A Review Study on Different Plants in Malvaceae Family and Their Medicinal Uses

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Introduction

Medicinal plants, also called medicinal herbs, have been discovered and used in traditional medicine practices since prehistoric times. Plants synthesise hundreds of chemical compounds for functions including defence against insects, fungi, diseases, and herbivorous mammals. Numerous phytochemicals with potential or established biological activity have been identified. However, since a single plant contains widely diverse phytochemicals, the effects of using a whole plant as medicine are uncertain. Further, the phytochemical content and pharmacological actions, if any, of many plants having medicinal potential remain unassessed by rigorous scientific research to define efficacy and safety [1]. In the United States over the period 1999 to 2012, despite several hundred applications for new drug status, only two botanical drug candidates had sufficient evidence of medicinal value to be approved by the Food and Drug Administration. A medicinal plant is a plant that is used to attempt to maintain health, to be administered for a specific condition, or both, whether in modern medicine or in traditional medicine. The Food and Agriculture Organization estimated in 2002 that over 50,000 medicinal plants are used across the world [2].

The Royal Botanic Gardens, Kew more conservatively estimated in 2016 that 17,810 plant species have a medicinal use, out of some 30,000 plants for which a use of any kind is documented [3]. In other systems of medicine, medicinal plants may constitute the majority of what are often informal attempted treatments, not tested scientifically [4]. The World Health Organization estimates, without reliable data, that some 80 percent of the world’s population depends mainly on traditional medicine (including but not limited to plants); perhaps some two billion people are largely reliant on medicinal plants [4]. The use of plant-based materials including herbal or natural health products with supposed health benefits, is increasing in developed countries [5]. This brings attendant risks of toxicity and other effects on human health, despite the safe image of herbal remedies [6]. Herbal medicines have been in use since long before modern medicine existed; there was and often still is little or no knowledge of the pharmacological basis of their actions, if any, or of their safety. The World Health Organization formulated a policy on traditional medicine in 1991, and since then has published guidelines for them, with a series of monographs on widely used herbal medicines [7].
Medicinal plants may provide three main kinds of benefit: health benefits to the people who consume them as medicines; financial benefits to people who harvest, process, and distribute them for sale; and society wide benefits, such as job opportunities, taxation income, and a healthier labour force [8]. However, development of plants or extracts having potential medicinal uses is blunted by weak scientific evidence, poor practices in the process of drug development, and insufficient financing [9]. Malvaceae are distributed widely in tropical and temperate regions. 22 genera and about 125 species of Malvaceae have so far been reported from India. Some of the larger genera, along with their common names/ or number of reported species in parenthesis, include Hibiscus (rose mallow, 300), Sida (200), Pavonia (200), A. esculentus (Indian mallow, 100), Alcea (60), Malva (Mallow, 40), Lavatera (25), Gossypium (Cotton, 20), and Althaea (12).

A number of species are pests in agriculture, including *Abutilon theophrasti* and *Madiola caroliniana*, and others that are garden escapes. Cotton (four species of *Gossypium*), kenaf (*Hibiscus cannabinus*), cacao, kola nut, and okra (*Abelmoschus esculentus*) are important agricultural crops. The fruit and leaves of baobabs are edible, as is the fruit of the durian. The family is recognized by *Hibiscus rosa-sinensis* (rose of China) because of its beautiful large flowers and hundreds of its known cultivated varieties. Cotton (*Gossypium*), the most important plant of this family from the commercial viewpoint, has been cultivated in India since last 5000 years [10].

**Objectives of the Review**

Medicinal plants are very much related to our health culture. Most of the people of Bangladesh are directly or indirectly depends medicinal plants for health problem. The review aims to understand the possibility of medicinal plant as a sustainable livelihood option. The specific objectives are to explore the uses of locally produced medicinal plants, to explore the market of medicinal plants in Bangladesh, to know about of the habitat, diversity of medicinal plants, to explore the market of medicinal plants in different countries. Search engine websites such as Google, Google Scholar, Pub Med, Science Direct, Research gate and other online collections were utilized in this review to obtain information.

**Materials and Methods**

The present study in based on the intensive field of the area during the period of June 2018 to April 2019. A total of 5 species under 5 genera belonging to the Malvaceae family were collected and identified. The methods and materials were performed through a systematic search related to *Euphorbiacea* including the ethnomedicinal practices, phytochemistry and pharmacological studies around the world. The data was collected from online journals, research papers and books, all of which were published in different countries. Search engine websites such as Google, Google Scholar, Pub Med, Science Direct, Research gate and other online collections were utilized in this review to obtain information.

