Agri Articles
(e-Magazine for Agricultural Articles)
Volume: 04, Issue: 02 (MAR-APR, 2024)
Available online at http://www.agriarticles.com
©Agri Articles, ISSN: 2582-9882

Profitable Utilization of Mulberry Fruits

(*Dr. K. Thanga Roja[1], Dr. M. Mithilasri[1] and Dr. E. Arasakumar[2])
[1]Tamil Nadu Agricultural University, Coimbatore (District), Tamil Nadu
[2]Regional Sericultural Research Station, Central Silk Board, Dehradun
*Corresponding Author's email: rojathanga@gmail.com

Plants of mulberry are found all over the world. Its leaves serve as food for the silkworms, which subsequently generate silk fibre. Mulberry plants not only have leaves but also bear tasty fruit. The rich flavour of this fruit integrates a nice balance of sweetness and flavour with nutrients that are vital to human metabolism. If mulberries are collected commercially for a range of extremely profitable products, they have the potential to become a significant agricultural crop on a global scale. Mulberries can be used as animal feed for ruminant cattle, as well as a food colouring, diabetes control agent, pulp, jam, jelly, fruit drink, fruit sauce, cake, fruit tea, fruit powder, and fruit wine. Rather than focusing exclusively on mulberry foliage for the sericulture sector, this potential use for mulberry fruits has been overlooked by people.

Mulberry fruit in the preparation of jams, jellies and sweet products: Berries from mulberry trees are abundant and well-liked in many countries worldwide. Mulberry fruit is a common ingredient in jams, jellies, and other confections because of its high sugar content. Recent years have seen a commercial production of mulberry fruit juice as a health beverage due to substantial effort on producing mulberry trees under various kinds of locations. It is now quite well-liked in Korea, Japan, and China. The original mulberry fruit juice kept cold for three months without preservatives stays fresher than the bottled version for around a year at room temperature (Dharmananda, 2018).

An acre of mulberry tree farming in sub-tropical India produces around 1993 kg of fruit jam and 2794 litres of fruit pulp when the trees are planted 8 x 9' apart and rows to rows. Mulberry fruits, fresh, dried, or frozen, are used in the culinary industry to manufacture vinegar, tonic wine, amaretto or vermouth wine, and a variety of syrups. Marmalades, chocolate, frosting, jam, and fondant are among the sweet products made with mulberry fruits. Additionally, mulberry seed oil is used in these applications. Mulberry fruit juice is also used as a natural alcoholic extract ingredient in the food and medicinal industries. Mulberry fruits become the perfect hard alcohol after further distillation and alcoholic fermentation. The alcoholic beverage known as "mouro" is made by distilling the fermented fruits of the mulberry tree (*Morus nigra* L.).

Mulberry fruit in the preparation of wine: Mulberry fruit, with its high vitamin C content, is used to manufacture specialty wine and beer in most temperate nations. According to Ehow (2019), mulberry wine is made from overripe and tart grapes. The wine has a taste that is both sweet and tart. Mulberry wine can help remove coprostasis, or faecal residue in the intestines, and pollutants on a regular basis, which can help you, get a trimmer physique. The wine obtained by immersing mulberries in rice wine or grape wine is useful as a treatment for weakness following diseases, and it is also used to alert male energy and boost overall vitality.

Mulberry fruit as a natural food colorant: The use of mulberry fruits, which are rich in anthocyanins, to create a natural colour for industrial use would be advantageous for the food business. Specifically, cyanin is known to be present; the fruit's reddish-purple colour is caused by this red pigment. Pair of highly prevalent anthocyanins is cyaniding-3-glucoside and cyaniding-3-rutinoside. These pigments may be employed as natural food colouring, dietary modulators, or disease-causing agents, according to Wrolstad (2011). Because synthetic pigments are unhealthy, the food business is demanding more natural food colouring. Here, mulberry fruits are dissolved in water, they are easy to extract and add to aqueous food systems. It has previously been possible to extract anthocyanins from mulberry fruit economically and efficiently using a low-cost method (Liu *et al*., 2014). Using this extraction technique, fabrics can be tanning agents or used as a high-value food colorant. Based on research of 31 Chinese mulberry cultivars, the total anthocyanins concentration per liter of fruit juice was range from 148 mg to 2725 mg. All the vitamins, all the sugars, and all the acids are still present in the residual juice, which can be used to make pulp and wine. Nonetheless, the amount of anthocyanins depends on the climate in the growing region. Anthocyanin content is high, especially in dry environments. It might be very profitable for tropical sericulture nations to extract anthocyanins from mulberry fruits on an industrial scale.

Mulberry fruit as a feed supplement to live stock: According to Habib (2014), when cattle with low illness incidence were fed a multi-nutrient feed block manufactured from mulberry fruits, their milk yield increased from 30 to 50 per cent. Studies have indicated that a farmer can earn between US$17 and US$26 per month by commercially preparing mulberry fruit blocks during the mulberry season. It is possible to use the technology of using mulberry fruits as blocks for animal feed to start a microbusiness that brings in extra money for farmers who raise sericulture plants.

Dyeing cotton fabric with anthocyanin dyes from mulberry fruits: The cotton fabric can be successfully dyed with natural anthocyanin colours derived from the fruits of the mulberry plant *(Morus rubra*), particularly cyanidine 3-glycoside. These dyes have sufficient colouring qualities to be used in potential commercial applications. Anthocyanin extracts from mulberry fruits were used to test the dyeability of the fabrics made from cotton. The two primary colours of fabrics that are coloured with mulberry fruit extracts are aubergine, deep purple, and red. The color strength of cotton cloth increased from 2.7 to 5.3 when dyed without the use of mordants, and from 3.2 to 6.9 when dyed with tin. The color fastness improved by 0.5–2 grades as the final solution's succinic acid level rose. With a grey scale grade of at least 3, it was discovered that fabric colored with simultaneous tin mordanting and modified with 30 g of succinic acid had good color fastness to perspiration, crocking, light, and washing. Neutral soapy water was recommended over alkaline soapy water for washing at home.

Conclusion

One such activity with multiple applications is sericulture. Utilizing sericulture by-products and optimizing mulberry fruit by-products are vital to establishing this industry as a solid one. Further research is also required to determine exactly how helpful these products are. This article will discuss the latest advancements in the complete utilization and value addition of mulberry fruit resources, to enhance the sustainability of the sericulture industry.

References

1. Dharmananda S. (2018). Fruit as medicine-Morus fruit (Mulberry). *Institute for traditional medicine*, Portland, Oregon, USA, ***1*** (1): 1-7.
2. Ehow. (2019). How to make mulberry wine. Food and Drink, www.eHow.com

3. Liu X, Xiao G, Chen W, Xu Y and Wu J. (2014). Quantification and purification of mulberry anthocyanins with macroporous resins. *Journal of Biomedicine and Biotechnology*. ***5*** (1):326-331.
4. Wrolstad, R. E. (2011). The possible health benefits of anthocyanin pigments and polyphenolics, Linus Pauling Institute, Oregon State University.