), Echte mariendistel (German) and Cardo Mariano (Italian), grows widely in some parts of Iran. Its fruit and seeds have been used since ancient times for treatment of disorders of the liver, bile ducts, and gallbladder. The medicinal effects of this plant are due to the presence of a flavonolignans group which is called silymarin. Silymarin is a mixture of different types of flavonoids, water-insoluble and soluble in alcohol compounds. The seeds of milk thistle are a good source of five kinds of flavonoids including Silibin, IsoSilibin, Silidianin, Silichristine and doxyfuline.<sup>2</sup> In traditional medicine, milk thistle has been used as adrenergic, anti-allergic, anti -cancer (cancer of the prostate, ovary, uterus and breasts), anti-depressants, antitoxic, anti-fungal toxin, anti-hepatotoxic, anti-edema, anti-inflammation, anti-leukotrienes, antioxidants, anti-prostaglandins, antiviral as well as laxative, diaphoretic, food digester, liver protector, lowering of blood fat, reducing of cholesterol, sympatholytic agent,<sup>3-8</sup>

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lipoxygenase inhibitor, inhibitor of cAMP phosphodiesterase, producing of glutathione, reducing the amount of bile and aphrodisiac for fatty liver. *Silybum marianum* seeds prevent liver damage, so it can decrease the rate of related disorders such as byalcoholism, <sup>9-14</sup> hepatitis, cirrhosis and fatty liver. The use of milk thistle is proved by E Commission as one of the best known treatment for treatment of cirrhosis. Milk thistle can alleviate the liver problems caused by overuse of some medications such as the acetaminophen, alleviate the symptoms due to eating of poisonous mushrooms and can also neutralize the effects of psoriasis (Figure 2).<sup>15-20</sup>



**Fig 2:** Silymarin Structure

The traditional forms of use of milk thistle are including tincture and herbal tea. To prepare herbal tea briefly, 3.5 grams of milk thistle seeds is added to 150 ml of boiling water and the mixture is steeped for 10-15 minutes. The herbal tea is then strained, sweetened if so desired, and served half an hour before meals (3-4 times daily). In the case of tinctures, 15-25 drops/day/ 4-5 times should be served before taking the alcohol evaporated. Pharmaceutical products including legalon tabletas, livergol tabletas, Durasilymarin, drops and tablets of hegrimarin and silymarin supplements are available on the market of medicinal plants. The prescription of these herbal drugs in patients with cirrhosis, who concurrently use aspirin, may increase the metabolism of aspirin. The concurrent use of this herb with tacrine (Tacrine) probably can reduce the side effects of cholinergic. Tacrine

is a drug used to treat Alzheimer's disease. Hepatoprotective effects of thistle can reduce liver toxicity of acetaminophen and chemotherapy. If this plant used simultaneously with common anti-diabetic drugs, a severe drop in blood sugar levels can be occurred. Although the use of this plant usually not be expected to cause any adverse effects on pregnancy and lactation, it should be used with caution and under medical supervision.<sup>21-24</sup> Due to the interesting properties of milk thistle such as healthy, minimal drug interactions, effectiveness as well as being rich sources of flavonoids and antioxidants, further clinical studies are required to understand other miraculous effects of this valuable medicinal plant and subsequently to produce more natural remedies.

## REFERENCES

1. Ghahreman A. Flora of Iran. Tehran: The Publication of Research Institute of Forests and Rangelands, 1992.
2. Subramaniam S, Vaughn K, Carrier DJ, Clausen EC. Pretreatment of milk thistle seed to increase the silymarin yield: an alternative to petroleum ether defatting. *Bioresour Technol.* 2008; 99(7): 2501-6.
3. Zargari A. Herb Production. Tehran: Publication of Astan Quds Razavi. 1985.
4. Fintelmann V. Modern phytotherapy and its uses in gastrointestinal conditions. *Planta Med.* 1991; 57(7 Suppl): 48-52.
5. Luper S. A review of plants used in the treatment of liver disease: part 1. *Altern Med Rev.* 1998; 3(6): 410-21.
6. Preparation Committee of Herbal Pharmacope of Iran. Herbal Pharmacope of Iran. Tehran: Ministry of Health, Treatment & Medicinal Education. Deputy of Food and Drug, 2003.
7. Mukhtar H, Elmets CA. Photocarcinogenesis: mechanisms, models and human health implications. *Photochem Photobiol.* 1996; 63(4): 356-7.