**Results and Discussion**

The total description and the medicinal uses of the plants of the Malvaceae family are given below:

**Hibiscus rosa-sinensis L [11]**

**Taxonomic description:** An ornamental shrub or small tree. Leaves ovate-lanceolate, more or less acuminate, irregularly and coarsely serrate towards the top. Flowers large, axillary solitary; corolla 7.5 cm diam., tubular below, red. Local name: Jaba, English Name: Shoe flower, China rose. Habit: Shrub. Habitat: Gardens. Phenology: January to December (Figure 1).

**Figure 1:** Hibiscus rosa-sinensis L

**Medicinal Uses:** The flower buds are cooling and as-trigent; remove burning of the body, urinary discharges, seminal weakness and piles. Flowers are refrigerator, emollient, demulcent, aphrodisiac and emmenagogue. Juice of the flower with juice of banana inflorescence cures acute dysentery. Flower with leaves of *Adhatoda zeylanica* is very much beneficial in bleeding piles. Flowers fried in ghee is given in menorrhagia; also used in diseases of the genito-urinary tract. Fresh flowers are mecerated and mixed with water is taken to cure scanty menstruation. Staminal column is diuretic and is used in the treatment of kidney trouble. Leaves are emollient, anodyne and aperient. Roots are valuable in cough.

**Chemical constituents:** Leaves and stems contain β-sitosterol, stigmasterol, taraxeryl acetate and three cyclopropane compounds and their derivatives. Flowers contain cyanidin diglucoside, flavonoids and vitamins, thiamine, riboflavin, niacin and ascorbic acid. Quercetin-3-diglucoside, 3,7-diglucoside, cyanidin-3,5-diglucoside and cyanidin-3-sophoroside-5-glucoside have been isolated from deep yellow flowers; all above compounds and their derivatives.

**Figure 2:** Abutilon indicum (L.) Sweet

**Abutilon indicum** (L.) Sweet [12]

**Taxonomic description:** An erect woody under shrub. Leaves ovate, cordate irregularly toothed, covered on both surfaces with white down. Flowers solitary, axillary; calyx 5-lobed, tubular below,
lobes ovate-acute; corolla yellow, petals 5, connate below and adnate to the tube of the stamens. Ripe carpels 15-20, longer than the calyx, truncate or shortly awned. Local name: Petari. Habit: Undershrub. Habitat: In waste places. Phenology: July to August (Figure 2).

**Medicinal Uses:** Infusion of the leaves and roots is diuretic and demulcent; used in fevers, chest infections, gonorrhea and urethritis; leaves cooked and eaten in bleeding piles. Stem bark is astringent, diuretic, febrifuge, antihelmintic. Lessens perspiration; good in stranguary and urinary complaints. Seeds are tonic, aphrodisiac, laxative, emollient and demulcent; good for bronchitis, cough, piles, gonorrhea, gleet and chronic cystitis. Root is nerve tonic; infusion is useful in fever, leprosy, stranguary, piles, leucoderma, haematuria and stones in bladder.

**Chemical constituents:** Chemical constituents of the whole plant of *Abutilon indicum* resulted in the isolation of two new compounds, abutilin A (1) and (R)-N-(1′-methoxy carbonyl-2′-phenylethyl)-4-hydroxybenzamide (2), as well as 28 known compounds. The structures of the two new compounds were established on the basis of the spectroscopic analysis, and the known compounds were identified by comparison of their spectroscopic and physical data.

**Gossypium herbaceum L [13]**

**Taxonomic description:** A small, woody, annual shrub. Leaves almost reniform, distinct cordate-auriculate, 3-5-7 lobed. Inflorescence proliferous, forming many lateral spurs that carry two or more flowers. Bracteoles 3, equalling the capsule, ovate-rotund, top incised into long irregular teeth. Flowers large, yellow with purple claws. Capsules ovoid, acuminate. English name: Cotton. Local name: Karpus. Habit: Shrub. Habitat: Cultivated. Phenology: January to December (Figure 3).

**Medicinal Uses:**

a) Flower extract is used as an abortifacient and to induce menstrual flow.

b) Seeds are demulcent, laxative, expectorant and aphrodisiac.

c) Roots are emmenagogue and galactagogue; useful in dysmenorrhoea and suppression of menstruation.

d) Root bark stimulates uterine contractions and hastens difficult labour. It promotes abortion or onset of menstruation and reduces menstrual flow (Yusuf et al. 2009).

c) Flower color in certain species, such as *H. mutabilis* and *H. tiliaceus*, changes with age. The fruit is a dry five-lobed capsule, containing several seeds in each lobe, which are released when the capsule dehisces (splits open) at maturity. It is of red and white colours. It is an example of complete flowers. Local name: Dharosh. Habit: Herb. Habitat: Cultivated gardens. Phenology: April to July. Status of occurrence: Abundant (Figure 4).

