2.1 PROFILE OF PLANT 1 - MIMUSOPS ELENGI LINN

Taxonomical classification

Kingdom : Plantae
Order       : Ericales
Family      : Sapotaceae
Genus      : Mimusops
Species    : M. elengi L
Binomial name: Mimusops elengi (L)

Vernacular names

Sanskrit: Anangaka, Bakula, Chirapushpa, Dhanvi, Gudhpushpa, Kantha, Karuka, Kesha, Mukula, Padyamoda, Sharadika, Sindugandha, Simhakeshaa, Sthirmukhgandha, Surabhi, Tailanga, Varalahdha, Visharada
Gujarati: Babhuli, Bolsari, Varsoli, Vovoli
Hindi: Bakul, Bolsari, Maulsaraau, Maulser, Maulsari
Marathi: Bakhor, Bakula, Barsoli, Owali, Owli, Vavoli, Wovali, Wowli
Malayalam: Bakulam, Elengi, Ilanni, Iranni, Makuram
Tamil: Alagu, Ilangi, Kesaram, Kosaram, Magil, Magilam, Vagulam
Punjabi: Maulsari, Maulsiri
Bengali: Bakal, Bakul, Bohl, Bukal
English: Bullet wood, Indian Medlar
Nepalese: Bakulapuspa
Sinhalese: Munemal
German: Affengesicht
French: karanicum
Unani: Moolsari
Burmese: Kaya
Malaysian: Enengi
Telgu: Pogada
Photograph 2.1 Photograph of various parts of *Mimusops elengi*
**Part used**
Stem bark, leaves, flowers, fruit and seeds

**Distribution**

*Mimusops elengi* tree is the native of western peninsula. The tree is found in south India in dry evergreen forests from the Krishna southwards and in ravines in the hills up to 20 meter along western coast and lower Ghats in moist evergreen forests. It is distributed in Andaman, Martaban, Tenasserim, Burma and the western in Ghats; in the Eastern Ghats it is found in dry areas, often on laterite and in comparatively small in size. It is mostly found in Northwestern Himalayas, Eastern Ghats, Western Ghats, Central Deccan Plateau, East Coast, West Coast, Indo-gangetic Plain, and Outlying Islands.

**Macroscopic characters**

**Stem bark**

The fresh bark is grayish black, channelled, occurs in pieces of 15-25 cm long and 10-15 cm broad. Externally rough due to the presence of vertical lenticels, cracks and longitudinal fissures. The dried bark is black, curved, thin, fibrous and longitudinally striated.

**Fruit and Seed**

Fruit is a berry, ovoid, 2.5 cm long with. It turns yellow and it tastes astringent and sweet. Fruits occur in rainy season, when ripe containing 1, rarely 2 seeds. Seeds are grayish brown, solitary, ovoid, compressed, shining

**Leaves**

The leaves are glossy and are dark green when old with 6.3-10 cm in long and 3.2-5 cm in wide. The new leaves mostly appear in February when the trees often appear bright vivid green. Leaves are variable, elliptic, oblong or ob lanceolae, short or long acuminate, margin undulate, closely but faintly veined. Petioles 1.2-2.5 cm.
General Properties of the plant and their traditional uses:

The bark is acrid and sweet; cooling, cardiotonic, alexipharmic, stomachic, anthelmintic, astringent; cures biliousness and diseases of the gum and teeth. The flowers are sweet, acrid, oleagenous; cooling, astringent to the bowels; good for the teeth, causes flatulence. They are used as expectorant; cures biliousness, liver complaints, diseases of the nose, headache and their smoke is good in asthma. The seeds fix loose teeth; as an errhine cures nasal congestion and headache. The root is sweet and sour; aphrodisiac, diuretic, cardiotonic, stomachic, astringent to the bowels; good for gonorrhoea; as a gargle, strengthens the gums. The fruits are sweet and sour, aphrodisiac, diuretic, astringent to the bowels, good in gonorrhoea. The pulp of the ripe fruit is sweetish and astringent and has been successfully used in curing chronic dysentery. The leaves are traditionally used in fever, postural eruptions of skin, ulcer, headache, dental diseases, bacterial diseases, wound along with antioxidant, cytotoxic, analgesic and antipyretic activities.

Phytochemical constituents

Stem bark

Taraxerone, taraxerol, betulinic acid and spinasterol, sodium salt of betulinic acid and ursolic acid, fatty acid esters of alpha-spinasterol was isolated from the bark. A new farnanetype pentacyclic triterpene, farnan-2-one-3 beta-ol (mimusopfarnanol), was isolated along with the known triterpenoids, farnan-3-one, olean-18-en-2-one-3-ol, lup-20 (29)-en-3 beta-ol, 3-hydroxy-lup-20(29)-ene-23, 28-dioic acid, beta amyrin, lupeol also obtained from bark. Steam distillation of bark sample yielded 0.18% of volatile organic matter. The major constituents were alpha cadinol, tau muurolol, hexadecanoic acid, diisobutyl phthalate, octadecadienoic acid. New gallic acid esters, characterized as phenyl propyl gallate.
Fruit and seed
Fruit and seed of bakula showed presence of quercitol, ursolic acid, dihydro quercetin, quercetin, \(\beta\)-d glycosides of \(\beta\)-sitosterol, alpha-spinasterol after saponification.\(^{117}\) Two new pentacyclic triterpene acids were isolated as mimusops acid and mimusopsic acid, possessing the novel migrated oleanane skeleton, mimusopane, along with mimusops gene and mimugenone.\(^{118}\) Pentacyclic triterpenes 3beta,6beta,19alpha,23-tetrahydroxy-urs-12-ene and 1beta-hydroxy-3beta-hexanoyllup-20 (29)-ene-23, 28-dioic acid have been isolated.\(^{119}\) Two novel triterpenoid saponins, mimusops in and mimusops in were isolated from the seeds of *Mimusops elengi* and minor triterpenoid saponin mimusin was isolated along with two known triterpenoid saponins, Mi-saponin A and 16 alpha-hydroxy Mi-saponin A.\(^{120}\) In addition taxifolin, alpha-spinasterol glucoside, Mi-glycoside 1, two new triterpenoid saponins mimusopside A and B were also isolated. Six new saponins were isolated from the seed kerne.\(^{121}\) Bakul fruit are reported to contain moisture (79.27 %), protein (1.29%), fat (2.76%), reducing sugar (8.9%), Non reducing sugar (6.3%), Total sugar (15.2%), Fiber (1.13%), Vitamin C (3.27 mg / 100 gm), Mineral content (0.32%), Iron (0.59 mg / 100 gm), Sodium (5.16 mg / 100 gm), Potassium (98.54 mg / 100gm)\(^{122}\).

