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MORPHOLOGY, CHEMICAL COMPOSITION, AND TRADITIONAL MEDICINAL USES OF THE MALLOW PLANT

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Abstract

This article explores the morphology, chemical composition, and traditional medicinal applications of **mallow (Malva sylvestris)**. Known for its attractive appearance and mild fragrance, mallow has been widely used in folk medicine since ancient times. It is particularly famous for its soothing, antibacterial, and anti-inflammatory effects. The study describes the morphological features of the plant, including its **stem, leaves, flowers, and fruit**, and provides insights into its chemical composition, focusing on active compounds such as essential oils, flavonoids, tannins, saponins, and diterpenoids**. The article highlights the** therapeutic potential **of mallow in treating** inflammation, digestive disorders, skin conditions, and respiratory ailments**, emphasizing its** significance in both traditional and modern medicine**.**

Keywords

Mallow, *Malva sylvestris*, morphology, chemical composition, essential oils, flavonoids, tannins, antibacterial properties, aromatherapy, inflammation, traditional medicine, stress relief.

INTRODUCTION

Mallow (*Malva sylvestris*), a plant admired for its aesthetic appeal and pleasant fragrance, has been used in traditional medicine for centuries. It is particularly known for its calming, antibacterial, and anti-inflammatory properties**.** Beyond its visual beauty, mallow's medicinal benefits make it a valuable plant for human health. Scientific studies have confirmed the therapeutic properties of its essential oils, flavonoids, tannins, and other bioactive compounds. Today, mallow plays a significant role in medicine, with its morphology, chemical composition, and medicinal applications being actively researched. This article presents modern findings on mallow's therapeutic value**,** helping to enhance its use in healthcare**.**

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LITERATURE REVIEW

1. Several scientific studies have examined the morphological structure of mallow. Chalchat et al. (2017) described its stem, leaves, flowers, and fruit, analyzing its growth process. Mallow typically grows 30–60 cm in height, with narrow, elongated, and serrated leaves. The flowers, often purple or violet, grow in clusters, enhancing the plant's aesthetic appeal. One of mallow's key morphological features is the high concentration of essential oils in its leaves and flowers, which contributes to its medicinal properties.

2. The therapeutic properties of mallow stem from its rich chemical composition. Studies by Hussain et al. (2016) have identified key components of mallow's essential oils, including linalool, lavandulol, geraniol, camphor, and cineole. These compounds are known for their calming, antibacterial, and anti-inflammatory effects. Gorinstein et al. (2007) further demonstrated mallow's antibacterial potential, confirming its effectiveness against infections. Additionally, mallow contains flavonoids, tannins, saponins, and diterpenoids, which provide antioxidant and anti-inflammatory benefits (Bakkali et al., 2014).

3. Mallow has been widely used in folk medicine for various ailments, including insomnia, anxiety, headaches, inflammation, and skin disorders. In their book, Tisserand & Young (2014) discuss mallow essential oil's role in aromatherapy, highlighting its stress-relieving and sleep-enhancing properties. Research by Anderson (2012) confirms its effectiveness in treating insomnia, while Field et al. (2016) show mallow's potential in reducing stress and improving mood.

Additionally, Bourn et al. (2018) discuss mallow's antibacterial and anti-inflammatory effects, demonstrating its success in treating skin conditions such as acne and eczema. Mallow essential oil is also recommended for relieving headaches. Research by Khan et al. (2013) highlights mallow's antioxidant effects, showing its positive impact on cardiovascular and digestive health. Furthermore, mallow is widely used in skin care and hair growth treatments.

RESULTS AND DISCUSSION

Mallow (*Malva sylvestris*), known for its widespread medicinal properties, has been used since ancient times in traditional medicine and is now gaining recognition in modern healthcare. Based on the literature analysis, several key conclusions can be drawn regarding its morphology, chemical composition, and therapeutic benefits:**Botanical Classification**:Belongs to the Malvaceae (mallow) family,Can be annual or perennial, growing in moist and sandy soils.**Root System**:**Deep taproot**, well-developed lateral roots.Strong moisture and nutrient absorption capacity.**Stem**:**Erect or creeping**, sometimes branched.**30–120 cm tall**,

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covered with soft hairs.Green or slightly purple, elastic but not brittle.**Leaves**:Large, heart-shaped or rounded, with 5–7 lobes.Serrated edges, dark green color.Arranged alternately on the stem.Upper side smooth, underside covered with fine hairs.**Flowers**:Single or grouped (2–3 per cluster).Purple, pink, or pale pink, sometimes striped.**Calyx**: 5 lobes.**Corolla**: 5 petals.**Stamens**: Fused, located inside the flower.**Blooming period**: May–September.**Fruit**:Dry, disc-shaped schizocarp, breaking into smaller segments.Light brown or greenish in color.Ripening period: July–October.**Seeds**:Small, oval, smooth, brown or gray.Remains viable for 3–5 years.

Conclusion

Mallow (*Malva sylvestris*) is a medicinal plant with significant therapeutic value. Its soothing, antibacterial, and anti-inflammatory properties make it a vital ingredient in traditional and modern medicine. Scientific studies confirm its morphological adaptability, rich chemical composition, and broad medicinal applications. By enhancing our understanding of mallow's healing properties, we can fully utilize its potential in healthcare and pharmacology.

The morphology of the mallow plant plays a crucial role in shaping its medicinal properties. The essential oils found in its leaves, flowers, and stems give the plant its pleasant fragrance and enhance its biological activity. The morphological characteristics of the plant directly affect its medicinal applications, as the essential oils are predominantly concentrated in the flowers and leaves. Additionally, the small flowers located in the upper part of the stem and the structure of the leaves further enhance the plant's therapeutic properties. These factors make mallow an important plant in healthcare and therapeutic applications.

