

Food and medicinal values of some *Ficus* species

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Abstract: In Indian mythology, the *Ficus* species play an important role in India. Some *Ficus* species play a vital role and have a religious significance in rituals like the peepal tree (*Ficus religiosa*) which is worshipped in India. The *Ficus* species have many food and medicinal values. It has some bioactive compounds which is used to treat many ailments like diabetes, piles, toothaches, gum problems and skin infections. Figs are consumed by many avian species. The conservation of *Ficus* species is also the conservation of wasp and avian species. A particular wasp pollinates specific *Ficus* species. Keeping the importance of *Ficus* species as food, medicine and in ecological balance, an attempt has been made to enumerate some common *Ficus* species of India along with their food and medicinal values. A total of 20 species of *Ficus* are reported here with their importance. The chapter highlights the importance of *Ficus* species as a source of optional food and medicinal agents.

Keywords: Bioactive compounds, mythology, avian species, medicinal value

Introduction: The genus *Ficus*, commonly known as fig, belongs to the family Moraceae, which includes a large number of species comprising about 1,100 species including trees, shrubs, climbers, and creepers. It is mostly found in tropical and sub-tropical regions. The Moraceae family is characterized by the presence of buttress and prop root. They have stipules. They also show presence of milky latex. The main key character is fruit that have many seeds and an inflorescence inside them known as syconium. The genus is very important due to its high ecological, nutritional, medicinal and economic values. It is also important for avian species as they consume the fruit of many *Ficus* species. Some *Ficus* species are edible, and some have medicinal values. Apart from food and medicinal values, *Ficus* species are known for their mythological importance and availability in sacred groves (Satapathy and Kumar 2017). The peepal tree (*Ficus religiosa*) is worshipped in most parts of India. Ancient history shows a range of information regarding *Ficus* species. It is believed that peepal is considered as an incarnation of Vishnu and Buddha (Kumar et al. 2021). From that day onwards, it has been a sacred tree in India particularly among the Hindus. Fruits are edible by the local communities as a vegetable and in dried form. Fruits are also consumed by many avian species. They also form shelter in species of *Ficus*. The fruit is mostly fleshy, hollow and vessel. Leaves are alternate, simple, entire and spirally arranged. Flowers are unisexual. *Ficus* species is different from other species because the reproduction systems are exclusive. It can only be pollinated by the wasp that are associated with it, and the wasp can only lay eggs within the fruit that is associated with it. The *Ficus* species is also used to cure many diseases since long. Some fruits are used to improve the immunity and to reduce the stomach problems. There might be a number of secondary metabolites responsible for the therapeutic potential of *Ficus* species, like phenolic compounds, phytosterols, volatile compounds etc. Keeping the importance of food, medicinal and ecological importance of *Ficus* species in mind, an attempt has been made to document the importance of some common *Ficus* species of India.

Methodology: The study was carried out in the year 2021-2022 in selected states of India (Odisha, Jharkhand, West Bengal, Punjab, Himachal Pradesh, Andhra Pradesh). Thorough a random questionnaire data was collected. The plant species was identified by the authors and some species were identified by Dr. Rajeev Kumar Singh, Botanical Survey of India, India.

Results and discussion: The survey work enumerated 20 common *Ficus* species of India having medicinal and food values (Figure 1 & Figure 2; Plate 1 & Plate 2). It was observed that the fruits of *Ficus amplissima*, *Ficus auriculata*, *Ficus racemosa*, and *Ficus tinctoria* are used as vegetables, whereas the latex of *Ficus benghalensis* is applied to treat tooth decay. The latex of the fruit of *Ficus benjamina* is used to treat piles. The latex of *Ficus nervosa* is used to treat gum problems. The roots of some *Ficus* species are also used as medicinal agents, like the root of *Ficus arnottiana*, which is used as an astringent.

