



CHEMICAL COMPOSITION AND MEDICINAL PROPERTIES OF MILK THISTLE (SILYBUM MARIANUM)

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Abstract

This study explores the botanical characteristics, chemical composition, and pharmacological uses of Milk Thistle (*Silybum marianum*), a plant known for its hepatoprotective effects. The research highlights the biological significance of silymarin and other bioactive compounds, while evaluating their roles in clinical and traditional medicine. The article presents a synthesis of literature alongside practical dosage recommendations and safety guidelines.

Keywords: *Silybum marianum*, silymarin, hepatoprotection, medicinal plant, chemical composition

Introduction

Milk Thistle (*Silybum marianum*) belongs to the Asteraceae family and is valued for its medicinal properties, particularly in liver protection and detoxification. It has been traditionally used in Europe and Central Asia, including Uzbekistan. The pharmacological effects are attributed to bioactive compounds like silymarin, essential oils, and minerals. With rising global interest in phytotherapy, especially in hepatology, it is important to study the therapeutic potential and biochemical makeup of this species.

Materials and Methods

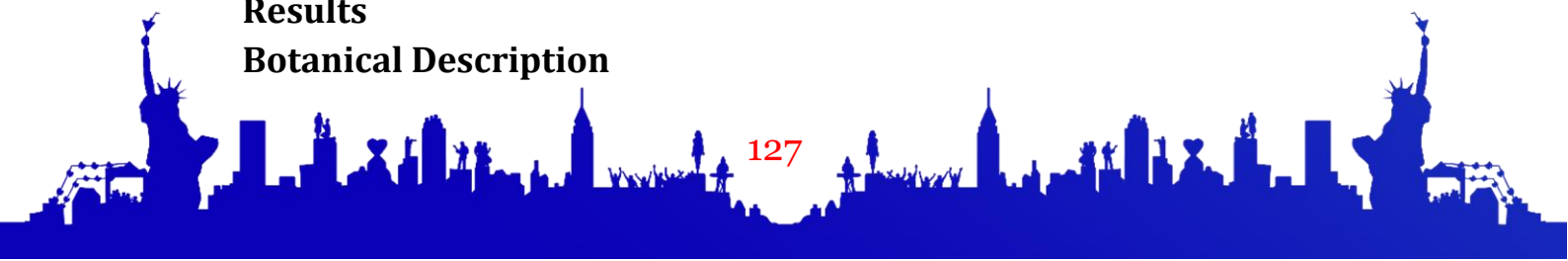
The study used a combination of qualitative literature review, phytochemical data analysis, and comparative assessments from regional and international sources. The botanical characteristics and chemical profile were referenced from standard texts in plant systematics and pharmacognosy. Dosage and clinical relevance were cross-checked against ethnomedicinal sources and modern scientific articles.

Sources included:

- Uzbekistani botany textbooks (Pratov et al., 2003; 2010; 2020)
- World Health Organization (WHO) plant profiles
- Peer-reviewed journals on phytotherapy and hepatoprotective agents

Results

Botanical Description



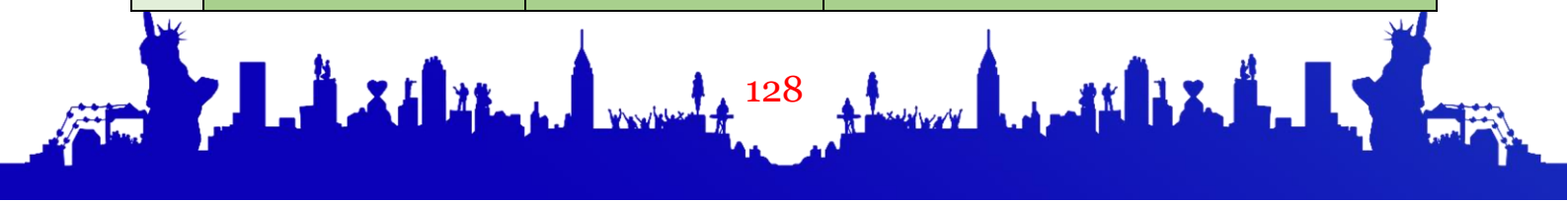


Milk Thistle is a biennial or annual plant growing 30–60 cm tall with glossy green leaves and pink-purple flowers. It prefers sunny, dry habitats and has adapted to regions in Europe, Asia, and North Africa. In Uzbekistan, it grows in Qashqadaryo and Surkhandaryo provinces.