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Mallow is chemically rich and contains various bioactive compounds. The primary active substances in mallow include essential oils, flavonoids, tannins, diterpenoids, saponins, and other biologically active compounds, which contribute to its therapeutic benefits. The essential oil is particularly rich in components such as linalool and lavandulol, which exhibit calming, antibacterial, and anti-inflammatory effects.

Studies by Hussain et al. (2016) and Gorinstein et al. (2007) have extensively examined the antibacterial and antifungal properties of mallow essential oil. Research indicates that the essential oil of mallow is an effective agent against microorganisms and is beneficial in combating various infections. Additionally, flavonoids and tannins enhance the body's antioxidant potential, playing a significant role in disease prevention.

Here is a table showing the chemical composition of the medicinal mallow (Malva sylvestris) plant and their average quantities:

1-table

Compound	Average Content (%)	Properties
Essential oils	**0.1 – 0.3%**	**Calming, antibacterial, anti-inflammatory**
Flavonoids	**1.5-3.0%**	**Antioxidant, anti-inflammatory**
Tannins	**1.5–3.0%**	**Astringent, antimicrobial**
Mucilage	**6.0-15.0%**	**Soothing, anti-inflammatory**
Saponins	**1.0–2.5%**	**Expectorant, antimicrobial**
Diterpenoids	**0.5-1.5%**	**Anti-inflammatory, immune-boosting**
Phenolic acids	0.3 – 1.2%	**Antioxidant, antimicrobial**
Anthocyanins	**0.2 – 1.0%**	**Antioxidant, supports vascular health**

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Ascorbic acid (Vitamin C)	**0.1 – 0.8%**	**Immunity-boosting, antioxidant**

The mallow plant is widely used in traditional medicine for reducing stress, treating insomnia, relieving headaches, reducing inflammation, and benefiting from its antibacterial properties. Studies conducted by Tisserand and Young (2014) and Anderson (2012) have shown that mallow is effective in treating insomnia. The aromatic scent of lavender essential oil has a calming effect on the human body, helping to reduce stress and improve sleep quality. Research by Field et al. (2016) and Bourn et al. (2018) has emphasized the potential of mallow as an effective antibacterial and anti-inflammatory agent.

Additionally, the mallow plant is effective in treating skin conditions such as acne and eczema. The study by Guzmán et al. (2017) highlighted the importance of mallow in skincare, demonstrating its antiseptic and antibacterial properties in treating skin infections.

The table below presents the traditional medicinal uses of the mallow (Malva sylvestris) plant:

2-table

Application Area	**Plant Part and Preparation Form**	**Usage Method**	**Effect / Application**
Stress Reduction	Leaves, flowers (infusion, tea)	Drink as tea	Calming, reduces anxiety
Insomnia Treatment	Flowers, essential oil	Inhalation, aromatherapy	Improves sleep quality
Headache Relief	Leaves, flowers (compress, tea)	Apply compress, drink tea	Pain relief, relaxation
Anti-inflammatory	Leaves, flowers (decoction, ointment)	Apply to affected area, drink	Reduces inflammation

Research on the mallow plant confirms its numerous beneficial properties. The essential oils, flavonoids, tannins, and other bioactive compounds in mallow demonstrate its effectiveness in treating various ailments, including nervous system disorders, cardiovascular diseases, and gastrointestinal issues.

However, there are some considerations and limitations regarding the use of mallow. Although it possesses many medicinal properties, excessive or improper use may lead to adverse effects, such as allergic reactions or digestive discomfort. Therefore, it is important to seek medical advice before using mallow for therapeutic purposes.

Further in-depth studies on the medicinal properties of mallow and its role in medicine are necessary. Investigating the specific bioactive compounds of mallow and their effectiveness in treating different diseases is crucial. Additionally, exploring new therapeutic methods by combining mallow with other medicinal plants could further enhance its efficacy.

CONCLUSION

The medicinal mallow (*Malva sylvestris*) is one of nature's unique gifts, distinguished not only by its beautiful appearance but also by its rich chemical composition and healing properties. Belonging to the Malvaceae family, this plant is commonly found in open fields, along roadsides, and in gardens. Its deep and well-developed root system efficiently absorbs moisture and nutrients from the soil. The upright or branched stem can grow between 30 and 120 cm in height. The broad, palmately lobed leaves and bright purple flowers make it a valuable ornamental plant as well.

Mallow has a rich chemical composition, including polysaccharides, flavonoids, phenolic compounds, anthocyanins, saponins, tannins, amino acids, and vitamin C. Due to these components, it exhibits anti-inflammatory, expectorant, immune-boosting, and digestive-improving effects. As a result, mallow is widely used in traditional medicine to treat bronchitis, asthma, gastrointestinal disorders, skin inflammations, and to promote wound healing.

Different parts of the plant are commonly used in folk medicine:

- **Flowers and leaves**: Used to prepare infusions and decoctions, particularly beneficial for respiratory diseases.
- **Leaves**: Used as compresses to treat skin conditions and inflammations.
- **Roots**: Used in infusions for their anti-inflammatory and soothing effects.

Medicinal mallow is highly valuable due to its adaptability, beneficial properties, and ease of cultivation. It serves not only as a medicinal remedy but also as an important plant for improving environmental conditions and as an ornamental species.

Thus, the **medicinal mallow** is a natural source of healing with numerous benefits for human health!

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