Table 1: *Ficus* species used as a food and medicine

Botanical name	Common/Local name	Use(s)
<i>Ficus amplissima</i>	Indian bat tree	Fruits are edible; they are consumed by birds; their juice is used to treat mouth ulcers.
<i>Ficus arnottiana</i>	Paras pipal	The root of the plant is used as an astringent.
<i>Ficus auriculata</i>	Roxburgh fig	Fruit is used as a vegetable; fruit is used to treat diabetes.
<i>Ficus benghalensis</i>	Banyan	The latex is applied to treat tooth decay.
<i>Ficus benjamina</i>	Weeping fig	Latex from fruit extracts is used to treat piles.
<i>Ficus concinna</i>	Baidimri	Stem is chewed to get relief from toothache
<i>Ficus drupacea</i>	Brown woolly fig	Root powder is mixed with oil of <i>Pongamia pinnata</i> and applied externally to cure skin infections
<i>Ficus elastica</i>	Rubber fig	The fruit pulp is used for digestive problems.
<i>Ficus exasperata</i>	Sandpaper tree	The bark and root decoction are used against cough.
<i>Ficus hederaceae</i>	Climbing fig	NIL
<i>Ficus heterophylla</i>	Bada dimri	Bark powder is mixed with mustard oil and boiled. The filtered oil is applied to microbial infections.
<i>Ficus hispida</i>	Dimiri	The fruit is edible; the bark decoction is used to treat fever and colds.
<i>Ficus mollis</i>	Soft fig	The tender leaves are consumed as a preventive agent against diabetes.
<i>Ficus nervosa</i>	Sanadimri	Latex is used to reduce gum problems
<i>Ficus palmata</i>	Wild fig	Grounded leaves and fruits are combined with herbal tea to combat diabetes.
<i>Ficus racemosa</i>	Dimbri	Fruits are used as a vegetable; fruits are also used to treat leucorrhea
<i>Ficus religiosa</i>	Pipal	Bark of <i>Ficus religiosa</i> and fruits of <i>Syzygium cumini</i> are boiled in water and the extract is used to treat diabetes
<i>Ficus rumphii</i>	Variegated rumph's fig	Formulations are prepared with leaves of <i>Ficus rumphii</i> , <i>Ocimum sanctum</i> , <i>Moringa oleifera</i> , and <i>Marsilea minuta</i> . The juice of the formulated powder is used to treat sleeping disorders and to improve immunity.
<i>Ficus semicordata</i>	Bhuin dimri	The paste of Bark is mixed with leaves of <i>Curcuma longa</i> and applied on leach bites
<i>Ficus tinctoria</i>	Kharsara	Fruits are edible; fruits are used against indigestion
<i>Ficus virens</i>	White fig	Tender leaves and fruits are grounded and the juice is taken against diabetes.

