Chapter 5

Indigofera cassioides Rottler ex DC.: a wild edible flower of India

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ABSTRACT

Plants are the major source of food and medicines in prehistory. The tribal people depend on the forest for their livelihood. They consume wild fruits, flowers, leaves, tubers, and bulbils. Among them, *Indigofera cassioides*, a deciduous shrub of the family Fabaceae, is a less explored medico-food plant, traditionally consumed as a wild edible flower by the tribals in many states of India. Less research is carried out on this wild edible flower. Therefore, an attempt has been made to present information on its food, medicinal, and economic values to draw attention to its potential for future nutraceuticals.

Key words: Wild flowers, traditional food, traditional knowledge

Introduction: India is a rich treasure of diverse flora along with wild nutraceutical plants and ethno-medicinal knowledge (Quinlon 2001). Tribal people depend on the forest resources directly or indirectly for their daily necessities. Wild food plants are obtained from the forest by the tribal communities are used for numerous purposes globally (Dimri and Marndi 2017). Plants used by the communities are the reservoirs of naturally occurring bioactive compounds (Vats et al. 2022). Hence, the consumption of wild food plants leads to minimize the risk of diseases and increase their immunity. As a result, the indigenous traditional knowledge and practices are carried out by tribal people lead to a healthy lifestyle. In urban areas, these wild nutraceutical

plant species are less known due to less documentation and vanishing of such practices of herbal therapeutics day-by-day. One such wild nutraceutical plant, *Indigofera cassioides* (Figure 1) of family Fabaceae are consumed (flowers) by the tribal people (Mohanty and Rautaray 2019; Present study). It is also known as Pharsi in Hindi, Girli in Odia, and Dare Huter in Santali language. It is a shrub which grows up to a height of 3.6 m with wide distribution, mostly found in India ranges from east Asia to Himalayas (Gudadhe et al. 2013; Present study). Keeping the importance of wild edible flowers, an attempt has been made to document the food, medicinal and economic values of *I. cassioides* through field and literature survey and presented in this chapter.

Distribution: The native range of *I. cassioides* is Indian subcontinent to China and Indo-China. It is distributed in Bangladesh, Cambodia, China South-Central, China Southeast, East Himalayan India, Laos, Myanmar, Nepal, Pakistan, Taiwan, Thailand, Vietnam, and West Himalayan areas and has been introduced to Sri Lanka and Kenya (Singh et al. 2009).

Morphology: It is an erect shrub about 1-1.5 m tall. The leaves are compound nearly 7-15 cm long, with 11-21 leaflets which are 1.1-2.4 cm long, 7-15 mm broad, oblong to elliptical, blunt, truncate to slightly retuse, apiculate, and velvety on both sides.



Figure 1: *Indigofera cassioides* in wild



Figure 2: Flowers of *I. cassioides* collected by tribal people



Figure 3: Cooked flowers of *I. cassioides* by authors



Figure 4: Economic significance of *I. cassioides*

The stipules are 2-4 mm long, deciduous. Inflorescence is a 5-17 cm long raceme, covered with sterile scales at the base (Chikmawati and Ariyanti 2016). The bract is 2-10mm long. The stalk carries the raceme is about 1-2 mm long. Sepal cup is 2-3mm long, teeth nearly equal, 1-2mm long. The flowers are bright purple pink, fading to violet, shaped like pea flowers (Figure 2). The fruit is 2.4-4.3 cm long, 4mm broad, straight, hairless, 8-12-seeded. The flowering usually occurs during March-May (Saxena and Brahmam 1994; Kumar et al. 2013).

Food values: Research has shown that the tribal people use the flowers of *I. cassioides* as a vegetable (Mallick et al. 2020). It is interesting to see how these wild flowers are cooked. Flowers are first separated into their buds, and then they are cooked in water for 20 to 30 minutes, or until the pink bloom turns creamy white. Boiled flowers are then fried in mustard oil (Snehalatha et al. 2022; Present study; Figure 3).

Ethnomedicinal uses: The flowers of *I. cassioides* are used by tribal people to treat diabetes (Mallick et al. 2020). The roots of *I. cassioides* are used as a tonic by the tribal women after delivery (Rai 1987). The tender leaves are used to cure cough by Bhuian tribe (Snehalata et al. 2022). It is also used to treat arthritis, inflammation, and liver problems (Mohanty and Rautaray 2019). The stem decoction is used as a tonic (Gudadhe et al. 2013). A decoction of the roots is used in the treatment of coughs. Due to the presence of various phytochemicals, bioactive constituents, secondary metabolites in different parts provide the nutraceutical properties to the plant (Kumar et al. 2012).

Phytochemicals and pharmacological values: Preliminary phytochemical screening of methanolic extract of *I. cassioides* showed the presence of alkaloids, glycosides, steroids, terpenoids, phenols, flavonoids, tannins, amino acids, phenolic compounds such as catechins, epigallocatechine gallate, ferulic acid and proanthocyanidins (Sudhakar et al. 2022). The methanolic leaves extract of *Indigofera cassioides* exhibited significant thrombolytic activity which might be an aid to reduce the myocardial infraction. The cardioprotective effect of methanolic leaves extract of *I. cassioides* was confirmed by the reduction in cardiac marker enzymes, altered lipid profile and protection histopathological changes on heart tissues (Sudhakar et al. 2022). These compounds have been reported to have various biological effects including antioxidant activity (Ali et al. 2008). The antioxidant activity of phenolic compounds is mainly due to their redox properties, which can play an

important role in absorbing and neutralizing free radicals, quenching singlet and triplet oxygen or decomposing peroxides (Kumar et al. 2012).

Economic values: The flowers of *I. cassioides* are collected mainly by the tribal women during February-March and sell in the weekly markets (Dimri and Marndi 2017; Figure 4).

Conclusion: The proper documentation, awareness, and utilizing of wild nutraceutical food plants can reduce the food and nutrition problems especially in tribal and rural areas. In this aspect, *Indigofera cassioides* play an important role in providing food, medicine, and livelihood to the tribal people. The consumption of such nutraceutical species like *I. cassioides* able to increase the immunity. The present documentation highlights the importance of such medico-food plant that could be selected for value addition and advance research works.

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