

## A Critical Review on Pharmacological Properties of Morusalbal.

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### ABSTRACT

Morusalba, commonly known as white mulberry, is a plant that has been used in traditional medicine for centuries. This article provides a critical review of its pharmacological properties based on scientific evidence. The chemical constituents of Morusalba, including flavonoids, phenolic acids, anthocyanins, and alkaloids, are responsible for its pharmacological effects.

Morusalba has been found to have significant anti-inflammatory properties, which make it a potential treatment for various inflammatory diseases. Its antioxidant properties help to neutralize free radicals and reduce oxidative stress, which can lead to the development of chronic diseases. Morus alba's anti-diabetic properties, which help to lower blood glucose levels and improve insulin sensitivity, make it a promising treatment option for type 2 diabetes.

The plant's anti-cancer properties are also noteworthy. Studies have shown that its compounds can inhibit the growth and spread of cancer cells and induce apoptosis, making it a potential treatment option for cancer. Its cardioprotective effects, which help to reduce blood pressure, improve lipid profile, and reduce the risk of atherosclerosis, make it a promising agent for cardiovascular diseases.

Morusalba has also been found to have anti-obesity properties, which make it a potential treatment option for obesity. Its compounds can prevent weight gain and reduce body fat. Additionally, Morusalba has been found to have neuroprotective properties that can reduce the risk of neurodegenerative diseases such as Alzheimer's and Parkinson's disease. The critical review of Morus alba's pharmacological properties suggests that it is a plant worth exploring further for its potential medicinal benefits. Its diverse range of pharmacological properties makes it a promising candidate for the development of novel therapeutics for various diseases. However, more research is

needed to fully understand its mechanisms of action and develop effective treatment options.

**KEYWORDS**-Morusalba L., white mulberry, pharmacological properties.

### I. INTRODUCTION

Morusalba L., also known as white mulberry, is a tree species that is widely distributed in Asia, Europe, and North America. Its leaves, fruits, and bark have been used in traditional medicine for various purposes, including treating diabetes, cardiovascular diseases, inflammation, and cancer. In recent years, there has been growing interest in the pharmacological properties of Morusalba L. due to its potential as a source of natural compounds with therapeutic benefits.

Numerous studies have been conducted to investigate the pharmacological activities of Morusalba L. and its bioactive constituents. These studies have revealed that the plant contains a wide range of phytochemicals, including flavonoids, alkaloids, terpenoids, and phenolic compounds, which possess various pharmacological properties.

Some of the most significant pharmacological properties of Morusalba L. include its anti-diabetic, anti-inflammatory, antioxidant, anti-cancer, anti-hypertensive, and anti-microbial activities. For instance, several studies have demonstrated the hypoglycemic and anti-diabetic effects of Morusalba L. extracts and compounds, which can help to reduce blood glucose levels and improve insulin sensitivity.

Moreover, the anti-inflammatory and antioxidant activities of Morusalba L. have been shown to be beneficial in the prevention and treatment of chronic diseases, such as cardiovascular diseases and cancer. Additionally, Morusalba L. extracts have been found to exhibit anti-microbial activity against a range of bacterial and fungal pathogens, which suggests their potential as natural alternatives to synthetic antibiotics.

Despite the promising pharmacological properties of Morus alba L., there are still some limitations and challenges associated with its use. These include issues related to the standardization and quality control of plant extracts, as well as the need for further research to identify the specific bioactive compounds responsible for its pharmacological effects.

A critical review of the available literature on the pharmacological properties of Morus alba L. suggests that the plant has significant potential as a source of natural compounds with therapeutic benefits. However, further research is needed to fully understand its mechanisms of action and to develop effective and safe therapeutic agents based on its bioactive constituents. Ayurvedic description

**Synonyms:** Tula, Püga, Kramuka, Brahmadaru

Rasa & Vipaka: Madhura;

Guna: Guru;

Virya :Śita

Unripen fruit: Rasa & Vipäka: Amla; Guna: Guru,

Virya :Uṣṇa

Unripen fruit: Pittavatahara, visaghna, pitta raktaprapana

#### TAXONOMICAL CLASSIFICATION

The taxonomical classification of Morus alba is as follows:

Kingdom: Plantae

Clade: Tracheophytes

Clade: Angiosperms

Clade: Eudicots

Clade: Rosids

Order: Rosales

Family: Moraceae

Genus: Morus

Species: Morus alba

## II. MATERIAL AND METHOD

For the purpose of assembling important information regarding dietary classes, a wide range of Ayurvedic ancient texts, compendia, Dravyaguna literature, periodicals, and internet articles were thoroughly reviewed.

#### Chemical constituents present in Morus alba L.<sup>(10-14)</sup>

Morus alba contains a wide range of chemical constituents, including:

1. Flavonoids: Morin, quercetin, rutin, kaempferol, isoquercitrin, astragalol, and others.

2. Phenolic acids: Gallic acid, caffeic acid, chlorogenic acid, and others.

3. Anthocyanins: Cyanidin-3-O-glucoside, cyanidin-3-O-rutinoside, delphinidin-3-O-glucoside, and others.

4. Alkaloids: Kuwanon G, sanggenon A, oxyresveratrol, and others.

5. Triterpenoids: Betulinic acid, ursolic acid, and others.

6. Polysaccharides: Mulberry leaf polysaccharides, moran A, and others.

7. Vitamins and minerals: Ascorbic acid, vitamin K, calcium, iron, and others.

#### PHARMACOLOGICAL AND BIOLOGICAL ACTION OF Morus alba L.<sup>(15-24)</sup>

1. Anti-inflammatory action: Morus alba has anti-inflammatory properties due to its flavonoid and phenolic acid content. It can help reduce inflammation and prevent chronic inflammatory diseases.

