A review on traditional ayurvedic medicinal plants used in the sundarban mangrove forest in bangladesh


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ABSTRACT

Medicinal Plants have been used for thousands of years to flavor and conserve food, to treat health disorders and to prevent diseases including epidemics. Recently, dramatic changes have taken place in the primary health care system of world population through the development of science, technology and medical science, but till to day 400 cores of people of the worldwide are totally dependent on herbal medicine. In Bangladesh, various types of diseases affect thousands of people every year, especially children are so much vulnerable. In this review, we have choosen 6 plant species that are used in the treatment of various types of eruptions, gastrointestinal infection etc. Bacterial toxins or viral infections are the most common cause of the diseases. The diarrheal outbreaks are often associated with flood affected areas with contaminated drinking water and an increased risk of spreading the water-borne disease. Not surprisingly, plants found in the near surroundings have been taken into use by the local community as medicine to treat diarrhoeal symptoms. These plants are cheaper and more easily available than conventional medicine. We just here figure out some so much beneficial ayurvedic plants (Diospyros peregrina Gürke, Heritiera littoralis Dryand, Ixora coccinea, Pongamia pinnata, Rhizophora mucronata, Xylocarpus granatum) traditional uses against gastrointestinal infection, eruptions, catarrhal bronchitis, dysentery, and as an anti inflammatory agent. Appearance and geographical distribution, traditional uses, and biological studies related to antidiarrhoeal activity will be presented. This review reveals that there is limited scientific evidence supporting the traditional use of these plants.

Keywords: Mangrove plants; Diospyros peregrina Gürke; Heritiera littoralis Dryand; Ixora coccinea; Pongamia pinnata; Rhizophora mucronata; Xylocarpus granatum; antidiarrhoeal activity.

OVERVIEW

Medicinal plants always played an important role in the health development of mankind. In developing countries, 80% of populations are totally dependent on plants for their primary health care. Over 25% of prescribed medicines in industrialized countries derive directly or indirectly from medicinal plants. A multidisciplinary approach combining botanical, ethnobotanical, phytochemical and biological
techniques led to Drug discovery from plant. Plants provide us new lead molecules for the development of drugs against various pharmacological targets. Discovery of drugs from plants has traditionally been time-consuming, so faster methods for plant collection, bioassay screening, isolation and development of compound must be adopted. Bangladesh is in particular affected by tropical cyclones due to its geographical position, but mangroves play an important role reducing the impact of the cyclones and accompanying surges [60]. The aim of this review is to summarize the present knowledge of some traditional medicinal plants used against gastrointestinal infection, eruptions, catarrhal bronchitis, dysentery, and as an anti-inflammatory agent. Appearance and geographical distribution, traditional uses, and biological studies related to antidiarrhoeal activity will be presented. The literature sources used in this review are the SciFinder and PubMed databases and Google searches in the “grey” literature, as well as handbooks, reference works and articles from the archives of the authors.

**Traditional Medicinal Plants from Bangladesh**

**GAB**
- Local name by Bangladeshi: - GAB
- Scientific name: - Diospyros peregrina Gürke
- English name: - Gaub Persimmon
- Family: - Ebenaceae

Gab is a large-sized ever green (fig-1) tree up to 15m high. It has bell-shaped flowers; the fruits are yellow when ripe, round and 4–8 cm in diameter. It is indigenous to Bangladesh and India, and is also found in many other countries of Asia and America [1].

![Figure 1. Diospyros peregrina](image)

**Traditional Use**
The bark has traditionally been used against dysentery and intermittent fevers. The ripe fruit has been used against biliousness, diseases of the blood, urinary losses, and stones in the urinary tract. The seeds and the oil from the seeds are given as an astringent agent against diarrhoea. The juice of the unripe fruit is used on wounds and ulcers, it has astringent properties, and it has also been used for the treatment of diabetes. The flowers and fruits are given to children with hiccough [1, 3, and 4].

Tannins from *D. peregrina* are used for dyeing and in the tanning industry [5]. In Namibia, *D. peregrina* is employed against malaria [6]. An antiplasmodial activity of a stem bark extract of *D. peregrina* has been reported [7]. Bark contains Triterpenoids, Sterol, and Long-chain alcohol [8]. An extract of unripe fruits of the related species *D. melanoxylon* in milk has been reported to be used against diarrhoea in Madhya Pradesh, India [9].heartwood contains Lupeol[10]. Stems contain β-sitosterol, leuco-pelargonidin-3-O-α-L-rhamnopyranoside [11], and Aliphatic ketone [12]. Leaves contain betulin, oleanolic acid, peregrinol[13, 14] and β-sitosterol[13, 14]. Fruits contain peregrinol, lupeol, betulin, betulinic acid, taraxerone, marsformosanone[15, 16]. Flavonoids: furano-(2",3",7,8)-3',5'-dimethoxy-5-
hydroxyflavone, 3,6-dimethoxy-2-(3′,5′-dime thoxy-4′-hydroxyphenyl)-8,8-dimethyl-4H,8H-benzo[1,2-b:3,4-b′]dipyran-4-one, pongaflavone, 5-hydroxy-3,6,7-trimethoxyflavone, 4′-O-methyluteolin 7-glucoside, quercetin 3-O-glucosyl glucoside [17, 18]. An antidiarrhoal effect has been investigated from the methanol extracts of the bark and the seeds of D. peregrine [19].

**DUNGUN**
Local name by Bangladeshi: - Dungun
Scientific name: - Heritiera littoralis Dryand

An antidiarrhoeal effect has been investigated from the methanol extracts of the bark and the seeds of D. peregrine [19].