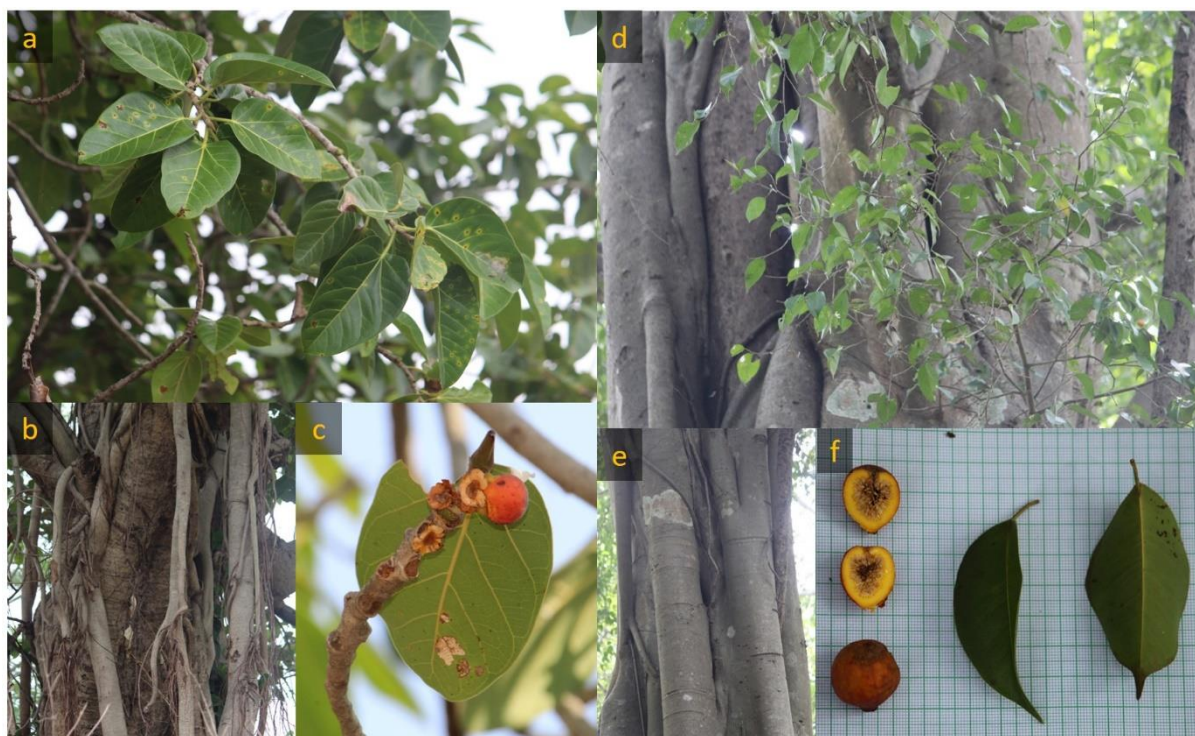


Plate 1: Some common *Ficus* species having medicinal values, a) Leaves of *Ficus benghalensis*, b) Bark of *Ficus benghalensis*, c) Fruit of *Ficus benghalensis* d) Leaves of *Ficus benjamina*, e) Bark of *Ficus benjamina*, f) Fruit of *Ficus benjamina*



Plate 2: Some *Ficus* species having ecological values, a) Leaves of *Ficus arnottiana*, b) Bark of *Ficus arnottiana*, c) Fruit of *Ficus arnottiana*, d) Leaves of *Ficus concinna*, e) Bark of *Ficus concinna*, f) Fruits of *Ficus concinna*



Plate 3: Habit of *Ficus hederaceae* (Climbing fig) collected from Bonai Forest Division, Odisha

