



KACHNAR: FROM SPRING BLOSSOM TO SEASONAL DELICACY

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Abstract

Kachnar is an underutilized tree used from ancient times for multiple purposes. It is used as ornamental plant and for avenue plantings because of vibrant and showy flowers which also attract pollinators. The flowers and flower buds are seasonally available which are used in different parts of the country for making various cuisines. It contains enormous vitamins, protein, fats, tannins, flavonoids and polyphenols which leads to superabundant health benefits and used for making Ayurvedic medicines to cure diseases like diabetes, cataract, tonsillitis, tumour, ulcers, wounds and bacterial infections. Besides, this plant is also used for making gums, fiber, wood, fuel extraction and supports food processing, industrial and pharmacological industries. Its leaves and bark have petroleum, chloroform and alcohol extracts which are helpful in inhibiting microbes like *Staphylococcus aureus*, *Bacillus subtilis* and *Escherichia coli*. It is adaptable to diverse climatic conditions and reduce environmental wastage as every part can be fully utilized.

Keywords: Kachnar, Orchid tree, Phytonutrients, Benefits, Medicinal value.

Introduction

Kachnar (*Bauhinia variegata* L.) is a deciduous, flowering tree that belongs to the family Leguminosae and is commonly known as Orchid Tree, Gurial, Ebony wood, Butterfly ash,

Camel's Foot Tree, Kanchnar, Mountain Ebony, Kovidara, Raktakanchan and Kosonaro in various parts of India. It is grown in tropical and temperate climates and native to Southeast Asia, China and Western India. It is a medium-sized, fast-growing tree which attains a height of 9-12m and 45-50 cm in diameter. It requires an average mean temperature between 7-42°C and well-drained, fertile, sandy loam soil. It prefers acidic soil for its better growth. It is propagated by seeds and vegetative propagation through stump planting and cuttings. The falling of leaves occurs in November to December and it starts blooming in February-April when the dry summer approaches. It starts flowering 2-3years after planting and fruiting during April-July (Sharma et al., 2020).

It has grayish brown bark which changes colour internally on drying from creamish yellow to reddish brown. It has green coloured broad leaves which are alternate, linear-lanceolate, bilobed and rounded at the apex, glabrous and smooth surface with parallel venation. Kachnar has green pod shaped buds due to calyx and pedicel; pink to light magenta-coloured flowers which are fragrant, bisexual with five petals and superior ovary. It has elongated fruits which are hard, dehiscent and contain 10-15 seeds (Irchhaiya et al., 2014). Many different species of kachnar are present in the country, some of them are *Bauhinia variegata*, *Bauhinia racemosa*, *Bauhinia acuminata*, *Bauhinia blakeana*, *Bauhinia*

malabarica, *Bauhinia tomentosa* and *Bauhinia purpurea*. Among all *Bauhinia variegata* and *Bauhinia purpurea* flowers and floral buds are predominantly consumed in the country. Both the species can be easily identifiable by their flower colour, i.e. white with purplish tinge in *B. variegata* to purple to white in *B. purpurea* (Monga et al., 2023). The morphological differences among these two species are presented in Figure 1 and Figure 2, respectively.



Figure 1. A visual representation of *Bauhinia variegata*: a) Leaf b) Flower buds c) Flower d) Group of flowers in raceme e) Tree





Figure 2. A visual representation of *Bauhinia purpurea*: a) Leaf b) Flower buds c) Flower d) Tree

Nutritional importance

Kachnar is a multipurpose plant used traditionally by the tribals in the country for making medicines and to cure different types of diseases. Its every part i.e. seeds, root, leaves, stem, bark, flowers and flower buds contains various health promoting phytonutrients like

tannins, terpenoids, flavonoids, kaempferol, saponins, quercetin and glycosides. Green buds of Kachnar are a good source of crude fiber, proteins, fats, total carbohydrates, indigestible carbohydrates, ascorbic acid, acid detergent and neutral detergent fiber. The flowers are rich source of energy, digestible carbohydrates and high in reducing and non-reducing sugars (Verma et al., 2012). The leaves contain minerals, polyphenolics, reducing sugars and some extent of Vitamin-C. The seeds are composed of carbohydrates, fiber and fats, whereas edible seed oil contains good amount of fatty acids like nervonic acid, linolenic acid, palmitic acid (16-22%), linoleic acid (42%), stearic acid and oleic acid. The plant has various types of bioactive functions such as antioxidant activity, antitumour activity, hepatoprotective activity, haematinic activity, anti-inflammatory activity, anticarcinogenic activity, antibacterial activity, immunomodulatory activity and wound healing properties etc. (Sharma et al., 2020).