**KANGAN**
Local name by Bengali: - kangan
Scientific name: - Ixora coccinea
English name: - Jungleflame ixora
Family: - Rubiaceae

Ixora coccinea is a perennial shrub 0.6–0.9 m in height, widely grown in gardens as an ornamental. The flowers are bright scarlet red, sometimes yellow, pink or orange-yellow. The bush has small globular fruits which are purple when ripe. The shrub is native to tropical Asia. However, it is cultivated for ornamental purposes in tropical and subtropical areas [1, 31].
Traditional Use

The roots, bark, leaves and flowers are used in traditional medicine in South East Asia from India to the Philippines [33, 34, 35, 36]. The roots of *Ixora coccinea* are used to treat hiccoughs, nausea, fever, ulcers, gonorrhea, and loss of appetite. The flowers of *Ixora coccinea* are used against reddened eyes, eruptions, catarrhal bronchitis, dysentery, and as an anti-inflammatory agent. The leaves have been utilized in the treatment of diarrhoea. A paste from the root of an unspecified *Ixora* species is used against diarrhoea in children [37]. *Ixora coccinea* has been investigated for antimicrobial effects. In a study by Annapurna et al [38], methanol extracts of the leaves were tested against a selection of bacteria and fungi. The ether extract was found to have higher activity than the methanol extract, and both Gram-negative and Gram-positive bacteria were inhibited. The activity against fungi was not significant [38].

KARANJA

Local name by Bengali: - Karanja
Scientific name: - *Pongamia pinnata*
English name: - Pongam tree
Family: - Fabaceae

*Pongamia pinnata* is a medium sized tree, 15–25 m in height, with white, purple and pink flowers growing in clusters and maturing into brown seed pods. The species is distributed from India to Philippines and the north of Australia. “Karanja” is the local name used in Bangladesh [1].

Traditional Use

Both the leaves, bark, flowers, seeds, and roots are reported to have a healing effect and it has been widely used as a traditional medicinal agent [40]. The leaves of these plant are used against flatulence, dyspepsia [41]. A poultice of the leaves is applied to ulcers infested with worms. A decoction of the leaves is used for medicated baths and fomentations in cases of rheumatic pains. The juice from the roots is used for closing fistulous sores and for cleaning foul ulcers. It is used for cleaning the teeth and strengthening the gums. It is also given internally mixed with coconut milk and lime water for the cure of gonorrhea. The oil from the seeds is useful in skin diseases such as herpes and scabies, and in rheumatism [41]. A paste from the seeds of the plant has also been used in rheumatism [42]. The use of the bark or leaves of the plant against fever in humans are available [43] and also used in animals [44] and against malaria [45]. The fresh bark of this plant is
used internally in the treatment of bleeding piles [41]. This plant is recommended for the treatment of snake bites and scorpion stings. However, the efficacy of this treatment has been debated [1].

BHORA
Local name by Bengali: - Bhora
Scientific name: - Rhizophora mucronata Lam
English name: - True mangrove

Family: - Rhizophoraceae
Rhizophora mucronata is an evergreen small tree up to 15 m tall, with small white flowers and long ovoid-conical fruits. The tree is distributed along muddy shores and tidal creeks in tropical zones of East- and South Africa, Asia, Northeast Australia and Central America [1]. “BHORA” is the local name in Bangladesh.

Figure 5. Rhizophora mucronata[46]

Traditional Use
The bark of this plant is known as an astringent. It has traditionally been used in the treatment of diabetes, diarrhoea, nausea, haematuria, haemorrhages and angina [41, 1]. The traditional use of several mangrove plants including R. mucronata has recently been reviewed [47]. The most usefulness use of this plant is Antiviral activity [48, 49, and 50]. The ethanol bark extract was found to have high activity against the Newcastle disease, vaccinia, encephalomyocarditis and Forest viruses. Also the ethanol flower extract showed good activity in human health [50]. Among 73 extracts of marine plants and mangroves, the bark of Rhizophora mucronata was the most promising antiviral agent [50]. Honey from the flowers is reported to be poisonous [41].

DHUNDUL
Local name by Bengali: - Dhundul
Scientific name: - Xylocarpus granatum Konig
English name: - Puzzle nut tree
Family: - Meliaceae
“Cannonball tree” or “puzzle nut tree”, is an evergreen tree with gray bark, up to 15 m in height. The fruits can be up to 25 cm in diameter [51]. The bark possesses extreme bitterness [1]. - Xylocarpus granatum is distributed in mangrove forests in East Africa, tropical Australia and Southeast Asia [52].

Figure 6. Xylocarpus granatum [53]
Traditional Use
The bark is used to treat fever, cholera, colic, diarrhoea and other abdominal affections [54, 55]. The bark is used traditionally as a water decoction prepared overnight for prevention of diarrhoea [56]. The fruits are also used against diarrhoea and externally to soothe inflammation [56, 57]. The fruit seed coats of Xylocarpus granatum is used for making an antidiarrhoeal drug [58]. The seeds are used in tonics, and the bitter and astringent oily fluid [59].

CONCLUSION
Bioactive constituents extracted from these plants have got a number of beneficial medicinal effects for different kinds of ailments, with no side effects and also they are very cost effective as compared to allopathic medicines. Especially for anti diarrhoeal event these types of plants are so much beneficial. Recently in Bangladesh the study of ayurvedic plants in case of severe diseases which is so rapid in localism gradually increasing by extraction of bioavailability from ayurved plants in mangrove forest or tribal region.

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REFERENCES