Leaves, heartwood and roots
Hentriacontane, carotene and lupeol from the leaves, heartwood and roots were isolated.\(^{123}\) A new steroidal saponin, 5 alpha-stigmast-9(11) en-3-o-beta-D-glucopyranosyl (1-5)-o-beta-D-xylofuranoside was isolated from the roots of *Mimusops elengi*.\(^{124}\)
2.2 PROFILE OF PLANT 2- *ROSA DAMASCENA*

**Taxonomical classification**

Kingdom: Plantae

Order: Rosales

Family: Rosacea

Genus: Rosa

Species: *R. damascena*

Binomial name: *Rosa damascena*

**Vernacular names**

- **Bengal**: Golap-phul
- **Bombay**: Guel
- **England**: Damask or Persian Rose
- **Gujarat**: Gulabu – phul
- **Hindi**: Gulab-ke-phul
- **Maharashtra**: Gulab
- **Malayalam**: Panniruppu
- **Persia**: Guliswkh
- **Sanskrit**: Satapatri
- **Tamil**: Golappu, Rojappu
- **Telugu**: Rojapuvu

**Part used**

Flower petals
Plant profile

Photograph 2.2 Photograph of Rosa damascena

a. Whole plant of *Rosa damascena*

b. Flower of *Rosa damascena*

c. Petals of *Rosa damascena*
Distribution

Several species and forms are cultivated in World *Rosa damascena* with its red double flowers is the most important species used in the production of “attar”, or rose oil. The natives of this species are Bulgaria, Turkey. It is cultivated in large amount in Bulgaria, Turkey, France, Italy, Greece, Germany and India.

In India, Ghazipur is the largest centre of rose production. It is also cultivated in Punjab (Lahore, Amritsar), Uttar Pradesh (Kanpur, Aligarh, Hathras) and in Bihar (Patna) and in Orissa.

Macroscopic characters

*Rosa Damascena* is a rose hybrid derived from *Rosa gallica*, *Rosa moschata* and *Rosa fedtschenkoana*. *R. damascena* is a perennial bushy shrub reaching approximately 1 to 2 meters in height with large, showy and colorful flowers. The leaves are imparipinnate and compound with 5-7 leaflets. The stems are erect, bearing many straight bristles and stouter, hooked prickles. Flowers are 6-8 cm. Wide, double, pink to red in colour. Hips are 2.5-cm. long, pear shaped.

There are 2 varieties of *Rosa damascena*, they are *Rosa damascena* trigintipetala, *Rosa damascena* versicolor.

- R.D. Trigintipetala – Flowers are smaller than the original type loosely double, soft pink, very fragrant, extensively grown in Bulgaria.
- R.D. Versicolor – York & Lancaster rose, flowers are white, flicked or blotched pink & red.

General Properties of the plant and their traditional uses

The most therapeutic effects of *Rosa damascena* in ancient medicine include, treatment of abdominal and chest pain, strengthening the heart, treatment of menstrual bleeding and digestive problems, and reduction of inflammation, especially of the neck. North American Indian tribes used a decoction of the root of *Rosa damascena* plant as a cough remedy to ease children’s cough. This plant is also used as a gentle laxative. Rose oil
heals depression, grief, nervous stress and tension. It helps in the reduction of thirst, healing old cough, special complaints of women, wound healing, and skin health. Vapor therapy of rose oil is helpful for some allergies, headaches, and migraine. The flowers are harvested for their fine fragrance, and are commercially harvested for rose oil used in perfumery and to make rose-water and “rose concrete”. The flower petals are also sometimes used directly to flavor food or to make tea and are considered safe for human consumption.¹²⁶

**Phytochemical constituents**

Several components were isolated from flowers, petals and hips (seed-pot) of *Rosa damascena* including terpenes, glycosides, flavonoids, and anthocyanins.¹²⁷⁻¹³² This plant contains carboxylic acid, myrcene, vitamin C, kaempferol and quercetin. Flowers also contain a bitter principle, tanning matter, fatty oil and organic acids. Loghmani-Khouzani et al (2007) found more than 95 macro- and micro-components in the essential oil of *Rosa damascena* from the Kashan regions of Iran. Among them, eighteen compounds represented more than 95% of the total oil. The identified compounds were; -citronellol (14.5-47.5%), nonadecane (10.5-40.5%), geraniol (5.5-18%), and nerol and kaempferol were the major components of the oil.