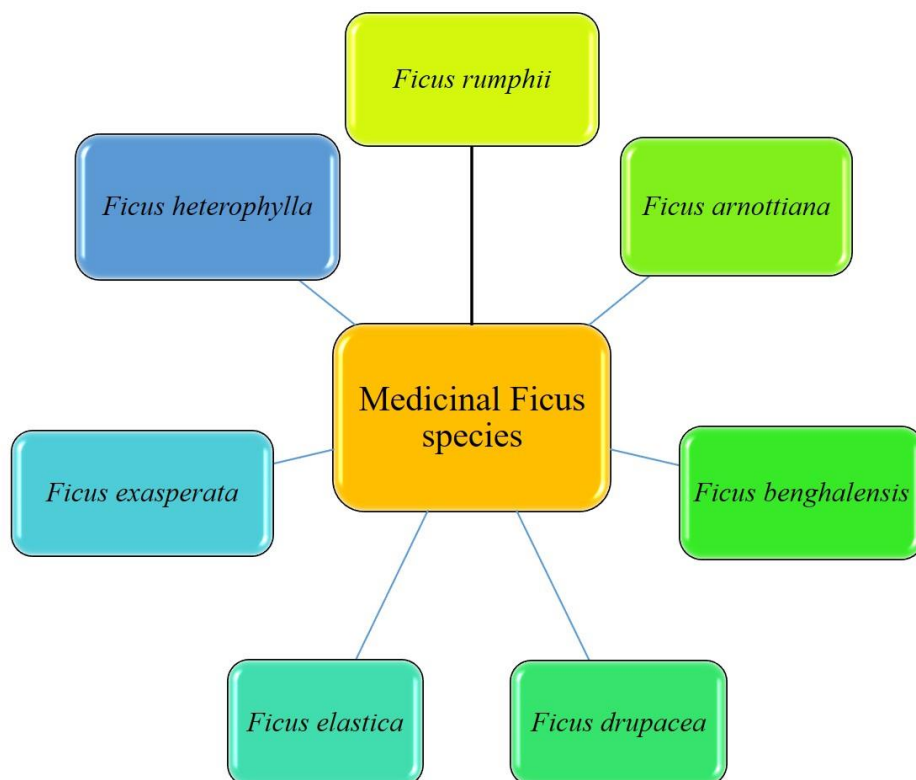


Figure 1: Common medicinal *Ficus* species of India

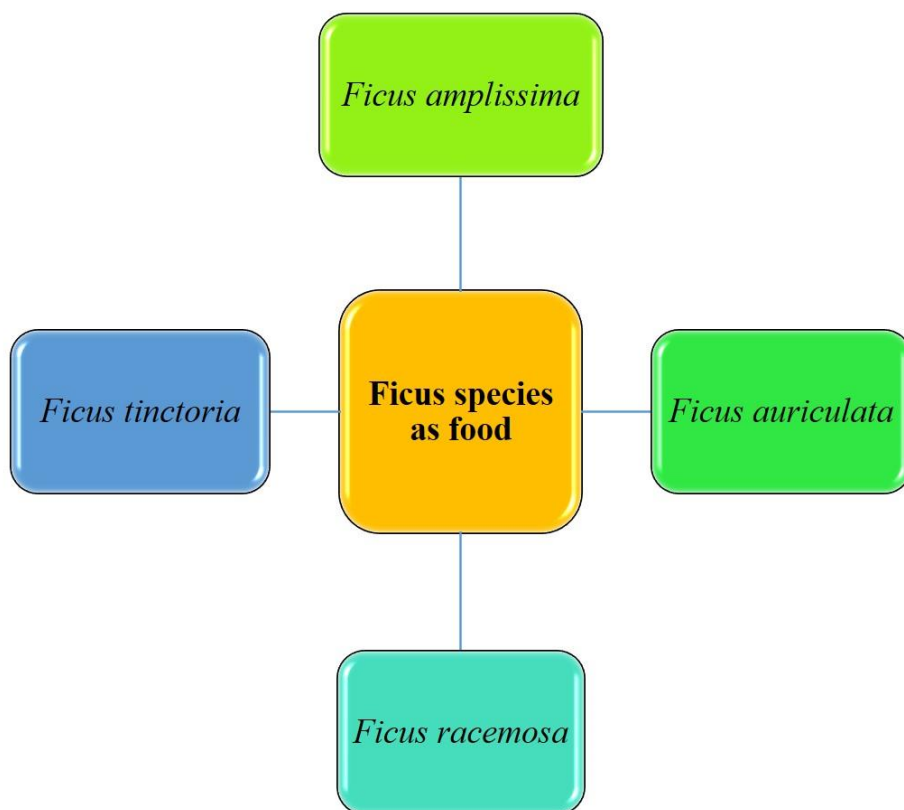


Figure 2: Common *Ficus* species having food values.

The root powder of *Ficus drupacea* with the oil of *Pongamia pinnata* is applied to treat skin infections. The bark powder of *Ficus heterophylla* is mixed with mustard oil and boiled. The oil is applied to cure microbial infections. The decoction of the bark of *Ficus hispida* is used to treat fever and cold. Diabetes can be treated with the bark of *Ficus religiosa* and the leaves and fruit of *Ficus virens*. Details are listed in Table 1. A large number of studies have been carried out on *Ficus* species. In 2021, Kumar et al. reported the diversity and distribution of *Ficus* species in Dehradun, Uttarakhand. In 2014, Sharma et al. reported that in Mizoram the wood anatomy of *Ficus* species with reference to their identification. In 2012, Dhanya et al. reported *Ficus* trees in Karnataka. In 2022, Kumar et al. reported a note on *Ficus hederacea* (Plate 3) in Odisha. Many researchers have worked on *Ficus* species, but the medicinal and food values are still not documented in a proper way. Therefore, more exploratory cum laboratory work is needed on *Ficus* species of India.

Conclusion: *Ficus* species have a wide range of medicinal value as it is used to treat many diseases like diabetes, piles, toothache, skin infections etc. The latex part is mostly used. Through this preliminary study, it is observed that *Ficus* species are widely distributed but their medicinal and food value are still not documented in a scientific manner. Therefore, we need sound proof documentation on the identification of *Ficus* species and exploring their medicinal and food values.

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