Chapter-2

The profiles of the selected medicinal plants

The author has selected 15 plants for the proposed study and a detailed profile of each plant is given below.

2.1. *Madhuca indica* Roxb

*Madhuca indica* belongs to family Sapotaceae, also called as *Bassia latifolia* Roxb. *Madhuca latifolia* Roxb. Commonly called as in Hindi: Mahua Mohwa and in Kannada: Ippe.

The plant is a frost resisting tree of the dry tropics and sub-tropics, common in deciduous forests and dry plain forests. The tree is usually found scattered in pastures and cultivated fields in central India. It is extensively cultivated near villages.

![Image](image.png)

Fig 2.1. *Madhuca indica*

According to Ethano Medical Uses, *Madhuca longifolia* bark has been used against diabetes, rheumatism, ulcers, bleeding and tonsillitis. The flowers, seeds and seed oil of madhuka have great medicinal value. Externally, the seed oil massage is very effective to alleviate pain. In skin diseases, the juice of flowers is rubbed for oleation. It is also beneficial as a nasya (nasal drops) in diseases of the head due to pitta, like sinusitis (Dahake *et al.*, 2010).  

14
The saponins of *Madhuca longifolia* possess anti-inflammatory activity. Triterpenic saponins isolated from seeds of *Madhuca indica* exhibited inhibitory effect against two phyto-parasitic nematodes. The components of *Madhuca longifolia* Madhucosides A and B, protobassic acid glycosides possess inhibitory effect on free radical release from phagocytes (Saha et al., 2010., Pawar et al., 2004., Gosh et al., 2009., Gaikwad et al., 2009., Shekhawat et al., 1900).

The fruits of *Madhuca indica* was reported to contain a number of triterpenoids including α- and β-amyrin acetates, 3β-monocaprylic ester of erythrodiol, 3β-capryloxy oleanolic acid and an acetate The other constituents isolated and characterized are n-hexacosanol, β-glucoside of β-sitosterol and free β-sitosterol. The nut-shell contains β- -glucoside of β-sitosterol, quercetin and dihydroquercetin. Myricetin and myricetin-3-O- rhamnoside have been isolated from the leaves of *Madhuca indica*. Madhucosides A and B, protobassic acid glycosides have also been isolated from *Madhuca indica* barks (Saha et al., 2010., Pawar et al., 2004., Gosh et al., Awasthi et al., 1967., Awasthi et al., 1972).

### 2.2. Anacardium occidentale L

*Anacardium occidentale* L, a member of the family Anacardiaceae, also commonly called as Cashew Nut.Cashu, Cherry, Geru mavu, Gerumavu, Godambe Cajuil, Cashew, Cashew-apple, Cashew-nu. In Kannada called as Godambi

Fig 2.2. *Anacardium occidentale*
The extracts of leaves, stem and bark are widely for the treatment of diarrhea, dysentery and colonic pain (Bilcalho, 2001). It has also been reported to possess antibacterial, anti-inflammatory and anti-ulcerogenic (Akinpelu, 2001). The leaves are also used in Brazil for eczema, psoriasis, scrofula, dyspepsia, genital problems, and venereal diseases, as well as for impotence, bronchitis, cough, intestinal colic, leishmaniasis and syphilis related skin disorders. The literature review revealed the following pharmacological activities, Anacardium nut milk extract, dried powder of Emblica officinalis fruit and honey combination showed potent analgesic, antipyretic and ulcerogenic property (Rajendran et al., 2007). The crude ethanolic extract of Anacardium occidentale root showed hypoglycemic potencies in both guinea pig and rats (Olajide et al., 2005). The methanol extract of stem bark posses protection against lipopoly saccharide induced septic shock in mice (Olajide et al., 2004). The stem bark aqueous extract showed anti-inflammatory effect in egg albumin induced paw edema model. Nut shell oil of A.occidentale has been reported to posses tumour promoting property in swiss albino mice (Rajendran et al., 2007).

The fruit of Anacaedium occidentale contains tetrahydronino kiflavone-c-glycoside III, this is the first biflavonoid to occur with one flavanone and one chalcone unit and also the first C-glycoside in the biflavonoid series (Rajendran et al., 2007).

2.3. Basella alba L

The plant Basella alba L, belongs to family: Basellaceae, it is commonly called as Malabar spinach, Phooi leaf, Red vine spinach, Creeping spinach, Climbing spinach In kannada called as Basale soppu.
It is a fast-growing, soft-stemmed vine, reaching 10 m in length. Its thick, semi-succulent, heart-shaped leaves have a mild flavour and mucilaginous texture. The stem of the cultivar Basella alba 'Rubra' is reddish-purple.