Benefits and uses

Flowers

- The fresh flowers of Kachnar are used for making chutney, curry, pakoras, pickles, ready to drink beverages, appetizer, squash, wines and in cosmetic industries for making perfumes.
- Dried flowers are used in pharmaceutical industries, processing industries for making instant food product mixes, flour and flavouring of meat and fish.
- The flowers are used for inhibiting microorganisms due to presence of methanolic extract along with they are helpful in edema, dysentery and have anthelmintic, anticariogenic and laxative properties.

- Flowers are reported to be used as an antifertilizing agent in Bihar, treating Genito-urinary and gastro-intestinal problems.
- The flowers are used as galactagogue in decoction form and to cure malaria and bleeding piles.

Buds

- Flower buds are cooked as vegetable, used for making broths, flavouring agent for various products and utilized as feed for milching animals.
- The flower buds reported to be used for treating menorrhagia, controlling vaginal discharge in women and for treating diarrhoea, tumours and flower buds' powder is utilized as vermifuge.
- The dried buds of Kachnar are beneficial for the treatment of piles, dysentery, liver, diarrhoea, eye ailments due to their antioxidant properties.

Bark

- The tree bark is used as antileprotic, antioitrogenic, antitumour, healing of wounds, skin diseases and preparation of tonic for fever.
- Bark is considered to be beneficial for the liver, bowels and for the treatment of tuberculosis, asthma, dysmenorrhoea and menorrhagia.
- In Ayurvedic, the stem bark is used in curing cervical lymphadenitis, wounds, worm infestations, leucoderma and rheumatism treatment by Lodhas (Mali and Dhake, 2009).
- The bark powder is combined with various drugs and phytocompounds for treatment of lymphatic swelling, gynaecological conditions, osteoporosis and diarrhoea.

- In Unani system of medicine, bark is described to be useful for treating leukoderma, leprosy, ulcers and wounds.
- In cattle's, mucilage of stem bark is used for quick healing of bone fractures.

Roots

- The roots are helpful in prevention of adverse effect of snake poisoning, deals with flatulence, indigestion, controls obesity and tumour.

Leaves

- The leaves are used as animal fodder and for control of mosquitos; leaves juice is helpful in relieving chest pain and controlling hyperlipidaemia which take place due to diet rich in fats.
- Leaves are also utilized as laxative and for curing piles; dried leaves prevent the cough.
- Seeds have serine protease inhibitor activity thereby prevent inflammation, coagulation and cancer.

Seeds

- They are also used as pulses in Central and Northeastern India due to high amino acids.
- Seeds yield 16-17% fatty oil on extraction with petroleum ether as it is composed of 20% endocarp and 80% kernel.

The plant is also used for ornamental purpose, dyeing industry, as fuel with 4800 kcal/kg calorific value and to make agricultural implements from its wood. Different types of ayurvedic products made from Kachnar are Kachnar guggulu, Kachnar gutika, Kachnaradikwatha and Gulkand kachnar (Tanika et al., 2022).

Conclusion and Future prospects

Kachnar is a versatile plant comprised of numerous health promoting phytochemicals and has been used since ancient times to make Ayurvedic medicines and had greatest industrial value. Besides its nutritional benefits, it is also profitable for environmental conservation. Its commercialization will be beneficial for the pharmaceutical and processing industries to utilize its full potential for making different plant-based products and drugs. The substantial content of vitamins like vitamin B and vitamin C, minerals, protein, fiber and good fatty acids is supportive in escaping various health diseases and efficacious in animal feed as well. The breeding and research programmes on Kachnar will be beneficial to identify and isolate various bioactive compounds for health- promoting benefits. The growing of Kachnar also conserves the environment and helpful to the ecosystem for fulfilling survival needs of food, medicine and shelter.

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