2. Antioxidant action: Morus alba has potent antioxidant activity due to the presence of flavonoids, anthocyanins, and phenolic acids. It can neutralize free radicals and reduce oxidative stress, which can lead to various diseases.

3. Anti-diabetic action: Morus alba has been found to have anti-diabetic properties, including lowering blood glucose levels and improving insulin sensitivity. It is a promising treatment option for type 2 diabetes.

4. Anti-cancer action: Morus alba has been found to possess anti-cancer properties, including inhibiting the growth and spread of cancer cells and inducing apoptosis. It is a potential treatment option for cancer.

5. Cardioprotective action: Morus alba has been found to have cardioprotective effects, including reducing blood pressure, improving lipid profile, and reducing the risk of atherosclerosis. It is a promising agent for cardiovascular diseases.

6. Anti-obesity action: Morus alba has been found to have anti-obesity properties, including preventing weight gain and reducing body fat. It is a potential treatment option for obesity.

7. Neuroprotective action: Morus alba has been found to possess neuroprotective properties that can reduce the risk of neurodegenerative diseases such as Alzheimer's and Parkinson's disease.

8. Anti-allergic action: Morus alba has been found to have anti-allergic properties, including inhibiting the release of histamine and reducing allergic symptoms such as itching and redness.

9. Antimicrobial action: Morus alba has antimicrobial properties, including inhibiting the

growth of bacteria and fungi. It can be used as a natural alternative to synthetic antimicrobials.

10. Hepatoprotective action: Morusalba has been found to have hepatoprotective effects, including reducing liver damage caused by toxins and improving liver function.

11. Wound healing action: Morusalba has been found to have wound healing properties, including promoting the growth of new skin cells and reducing inflammation. It can be used to treat various types of wounds.

12. Anti-ulcer action: Morusalba has been found to have anti-ulcer properties, including reducing stomach acidity and protecting the stomach lining from damage. It can be used to treat peptic ulcers.

13. Antidepressant action: Morusalba has been found to have antidepressant properties, including improving mood and reducing symptoms of depression. It may be a potential treatment option for depression.

14. Anti-anxiety action: Morusalba has been found to have anti-anxiety properties, including reducing anxiety-like behavior and improving cognitive function. It may be a potential treatment option for anxiety disorders.

15. Immunomodulatory action: Morusalba has been found to have immunomodulatory properties, including enhancing immune function and reducing inflammation. It can be used to treat various immune disorders.

### III. DISCUSSION

1. Anti-inflammatory properties: Morusalba has been shown to possess significant anti-inflammatory properties, which make it a potential therapeutic agent for various inflammatory diseases.

2. Antioxidant properties: The flavonoids and phenolic compounds found in Morusalba have potent antioxidant activity. These compounds can help neutralize free radicals, reducing oxidative stress and inflammation in the body.

3. Anti-diabetic properties: Morusalba has been found to have anti-diabetic properties due to its ability to lower blood glucose levels and improve insulin sensitivity. This makes it a potential treatment option for type 2 diabetes.

4. Anti-cancer properties: Morusalba contains several compounds that exhibit anti-cancer properties. These compounds have been shown to induce apoptosis (cell death) and inhibit the growth and spread of cancer cells.

5. Cardiovascular benefits: Morusalba has been found to have cardioprotective effects due to its

ability to reduce blood pressure, improve lipid profile, and reduce the risk of atherosclerosis.

6. Anti-obesity properties: Studies have shown that Morusalba can help prevent weight gain and reduce body fat. This makes it a potential treatment option for obesity.

7. Neuroprotective properties: Morusalba has been found to have neuroprotective properties due to its ability to reduce oxidative stress, inflammation, and apoptosis in the brain. This makes it a potential treatment option for neurodegenerative diseases such as Alzheimer's and Parkinson's disease.

The critical review of the pharmacological properties of *Morus alba* suggests that it has significant potential as a therapeutic agent for various diseases. However, further research is needed to fully understand its mechanisms of action and to develop effective treatment options.

### IV. CONCLUSION

In conclusion, Morusalba, a plant from the Moraceae family, has been found to possess a wide range of pharmacological properties. These properties are due to the presence of various chemical constituents such as flavonoids, phenolic acids, anthocyanins, alkaloids, triterpenoids, and polysaccharides. Morusalba has been shown to have anti-inflammatory, antioxidant, anti-diabetic, anti-cancer, cardioprotective, anti-obesity, and neuroprotective properties. These properties make it a potential therapeutic agent for various diseases.

Morusalba's anti-inflammatory properties are particularly noteworthy since inflammation is implicated in many chronic diseases, including arthritis, atherosclerosis, and cancer. The flavonoids and phenolic compounds found in Morusalba have potent antioxidant activity that helps neutralize free radicals and reduce oxidative stress, which can lead to various diseases. Its anti-diabetic properties, which lower blood glucose levels and improve insulin sensitivity, make it a promising treatment option for type 2 diabetes.

The anti-cancer properties of Morusalba are also significant. Its ability to inhibit the growth and spread of cancer cells and induce apoptosis can help prevent the development of cancer. Additionally, Morusalba's cardioprotective properties can help reduce the risk of cardiovascular diseases, which are a leading cause of death worldwide.

Morusalba's potential as a treatment for obesity and neurodegenerative diseases is also promising. Studies have shown that it can prevent weight gain and reduce body fat. Its

neuroprotective properties can help reduce the risk of Alzheimer's and Parkinson's disease, among others.

Morusalba is a versatile plant that possesses significant pharmacological properties. It has the potential to become a therapeutic agent for various diseases, although more research is needed to understand its mechanisms of action fully. However, the critical review of its pharmacological properties suggests that it is a plant worth exploring further for its potential medicinal benefits.

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