Fig 2.3. *Besella alba*

The cooked roots of the plant are astringent and are used in the treatment of diarrhea and dysentery (Hebbar *et al.*, 2004). The flowers are used as an antidote to poisons. A paste of the root is applied to swellings and is also used as a rubefacient (Kumar, 2010). The plant juice is a safe aperient for pregnant women and a decoction has been used to alleviate labour (Qureshi *et al.*, 2010). It is also diuretic, febrifuge and laxative (Qureshi *et al.*, 2010., Sharma *et al.*, 2010). *Basella alba* has been used for the treatment of Anemia in women, coughs, cold (leaf with stem), cold related infections (Rahmatullah *et al.*, 2010). The flowers are used as an antidote to poisons. Leaves used in the treatment of diarrhea and dysentery. Decoction of the leaves has been used to alleviate labour. Maceration is taken orally for infertility, pelvic
inflammatory disease, orchitis, epididymitis, threatened abortion (Roshan Adhikari et al., 2012).

The literature review showed that the plant has got following Pharmacological activity. The different extracts of *Basella alba* demonstrated androgenic potential (Moundipa et al., 2006, Moundipa et al., 2005, Moundipa et al., 1999). *Basella alba* used to treat different types of oral ailments like toothache, plaque, caries, pyorrhea and aphthae (Haskell et al., 2004, Haskell, 2007, Meena et al., 2009, Qureshi et al., 2010, Sharma et al., 2010, Singh et al., 1989).

2.4. *Echinops echinatus* Roxb

The plant *Echinops echinatus* Roxb is the member of the family Asteraceae. It is commonly called as Indian Globe Thistle and in Kannada called as Brahmadande (Khare et al., 2007).

*Echinops echinatus* Roxb is an erect branched herb about a meter high. It has short, stout stems, branching from the base, covered with white cottony hair.

![Fig 2.4. Echinops echinatus](image)

*Echinops echinatus* mainly used as diuretic and nerve tonic. The fresh root of the plant is kept at the back of head touching scalped or kept in the naval before parturition time or during delivery pain for easy delivery, aqueous root extract used in whooping cough. The root’s bark is given for sexual debility and to treat
spermatorrhoea (Meena et al., 2009., Qureshi et al., 2010., Sharma et al., 2010., Singh et al., 1989). This plant has been reported to possess anti-inflammatory, anti-fertility, antimicrobial activities and antifungal activity (Singh et al., 1989., Sharma et al., 1988., Savita et al., 1988., Padashetty et al., 2007., Sing et al., 1988 and 2006).

The main chemical constituents found in plant body are aerial parts contain alkaloids, echinopsine, ehinopsidine and echinozolinone. Taraxasterol acetate. Apigenin and its derivatives- echinacin, echinaticin have been isolated from the aerial parts of the plant, and a new alkaloid 7-Hydroxyechinozolinone, has been isolated from the flowers of *Echinops echinatus* (Haskell et al., 2004., Khare, 2007).

### 2.5. *Holoptelea integrifolia* Roxb.

*Holoptelea integrifolia* (Roxb.) Planch comes under the family Ulmaceae, also as called as *Ulmus integrifolia*, commonly called as Indian Elm, entire-leaved elm tree, jungle cork tree, south Indian elm tree, in Hindi: chilbil, kanju, papri, in Kannada: Kaladri, nilavahi, rahubija.

Fig 2.5. *Holoptelea integrifolia*
This plant is distributed in the Indian Subcontinent including India, Nepal and Sri Lanka. It is also found in Cambodia, Laos, Myanmar and Vietnam. Indian Elm is a large deciduous tree, growing up to 18 m tall (Shrinivas et al., 2009).

The leaves and stem bark of this plant are used for skin diseases, obesity, cancer and for wound healing in the form of paste. The various bark extracts used in tuberculosis, piles, fistula, abdominal diseases, leprosy, polyuria, diabetes, vomiting and rheumatism swelling and wounds (Shrinivas et al., 2009., Saraswathy et al., 2008., Misra et al., 1975).