Chemical Composition . The primary characteristic of Milk Thistle lies in its rich chemical composition. The main active substance is **silymarin** (2.7%), which possesses strong antioxidant and anti-inflammatory properties. In addition, the plant contains the following components:

No	Name	Amount	Function and influence
1			Enhances metabolism
2			Eases stress, uplifts mood, improves sleep, relieves migraines
3		mg/g	Maintains metabolic activity
4		16.6 mg/g	Crucial for bone structure
5		24.4 mg/g	Role not yet fully understood
6		0.08 mg/g	Prevents anemia
7	m	4.2 mg/g	Supports nervous system excitability and muscle contraction
8		0.09 mg/g	
9		0.1 mg/g	Vital for Vitamin B1 absorption
10		22.9 mg/g	Important for cardiovascular health





11		1.16 mg/g	Essential for blood cell formation
12	m	0.15 mg/g	Enhances insulin function in metabolism of sugar, proteins, and fats
13		0.71 mg/g	Increases sperm cell activity, used in infertility treatment
14			Used in treatment of avitaminosis and hypovitaminosis

Therapeutic Applications

Milk Thistle preparations are widely used to:

- Stimulate bile production and improve lipid digestion
- Protect liver cells against alcohol, medication, and toxin-induced damage
- Alleviate chronic liver conditions including cirrhosis and hepatitis
- Aid in treatment of diabetes, varicose veins, hypertension, and obesity
- Improve gastrointestinal motility and enhance vitamin absorption
- Treat skin wounds, burns, and inflammation when applied topically



Dosage Examples

- Powdered seeds: 1 teaspoon three times daily before meals for 1 month
- Decoction: 30g seeds in 0.5L water boiled down by half; 1 tbsp hourly





- Tincture: 50g seeds in 500ml vodka; 20–25 drops diluted in water before meals

Safety Guidelines for Using Raptoropsha

		Before using Raptoropsha, ensure you are not allergic to this plant. If symptoms such as rash, itching, or difficulty breathing occur, stop use immediately.
		Pregnant and breastfeeding women should only use Raptoropsha under medical supervision, as it may affect hormonal balance.
		Patients taking medications for diabetes, liver diseases, or blood pressure should consult a doctor before using Raptoropsha, as it may interact negatively with these drugs.
		Do not exceed the recommended dosage. Overuse may cause side effects such as headache, vomiting, or stomach upset.
		Prolonged and continuous use may overburden the body. It is advisable to use it in cycles with breaks.
		Raptoropsha should not be used in children u

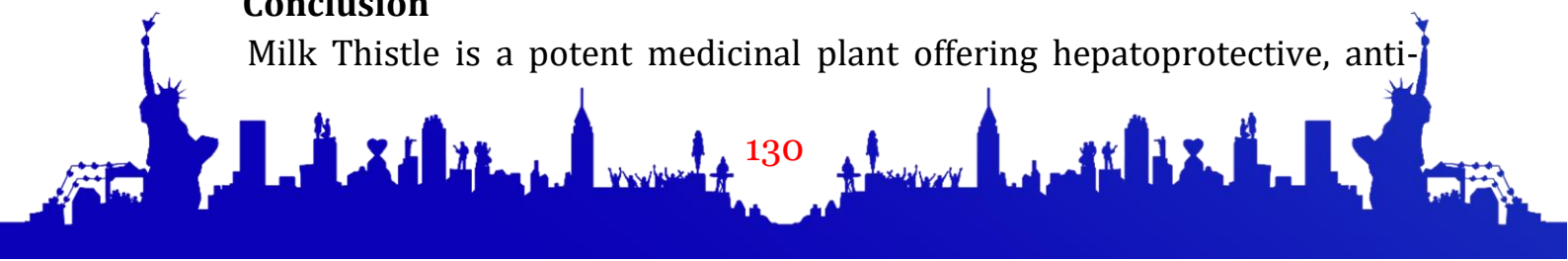
Discussion

The active compound silymarin stabilizes hepatocyte membranes, promotes protein synthesis, and accelerates liver regeneration. Studies suggest silymarin is effective against liver cirrhosis, fatty liver disease, and drug-induced hepatotoxicity. The antioxidant action reduces oxidative stress, while mineral components such as selenium and zinc further support immune and cardiovascular health.

Traditional use aligns with clinical observations, especially for liver detox, bile secretion, and gastrointestinal relief. However, controlled trials are needed to standardize dosing and evaluate long-term safety. Possible interactions with hypoglycemic agents and hormonal medications require caution.

Conclusion

Milk Thistle is a potent medicinal plant offering hepatoprotective, anti-





inflammatory, and detoxifying benefits. Rich in silymarin and essential micronutrients, it holds therapeutic promise across several domains of traditional and clinical medicine. Proper dosage, safety consideration, and professional supervision are key to maximizing its medicinal value.

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