

A brief Review and Comparison Study of Biological Activities of *Sapindus* species

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Abstract: The main objective of this review is to form a short compilation of comparative studies of two *Sapindus* species, namely the *Sapindus mukorossi* and *Sapindus trifoliatus* plant. It gains attraction with its wide range of biological activities. It is one of the oldest cultivated medicinal plants distributed in tropical and subtropical regions of Asia. Plant extract appears to be one of the better alternatives as they have minimal environmental impact and danger. It is commonly known as Indian soapberries, soapnuts, washnuts, and soapberries.

Keywords: *Sapindus*, biological activities, soapnuts, environmental impact.

INTRODUCTION:

Sapindus mukorossi (Fig. 1) is a deciduous tree that belongs to the family Sapindaceae and it is widely grown in the upper reaches of Indo-Gangetic plains. It flowers during summer. The fruit appears in the month of July-August and ripens during the month of November-December. The seeds are 0.8cm to 1.3cm in diameter, smooth and brownish. The *Sapindus mukorossi* is also known for its medicinal value. The fruits of the plant have medicinal value for treating several diseases like dermatitis, chlorosis, eczema, psoriasis, and migraines. The seeds of the plant are used for treating constipation, arthritis, common cold, and nausea. The seed is also used in ayurvedic medicine to remove freckles and tan from the skin and for cleansing hair. The major compounds isolated from the plants are triterpenoids, fatty acids, steroids, alkaloids, carbohydrates, saponins, and flavonoids. They are also known for their antidiabetic, fungicidal, anti-inflammatory, antimicrobial and cytotoxic activities.



Fig:1 *Sapindus mukorossi*

Sapindus trifoliatus (Fig 1.2) is one of the oldest cultivated plants in the world and is found in south India. It belongs to the family Sapindaceae. The species include both deciduous and evergreen plants. It is native to warm temperatures in tropical regions. They are also found in the states of Madhya Pradesh, Bihar, West Bengal, and Uttar Pradesh. The seeds are medium in size and are brown. This tree grows well in deep clay loamy soil. The flowers are small greenish-white in color. The flower blossoms in November, December, and January. The fruits and seeds are slightly smaller than the north Indian soap nuts. The shells are darker in color. The plant is used in ayurvedic medicine, Unani, and Tibetan medicines. It has anti-bacterial, anti-fungal, and anti-inflammatory properties. It is commonly used for the treatment of common cold, arthritis, constipation, nausea, dental caries, chlorosis, epilepsy and joint pain. It is also used in pharmaceutical industries for the production of detergents.



Fig:1.2 *Sapindus mukorossi*

Following are the vernacular names

(a) *Sapindus mukorossi*

- Hindi: phenil, risht, rishtak, ritha
- Manipur: kekru
- Marathi: phenil
- Urdu: phenil
- Assamese: aritha
- Mizo: hlingsi
- Sanskrit: hrishtah, phenaka, sarishta
- Nepali: rittha

(b) *Sapindus trifoliatus*

- Hindi: ritha
- Tamil: manipunganmaram
- Sanskrit: arishtak, phenila, aristam
- Marathi: aritha
- Kannada: kookatakayi
- Telug: kunkdukayalu
- Oriya: ritha
- Malayalam: uruangi

Following are the Taxonomical classification of the two species

(a) *Sapindus mukorossi*

Kingdom: Plantae
Sub kingdom: Tracheophytes
Division: Angiosperms
Super division: Eudicots
Class: Rosids
Subclass: Sapindales
Family: Sapindaceae
Genus: *Sapindus*
Species: *mukorossi*

(b) *Sapindustrifoliatus*

Kingdom: Plantae
Sub kingdom: Tracheobiota
Division: Magnoliophyta
Superdivision: Spermatophyta
Class: Magnoliopsida
Subclass: Rosidae
Family: Sapindaceae
Genus: *Sapindus*
Species: *trifoliatus*

BIOLOGICAL EFFECTS OF THE PLANT *Sapindus mukorossi*

Anti-bacterial activity: It was evaluated that methanolic and aqueous extracts of *Sapindus mukorossi* inhibited the growth of *shigella dysentriae* and *staphylococcus aureus*. In the in vitro study, the isolates show a considerable zone of inhibition at very low concentrations.

Fungicidal activity: The crude extract of *Sapindus mukorossi* exhibits a strong growth inhibition against the pathogenic yeast *Candida albicans*, which causes cutaneous candidiasis. Extracts from the dried pericarp of *Sapindus mukorossi* fruits were investigated for the antifungal activity for the Vulvo vaginal candidiasis caused in the vaginal secretions of women.

Anti-inflammatory activity: The pericarp of *S.mukorossi* Gaertn was studied. Reaction mixture comprised of bovine serum albumin (BSA) and plant sample.

BIOLOGICAL EFFECTS OF THE PLANT *Sapindus trifoliatus*

Antimicrobial activity:- The antimicrobial activity was studied against bacterial strains viz.*shigella dysentriae* and *staphylococcus aureus*. The “zone of inhibition” was observed.

Anti-inflammatory activity:- the pericarp of *s.trifoliatus* was studied. The result suggests that the cyclo-oxygenase and lipoxygenase pathway could be involved in anti-inflammatory activity.

Anti-migraine activity:- a pharmacological study with the pericarp extract was taken for the study. The effect of this extract on the central nervous system was investigated for the presence of anti-migraine characteristics. The investigation of the plant sample resulted in the possible neuroleptic properties.

CONCLUSION

The *Sapindus* species exhibits various biological activities such as antibacterial, anti-fungal, anxiolytic, anti-inflammatory, antioxidant, etc. The comparative study of both species concludes that both are efficient in their ways.

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