The reported chemical constituents are, leaves contain alkaloids, flavonoids, saponins, tannins, terpenoids, glycosides, steroids and anthraquinones. The chemical constituents of stem bark are friedelin, friedelin-3-β-ol, β -sitosterol, hederagenin (heart wood), hexacosanol, fatty acid esters, holoptelin A and B and β–amyrin (leaves). 2- Alpha, 3- alpha-dihydroxyolean-12-en-28-oic acid has been isolated from the heartwood (Shrinivas et al., 2009., Saraswathy et al., 2008., Misra et al., 1975). A phytochemical, 1,4-naphthalenedione, isolated from Holoptelea integrifolia has been reported to inhibit beta-lactamase enzyme (Sharma et al., 2009., Lakshmi et al., 2010., Vinod et al., 2010).

2.6. Caesalpinia bonduc L

Caesalpinia bonduc is the member of Fabaceae, also called as Caesalpinia crista L. Guilandina bonduc L Guilandina crista auct. L. The plant is known as, in Hindi : Kantkarej, Kantikaranja, in Kannada : Gajikekayi.
Fig 2.6. *Caesalpinia bonduc*

The plant is a large, thorny, straggling, shrub which behaves like a strong woody climber, taking support of trees (Moon *et al.*, 2004).

The seeds are claimed to be antiblenorrhagic, styptic, purgative and anthelmintic and cures inflammations, useful in colic, malaria, hydrocele, skin diseases and leprosy. The oil from the seeds is used in convulsions and paralysis. The decoction of roasted kernels is used in asthma and liver disorder. The fruits of *Caesalpinia bonduc* exhibits aphrodisiac, anthelmintic property. The oil from fruit is good for indolent ulcers (Ayurveda) and piles. The roots of this plant are much used as an astringent in leucorrhoea and blennorrhagia. The juice of leaves is good in elephantiasis and small pox (Moon *et al.*, 2004).

The plant has been reported for significant anti diarrhoeal activity in mice was shown by the nuts of *C. bonducella*. The alcoholic extracts of roots and stem showed antiviral activity against vaccinia virus. Anti fertility action of seeds was noted in rats and mice. Four triterpenoids which was isolated and methanol extract from the seeds of *C. bonducella* showed a wide range of inhibiting activity against both gram-
positive and gram-negative bacteria. Antitumor Activity and Antioxidant Status of *C. bonducella* have been evaluated against Ehrlich Ascites Carcinoma in Swiss Albino Mice. Antipyretic and Analgesic Activities of *C. bonducella* Seed Kernel Extract has been evaluated in rats and mice in various models. Anti filarial activity of *C. bonducella* against experimental filarial infections, immunomodulatory and anxiolytic activity of seed extract, anti-inflammatory, antipyretic and analgesic properties of seed oil in experimental animal models have investigated (Moon *et al.*, 2004).

The reported chemical constituents of the plant are an alkaloid, Natin and a sulphur containing Glycosides, Bonducin (Bonducellin) have been identified in the plants. Steroidal saponins were found in the twigs of the plants. From the seeds of *C. crista terpenoids, caesalpin, β-caesalpin, α-caesalpin were the first three bitter cassane/voucapane diterpenoids isolated*. The recently reported caesaldekarin C was also isolated from the roots of this plant (Moon *et al.*, 2004).
2.7. *Limonia acidissima* L

*Limonia acidissima* (*Feronia elephantum, Feronia limonia*) comes under the family Rutaceae. This plant is native to Bangladesh, India, Pakistan, Sri Lanka, and Southeast Asia east to Java. It is commonly called as wood apple, monkey fruit, in Kannada called as Belada hannu/Byalada hannu.

![Fig 2.7. *Limonia acidissima*](image.png)

The plant is slow-growing tree and is erect, with a few upward-reaching branches bending outward near the summit where they are subdivided into slender branchlets drooping at the tips. The wood-apple is native and common in the wild in dry plains of India and Ceylon and cultivated along roads and edges of fields and occasionally in orchards. It is also frequently grown throughout Southeast Asia, in northern Malaya and on Penang Island.

The main reported activities of the plant are, the constituents of *Limonia acidissima* inhibit LPS-induced nitric oxide production in BV-2 microglia. The plant posses mosquito repellent and Antifungal property (Intekhab *et al.*, 2009).

