

## ***Cordia dichotoma*: An Underutilized Indigenous Fruit with Expanding Applications in the Food Industry – A Review**

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### **SUMMARY**

The increasing demand for natural, functional, and sustainable food ingredients has renewed interest in underutilized plant resources. *Cordia dichotoma* G. Forst., commonly known as lasora or Indian cherry, is an indigenous fruit tree traditionally consumed in South Asia. The fruit is rich in mucilage, dietary fiber, minerals and bioactive compounds, making it a promising candidate for food industrial applications. This review summarizes the botanical characteristics, nutritional composition, functional properties and traditional uses of *Cordia dichotoma*, with particular emphasis on its applications as a natural thickener, stabilizer, functional ingredient, and biodegradable packaging material. The challenges related to large-scale utilization and future research prospects are also discussed. The review highlights the potential of *Cordia dichotoma* as a sustainable and value added ingredient in modern food systems.

### **INTRODUCTION**

The modern food industry is undergoing a paradigm shift toward the use of natural, plant-based, and clean-label ingredients driven by growing consumer awareness of health, sustainability, and environmental concerns. Synthetic additives such as artificial stabilizers, thickeners and preservatives are increasingly being replaced by naturally derived alternatives. In this context, indigenous and underutilized plant species are gaining scientific and commercial attention due to their functional properties and nutritional benefits (Kumar et al., 2019).



*Cordia dichotoma* G. Forst., a member of the family Boraginaceae, is one such underexploited fruit-bearing tree. Although it has been traditionally used as food and medicine for centuries, its industrial applications remain limited. Recent studies have identified its mucilage-rich pulp as a potential natural hydrocolloid, positioning *C. dichotoma* as a promising ingredient for food processing and functional food development (Patel & Rao, 2020). This review aims to consolidate available knowledge on *Cordia dichotoma* and explore its potential role in the food industry.

### **Botanical Description and Distribution**

*Cordia dichotoma* is a medium-sized deciduous tree, reaching heights of 10–15 m and is widely distributed throughout India, Sri Lanka, Pakistan, Nepal, and parts of Southeast Asia and Australia. The tree is drought-tolerant and capable of growing in poor and marginal soils, making it suitable for agroforestry systems and sustainable agriculture (Singh et al., 2018).

The fruit is a globose drupe, green when unripe and yellowish-brown upon ripening. The pulp becomes soft and mucilaginous at maturity, which is responsible for its distinctive sticky texture and functional behaviour in food systems.

### Traditional and Ethnobotanical Uses

Traditionally, *C. dichotoma* fruits have been consumed in both unripe and ripe forms. The unripe fruits are commonly used as vegetables and pickled, while ripe fruits are eaten fresh or dried. In Indian traditional medicine, the fruit pulp is used as a demulcent, laxative, and digestive aid (Warrier et al., 2017).

The widespread ethnobotanical use of *Cordia dichotoma* suggests its safety for human consumption and provides a strong foundation for its incorporation into modern food products.

### Nutritional Composition and Phytochemical Profile

The fruit of *Cordia dichotoma* contains carbohydrates, dietary fiber, and essential minerals such as calcium, potassium, iron, and magnesium. The high soluble fiber content contributes to its beneficial effects on digestion and gut health (Sharma et al., 2021).

Phytochemical studies have revealed the presence of flavonoids, phenolic compounds, and other bioactive constituents with antioxidant activity. These compounds play an important role in reducing oxidative stress and enhancing the functional value of *Cordia* based food products (Rao et al., 2019).

### Functional Properties of Cordia Mucilage

Mucilage extracted from *Cordia dichotoma* pulp is a complex polysaccharide with high water-holding capacity and viscosity-enhancing properties. It exhibits swelling, emulsifying, and stabilizing behaviour, which are essential characteristics for food hydrocolloids (Patel & Kulkarni, 2020).

The rheological properties of *Cordia* mucilage indicate its potential as a natural thickener and texture modifier, comparable to commercially used gums such as guar gum and xanthan gum.

### Applications in the Food Industry

#### 1 Natural Thickener and Stabilizer

*Cordia* mucilage can be used as a thickening and stabilizing agent in soups, sauces, gravies and ready-to-eat foods. Its ability to improve mouthfeel and prevent phase separation makes it suitable for convenience food formulations, while supporting clean-label claims (Kumar et al., 2019).

#### 2 Pickles, Fermented Foods, and Condiments

The firm texture and flavour absorbing capacity of unripe *C. dichotoma* fruits make them ideal for pickles and fermented products. Industrial production of *Cordia*-based pickles offers opportunities for value addition and export of ethnic foods (Singh et al., 2018).

#### 3 Bakery, Confectionery, and Snack Products

In bakery and confectionery products, *Cordia* mucilage acts as a natural binder and humectant, improving moisture retention and shelf life. Its application in fruit bars, traditional sweets, and fiber-enriched snacks has been reported (Sharma et al., 2021).

#### 4 Functional Foods and Nutraceuticals

Due to its soluble fiber and antioxidant content, *Cordia dichotoma* can be incorporated into functional foods aimed at digestive health, cholesterol reduction, and glycemic control. The fruit shows strong potential for nutraceutical product development (Rao et al., 2019).

### Emerging Applications in Edible Films and Packaging

Recent research has explored the use of *Cordia* mucilage in the development of edible films and biodegradable coatings. These films exhibit good film-forming ability and can reduce moisture loss and microbial spoilage in food products, contributing to sustainable packaging solutions (Patel & Rao, 2020).

### Challenges and Limitations

Despite its potential, large-scale utilization of *Cordia dichotoma* faces challenges such as seasonal availability, lack of standardized extraction protocols, limited commercial cultivation, and insufficient regulatory data. Addressing these constraints is essential for industrial adoption.

### Future Prospects and Research Directions

Future research should focus on optimizing cultivation practices, developing efficient mucilage extraction techniques, and conducting clinical and toxicological studies to support regulatory approval. Integration of *Cordia dichotoma* into food supply chains can enhance rural livelihoods and promote sustainable food systems.

### CONCLUSION

*Cordia dichotoma* is a nutritionally rich and functionally versatile fruit with significant potential for food industrial applications. Its mucilage, dietary fiber and bioactive compounds make it suitable for use in processed foods, functional

products, and biodegradable packaging. Systematic research and technological advancements can transform this underutilized fruit into a valuable ingredient for the modern food industry.

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