8. Amirghofran Z, Azadbakht M, Karimi MH. Evaluation of the immunomodulatory effects of five herbal plants. *J Ethnopharmacol.* 2000; 72(1-2): 167-72.
9. Lahiri-Chatterjee M, Katiyar SK, Mohan RR, Agarwal R. A flavonoid antioxidant, silymarin, affords exceptionally high protection against tumor promotion in the SENCAR mouse skin tumorigenesis model. *Cancer Res.* 1999; 59(3): 622-32.
10. Hikino H, Kiso Y, Wagner H, Fiebig M. Antihepatotoxic actions of flavonolignans from *Silybum marianum* fruits. *Planta Med.* 1984; 50(3): 248-50.
11. Dragsted LO. Natural antioxidants in chemoprevention. *Arch Toxicol.* 1998; 20: 209-26.
12. Katiyar SK. Silymarin and skin cancer prevention: Anti-inflammatory, antioxidant and immunomodulatory effects (Review). *Int J Oncol.* 2005; 26(1): 169-76.
13. Gupta OP, Sing S, Bani S, Sharma N, Malhotra S, Gupta BD, et al. Anti-inflammatory and anti-arthritis activities of silymarin acting through inhibition of 5-lipoxygenase. *Phytomedicine.* 2000; 7(1): 21-4.
14. Horvath ME, Gonzalez-Cabello R, Blazovics A, van der Looij M, Barta I, Muzes G, et al. Effect of silibinin and vitamin E on restoration of cellular immune response after partial hepatectomy. *J Ethnopharmacol.* 2001; 77(2-3): 227-32.
15. Katiyar SK, Korman NJ, Mukhtar H, Agarwal R. Protective effects of silymarin against photocarcinogenesis in a mouse skin model. *J Natl Cancer Inst.* 1997; 89(8): 556-66.
16. Vayalil PK, Elmets CA, Katiyar SK. Treatment of green tea polyphenols in hydrophilic cream prevents UVB-induced oxidation of lipids and proteins, depletion of antioxidant enzymes and phosphorylation of MAPK proteins in SKH-1 hairless mouse skin. *Carcinogenesis.* 2003; 24(5): 927-36.
17. Hasanloo T, Kowsari M, Naraghi SM, Bagheri O. Study of different *Trichoderma* strains on growth characteristics and silymarin accumulation of milk thistle plant. *J Plant Interact.* 2010; 5(1): 45-9.
18. Kren V, Walterova D. Silybin and silymarin-new effects and applications. *Biomed Pap Med Fac Univ Palacky Olomouc Czech Repub.* 2005; 149(1): 29-41.
19. Dermardersian A. The review of natural products. Facts and comparisons. 1st ed. USA: Lippincott Williams & Wilkins. 2001; 405-409.
20. Osuchowski M, Johnson V, He Q, Sharma R. Alterations in regional brain neurotransmitters by silymarin, a natural antioxidant flavonoid mixture, in BALB/c mice. *Pharm Biol.* 2004; 42(4-5): 384-9.
21. Hu Z, Yang X, Ho PC, Chan SY, Heng PW, Chan E, et al. Herb-drug interactions: a literature review. *Drugs.* 2005; 65(9): 1239-82.
22. Shahrouz S, Ghazyani T, Masgarpour B, Shafiei A. *Comprehensive Textbook of Official Drug.* Tehran: Publication Tymvrzadh Physician. 2008; 823.
23. Bekhradi MR. A novel herbal therapy. Yes: Baryj Essence Pharmaceutical Company, 2003; 69-247.
24. Barnes J, Anderson LA, Phillipson JD. *Herbal Medicines.* London: Pharmaceutical Press. 2007; 429-34.

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