The plant mainly contains coumarins, furanocoumarins, lignans, alkaloids, steroids and flavonoids. The unripe fruits contain stigmasterol. Root bark yielded osthole, geranyl umbelliferone, marmin, marmesin, aurapten, bergapten, isopimpinellin
and fernoil. The heartwood contains ursolic acid and a flavanone glycoside 7-methylporiol-β-d-xylopyanosyl-d-glucopyranoside. The stem bark yielded flavanone, alkaloids, coumarins, lignan, sterols and triterpene. Psoralen, bergapten, orientin, vitexin and saponarin have been isolated from leaves (Intekhab et al., 2009).

2.8. *Bauhinia variegata* L.

*Bauhinia variegata* L. is the member of Fabaceae, also called as *Phanera variegata* Benth. This plant commonly known as butterfly tree, bauhinia, camel's foot, mountain ebony, Napoleon's hat, orchid tree and in Kannada called as Arisinantige, ayata, bilikanjivala, irkubalitu

*B. variegata* is a plant of tropical and subtropical climates with hot, dry summers and mild winters. It is a small to medium-sized deciduous tree with a short bole and spreading crown, attaining a height of up to 15 m and diameter of 50 cm.

The root is carminative, used in dyspepsia and flatulence, used as an antidote to snake poison. The bark is astringent, tonic, anthelmintic, scrofula and skin diseases. The flowers used as laxative and to treate stomach disorders (Sahu G et al., 2012).

![Bauhinia variegata](image-url)

The main chemical nature of the plant includes tannins, alkaloids, saponins, cardiac glycosides, steroids, terpenoids and flavonoids (Rahman *et al*., 2007). The stem bark is reported to contain 5,7 dihydroxy and 5,7 dimethoxy flavanone-4-O-α-L rhamnopyrosyl-β-D-glycopyranosides, kaempferol-3-glucoside, lupeol, β-sitosterol, vitamin C and quercetin (Rahman *et al*., 2006). Seeds contain protein, fatty oil – containing oleic acid, linoleic acid, palmitic acid and stearic acid. Flowers contain cyanidin, malvidin, peonidin and kaempferol. The root contains flavanol glycosides (Zhang *et al*., 2007).

**2.9. Erythrina variegata L**

*Erythrina variegata* L is also called as *Erythrina coralloidendrum* var. *orientalis* L. *Erythrina indica* Lam. *Erythrina orientalis* (L.) and belongs to the family Fabaceae (Whistler *et al*., 2006). It is commonly called as in Hindi: Pangara, Kannada: Haalivaana.

The plant is indigenous to the old world tropics, possibly originally from India to Malaysia, but is native or of ancient introduction westward to Zanzibar and
eastward to eastern Polynesia (the Marquesas). It is typically found on sandy soil in littoral forest, and sometimes in coastal forest up to 250 m (800 ft) in elevation (Siddamallayya et al., 2010).

Fig 2.9. *Erythrina variegata*

Ethnomedical claims of *Erythrina variegata* are, the bark having astringent, febrifuge, anti-bilious and anthelmentic properties and also useful in ophthalmia and skin diseases. The juice of the leaves is used to relieve earache, toothache and joint pain. It has the reputation to stimulate lactation and menstruation and is used as laxative, diuretic and expectorant (Rahman et al., 2007).

The reported activities are methanolic extract of leaves of *E. variegata* has been reported to possess analgesic activity, antiosteoporetic and chymotrypsin inhibitor activities (Haque et al., 2007., Zhang et al., 2007., Iwanaga et al., 1998). The seed containing isoflavonoides reported for antibacterial property (Sato et al., 2003 and 2004)

The phytochemical investigations of *E. variegata* revealed the occurrences of orientanol B, erycristagallin, cristacarpin, sigmoidin K, 2-(γ,γ-dimethylallyl)- 6a-
hydroxyphaseollidin, erystagallin A, eryvarins A and B, bidwillon B, eryvarinol A and B, eryvarins F and G, alpinum isoflavone, isococculinine, decarbomethoxyerymelanthine, erysodienone, erythritol, erysodine, erysovine, stachydrine, sterols, fixed oils and fatty acids. Rahman MZ reported the isolation of alpinum isoflavone, 6-hydroxygenistein, 3β,28-dihydroxyolean-12-ene, epilupeol and stigmasterol from a methanol extract of E. variegata stem bark (Rahman et al., 2007).

2.10. *Ichnocarpus frutescens* L

*Ichnocarpus frutescens* is the family member of Apocynaceae, also called as *Apocynum frutescens*, *Echites frutescens*, *Quirivelia frutescens*. This plant commonly called as Black Creeper, Assamese: Dudhkuri lota, in Hindi: Kalidudhi, Shyamalata, Kannada: Gorwiballi, Gouriballi, Kappunamadaberu.