**Hibiscus esculentus L [14]**

**Taxonomic Description:**

- The leaves are alternate, ovate to lanceolate, often with a toothed or lobed margin.
- The flowers are large, conspicuous, trumpet-shaped, with five or more petals, color from white to pink, red, orange, purple or yellow, and from 4–18 cm broad.
- Flower color in certain species, such as *H. mutabilis* and *H. tiliaceus*, changes with age. The fruit is a dry five-lobed capsule, containing several seeds in each lobe, which are released when the capsule dehisces (splits open) at maturity. It is of red and white colours. It is an example of complete flowers. Local name: Dharosh. Habit: Herb. Habitat: Cultivated gardens. Phenology: April to July. Status of occurrence: Abundant (Figure 4).

**Medicinal Uses:**

a) The roots are very rich in mucilage, having a strongly demulcent action. They are said by some to be better than marsh mallow (*Althaea officinalis*).

b) This mucilage can be used as a plasma replacement. An infusion of the roots is used in the treatment of syphilis. The juice of the roots is used externally in Nepal to treat cuts, wounds and boils. The leaves furnish an emollient poultice.

c) A decoction of the immature capsules is demulcent, diuretic and emollient. It is used in the treatment of catarrhal infections, ardor urinae, dysuria and gonorrhoea.

d) The seeds are antispasmodic, cordial and stimulant.

e) An infusion of the roasted seeds has sudorific properties.

**Chemical Constituent:** The leaves are alternate, ovate to lanceolate, often with a toothed or lobed margin. The flowers are large, conspicuous, trumpet-shaped, with five or more petals, color from white to pink, red, orange, peach, yellow or purple, and from 4–18 cm broad. Flower color in certain species, such as *H. mutabilis* and *H. tiliaceus*, changes with age. The fruit is a dry five-lobed capsule, containing several seeds in each lobe, which are released when the
capsule dehisces (splits open) at maturity. It is of red and white colours. It is an example of complete flowers.

**Hibiscus mutabilis L [15]**

**Taxonomic description:** A large, bushy, ornamental shrub. Leaves, cordate, long-petioled, suborbicular, 5-7 lobed or angled, softly pubescent or tomentose. Flowers large, axillary, solitary; corolla 7.5-10 cm across, spreading, white or pink. Capsules globose, flattened, hairy. English Name: Changeable Rose, Confederate Rose. Local name: Sthalpadma. Habit: Shrub. Habitat: Gardens. Phenology: July to December. Status of occurrence: Common (Figure 5).

**Medicinal Uses:**

a) The flowers are considered to be stimulant, and an established remedy for pectoral and pulmonary complaints.

b) The plant is used as an emollient.

c) The methanol and ethyl extract of this plant have been reported to possess antibacterial activity against pneumoiae, bacillus subtilis, proteus vulgaris, E.coli.

d) The leaves have anti-inflammatory activity.

e) Bark extract of Hibiscus mutabilis has analgesic activity at 50 and 100 mg/kg respectively.

f) This plant has anti proliferative activity. It also has anti allergic action.

g) Ferulic acid purified from leaf extract of this plant has been used to inhibit lipid induced insulin resistance in skeletal muscle cells.

**Chemical Constituents:** Flowers contain meratin, quercimeritrin, cyanin and other flavonoides.

Stem contains flavonoides, glycosides of naringenin and eriodictyol (Asollkar et al., 1992; Rastogi & Mehrotra, 1990).

**Conclusion**

Traditional medicine practices on the family Malvaceae growing throughout Chittagong, Bangladesh was carried out during June 2018 to April 2019. A total of 5 species under 5 genera belonging to the family Malvaceae were collected and identified. The present study may be a preliminary contribution of this area using standard research methods, focusing on medicinal plants and their local uses for the healthcare. This detailed information will be helpful for the pharmacognosist, botanist, ethno-botanist and pharmacologist for the collection and identification of the plant for their re-search work. The result obtained in the investigation need to be rigorously subjected to pharmachemical analysis in order to validate their authenticity and future prospects. The paper has only documented the herbal health remedies presently in vogue in the region and does not prescribe or recommend for their use till further determination by the pharmacologist. Data have been gathered on the traditional uses of plant species, especially for asthma, abscess, anthelmintic, astringent, bronchitis, bedsores, cancer, cough, diuretic, diarrhea, dysentery, eczema, earache, headache, inflammations, jaundice, kidney disease, leprosy, paralysis, skin diseases, scabies, toothache, ulcers, ringworm and others.

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