

## Value Added by Products of Mulberry and Silkworm

G. Gunasekar

Department of Entomology, Faculty of Agriculture, Annamalai University, Tamil Nadu – 608 002, India

\*Corresponding Author: [gunaselanbschonorsagri07@gmail.com](mailto:gunaselanbschonorsagri07@gmail.com)

Mulberry, (genus *Morus*), genus of about 10 species of small to medium-sized trees in the family Moraceae and their sweet edible fruits. Mulberries are native to temperate Asia and North America, and several species are cultivated for their fruits and as ornamentals. Mulberry plants are also important as food for silkworms. Silkworm moth, (*Bombyx mori*), lepidopteran whose caterpillar has been used in silk production (sericulture) for thousands of years. Although native to China, the silkworm has been introduced throughout the world and has undergone complete domestication, with the species no longer being found in the wild.

### By products of mulberry plants

#### Leaves

- Mulberry leaves have high protein and vitamin content.
- They are finding application in salads, stir-fries, juices, and potentially other innovative food products.
- Anti diabetic agent - inhibits the infectivity of HIV.
- Rich in sucrose, glucose, fructose, dextrin, vitamin(A-E) - good supplementation in diet.
- Leaf is also used in the preparation of a syrup and moisturizing skin.
- Antibacterial, astringent, hypoglycemic, ophthalmic
- Treatment of cold, influenza and nose bleeding



#### Mulberry green tea

- Reduces blood pressure
- 100 % caffeine free

#### Mulberry health drink

- 'Spoorthi'- Health drink -breakthrough in organic remedies
- Remedy for diabetes and hypertension.

- Used as a laxative, to reduce digestion ailments
- Such a drink is already used in countries like Japan, China, Thailand and South Korea. In South Korea alone, 93 different items are prepared from Mulberry, including biscuits and chocolates.

#### Fruit

- Mulberry fruits are a valuable source of vitamins, minerals, and antioxidants. They can be enjoyed fresh, dried, or frozen, and are utilized in the production of jams, jellies, wines, syrups, pies, tarts, and cordials. Mulberry juice offers a refreshing and healthy beverage option.
- Preventing diarrhea & cold.
- Syrups & recipes prepared from fruits of *M. alba* are used against hyperlipemia, constipation, insomnia & anti-ageing.
- Decoction prepared from fruit is used against cerebral arteriosclerosis, central retinitis & nasopharyngeal cancer.

#### Mulberry stem

- Latex of mulberry stem has the capacity of healing wounds and injuries -used as dermal ointment.
- A product from shoots - improving hair growth softening of skin and hair.
- Having antirheumatic, diuretic, hypotension properties
- Bark is used to relieve tooth ache -purgative and vermicure

#### Beverages

**Wine:** Mulberry wine boasts a distinct character - sweet and fruity, it's a popular choice across the globe.

**Juice:** For a refreshing pick-me-up, mulberry juice made



from fresh or frozen fruits is a delicious and healthy option.

**Tea:** Mulberry tea, brewed from dried leaves, is a popular herbal tea enjoyed for its potential health benefits.

### By- products of silkworm

#### Pupal powder



- Rich source of nitrogen and phosphoric acid
- Helpful in reducing cholesterol and blood pressure
- Preparation of dog biscuit

#### Silk films

- Used as artificial blood vessels, skin and vectors for medicines.
- Used as a moulding material in Bakelite industry.

#### Sericin powder

- Has excellent moisture absorbing properties
- Used as a substrate for mammal cell culture,
- Environment friendly biodegradable polymers are produced

#### Silkworm litter

- Composting
- Biogas
- Cattle and poultry feed
- Chlorophyll paste, proteins and plastic materials

#### Silkworm faeces

- Aqua feed, chlorophyll paste
- Face powder



#### Pupal skin

- Pupal skin- reeling units and grainages as wastes. It is made of chitin (3-4 % of dry weight of pupae)

- Additive to increase loaf volume of wheat bread.

### Silkworm amino acid products

- Nutritional supplement
- Conditioners in beauty care products
- Pharmaceutical value

### Conclusions

Mulberry is a valuable medicinal plant that provides a wide range of bioactive compounds, including antioxidants like flavonoids and phenolics, as well as dietary fiber. Due to the presence of these bioactive components, mulberry leaf has a strong anti-diabetic, anti-cardiovascular, and anti-viral impact<sup>1</sup>. Additionally, silk, which is produced by silkworms, has evolved into a useful biomaterial with applications in various fields. Silk fibers are ideal for bioactive textiles, and silk proteins (sericin and fibroin) have antioxidant properties and potential wound healing applications.

### References

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