Fig 2.10. *Ichnocarpus frutescens*

The plant is found almost throughout India. Black creeper is evergreen woody twiners, with branches smooth or rust, velvety when young, with milky sap. The plant Black creeper root is used in fevers, dyspepsia, skin troubles and also used as diuretic. The root powder of the plant is administered with milk for diabetes, excretion of the stone in the bladder and as blood purifier. The root juice is taken internally to treat anemia and kidney stone (Ashok Kumar et al., 2010).
Pharmacological investigations have demonstrated that *Ichnocarpus frutescens* possess anti tumour, anti-inflammatory, wound healing, analgesic, antioxidant, antipyretic activities. It is also been reported to possess hepatoprotective, antitumor and α-glucosidase inhibitory actions. The polyphenolic extract of this plant has exhibited antidiabetic and antitumor activities (Pandurangan *et al.*, 2010., Pandurangan *et al.*, 2009., Kumarappan and Mandal 2007).

The main chemical constituents of the plant are phenylpropanoids, phenolic acids, coumarines, flavonoids, sterols, pentacyclic triterpenoids, ursolic acid and kaempferol in the leaves, lupeol, fridelin, β-sitosterol from stems (Pandurangan *et al.*, 2009).

### 2.11. *Cressa cretica* L

*Cressa cretica* L belongs to the family Convolvulaceae, also called as in Hindi : Rudravanti , in Kannada : Kharda (Ganeshaiah *et al.*, 2009., Saxena *et al.*, 1995). This plant is distributed throughout India, Srilanka, Timor, Australia (Western Australia, Northern Territory, Southern Australia, Queensland, New South Wales, Victoria) and warm countries (Warrier *et al.*,1990). It is an erect dwarf shrub of height of about 38 cm.

![Fig 2.11. Cressa cretica](image-url)
The main uses of the plant are expectorant, carminative, digestive, haematinic and tonicdyspepsia, flatulence, colic, urinary discharge, anorexia, helminthiasis, anaemia, tuberculosis, biliousness and general debility (Prajapati et al., 2004, Satakopan and Karandikar 1961). It is reported to be antibilious, antitubercular, and expectorant (Rizk et al., 1982). The plant is also used as anthelmintic, stomachic, tonic and aphrodisiac purposes, enriches the blood, and is useful in constipation, leprosy, asthma, jaundice, and urinary discharges, in the treatment of diabetes and general debility (Chopra et al., 1958, Weber et al., 2007, Pandurangan et al., 2010).

The aqueous and alcoholic extracts were reported for antibacterial and antifungal activity (Parekh et al., 2007, Parekh and Chanda 2008). The methanol extract of *C. cretica* produced intrusion in testosterone production and affected spermatogenesis in male albino rats. *C. cretica* to male rats is responsible for the decline in testosterone production and also alters spermatogenic activity without adverse toxicity (Mandeel and Taha 2004). The antitussive effect of methanolic extract of *C. cretica*, have been reported (Sunita et al., 1995).
2.12. *Amaranthus viridis* L.

*Amaranthus viridis* Linn. is the member of Amaranthaceae, its synonomous names are *Amaranthus gracilis* Desf, its common names are Green Amaranth, Wild Amaranth, Green Pigweeda and in Kannada named as Dhantina soppu

![Amaranthus viridis](image)

Fig 2.12. *Amaranthus viridis*

This is an annual herb up to 1m high and is found in summer. Stems are generally rounded, may have some ridges, and glabrous (without hairs).

This plant is traditionally used for treatment of constipation, inflammation, eczema, bronchitis, anaemia, and leprosy (Sivarajan and Balachandran., 1994).

*Amaranthus viridis* had been evaluated for antinociceptive, antipyretic, cardioprotective, antihyperglycemic, antihyperlipidemic, anthelmiuntic activities (Srinivas *et al.*,2012, Saravanan *et al.*, 2011). The anti-inflammatory property of petroleum ether, alcoholic and aqueous extracts of *Amaranthus viridis* Linn leaves were reported (Sravan *et al.*, 2011). *A. viridis* showed significant dose dependent anthelmintic activity in both the parameters (paralysis and death) (Ashok Kumar *et al.*, 2010).
2.13. *Mangifera indica* L

*Mangifera indica* belongs to the family Anacardiaceae, commonly known as :
Mango, an lo kuo, anbah, manga agaci, manga, mangot fil, mangot, manguier, mamuang, aangga, merpelam, pelem.

![Image of Mangifera indica](image.png)

*Fig 2.13. Mangifera indica*

The plant is native from Southern Asia, especially Eastern India, Burma and the Andaman Islands, *M. indica* has been cultivated in Southeast Asia, Malaysia, Himalayan regions, Sri Lanka, Africa, America and Australia.

*M. indica*, containing tannin, serve as astringents in cases of diarrhea, chronic dysentery, catarrh of the bladder and chronic urethritis resulting from gonorrhea. The bark of the plant contains mangiferine, it is employed against rheumatism and diphtheria in India. The resinous gum from the trunk is applied on cracks in the skin of the feet and on scabies, and is believed helpful in cases of syphilis (Ashok Kumar *et al.*, 2010). Mango kernel decoction and powder are used as vermifuges and as astringents in diarrhea, hemorrhages and bleeding hemorrhoids (Ashok Kumar *et al.*, 2010).

The main active principles of *M. indica* are 2-octene, alanine, alphaphellandrene, alpha-pinene, ambolic-acid, ambonic-acid, arginine, ascorbic-acid, betacarotene beta-pinene, carotenoids, furfurol, gaba, gallic-acid, gallotannic-acid,
geraniol, histidine, isoleucine, isomangiferolic-acid, kaempferol, limonene, linoleic-
acid, mangiferic-acid, mangiferine, mangiferol, mangiferolic-acid. The bark is
reported to contain protocatechic acid, catechin, mangiferin, alanine, glycine, γ-
aminobutyric acid, kinic acid, shikimic acid and the tetracyclic triterpenoids cycloart-
24-en-3β,26diol, 3-ketodammar-24 (E)-en-20S,26-diol, C-24 epimers of cycloart-25
en 3β,24, 27-triol and cycloartan-3β,24,27-triol (Scartezzini and Speroni 2009).104
And also natural C-glucoside xanthone mangiferin has been reported in plant
(Muruganandan et al., 2002)

2.14. Pandanus odoratissimus L.

Fig 2.14. Pandanus odoratissimus

*Pandanus odoratissimus* L. belongs to family Pandanaceae. It is a much-
branched shrub or a small tree, up to 6 m high; stem supported by aerial roots.

The leaves of *Pandanus odoratissimus* L. are aphrodisiac and also used in
leprosy, small-pox, syphilis, scabies, diabetes and leucoderma The root is considered
diuretic, depurative and tonic. The methanolic and aqueous extracts of Pandanus
odoratissimus L. root were exhibited powerful *in vitro* anti oxidant activity (Sasikumar
et al., 2009).

The flowers of *Pandanus odoratissimus* L yield an essential oil containing
methyl ether of β-phenylethyl alcohol as principle constituent (70%). Essential oil
obtained from blossoms (0.1- 0.3%) contains benzyl benzoate, benzyl salicylate,
benzyl acetate, benzyl alcohol, geraniol, linalool, linalyl acetate, bromostyrene, guaicol, phenylethyl alcohol and aldehydes. The oil also contains terpinenol (Ghani, 2003).

2.15. *Spondias Mangifera* Willd

*Spondias mangifera* is a family member of Anacardiaceae, the synonym of the plant is Indian hog plum. It is also called as in Hindi: Amra and in Kannada: Amatae.

![Fig 2.15. Spondias mangifera](image)

*Spondias mangifera* is widely distributed in the tropics and abundantly in the eastern and in north-east region of India (Sunita et al., 2009., Sivarajan and Balachandran, 1994). In India it is cultivated in Punjab, Maharashtra, Orissa, West Bengal and Assam for the edible fruits (Chopra and Chopra, 1992).

*Spondias mangifera* bark is noted for the treatment of articular and muscular rheumatism and in diarrhoea and dysentery (Chopra and Chopra, 1992). The leaves of the plant are aromatic, acidic and astringent and the leaf juice used in ear ache. The root bark powders have been recommended for regulation of menstruation and antitumor, (Kumarappan and Mandal et al., 2007) antipyretic, antispasmodic and antihistamine activities were also reported (Mokkhasmit et al., 1971).

The aerial parts of *Spondias mangifera* are reported to contain daucosterol, β sitosterol, stigmast 4-en-3-one, cycloartanone 2-4 methylene and lignoceric acid (Tandon and Rastogi, 1976).