

# Pharmacological Review of *Mimusops Elengi* Linn

Punam Vilas Kamble<sup>1</sup>, Santosh Waghmare<sup>2</sup>, Ashwini Andhale<sup>3</sup>, Dr. H.V. Kambale<sup>4</sup>

<sup>1,3,4</sup> Dept of pharmacology

<sup>2</sup> Dept of pharmaceutical chemistry

<sup>1,2,3,4</sup> Loknete Shri Dadapatil Pharate College of Pharmacy, Mandavganpharata.

**Abstract-** *Mimusops elengi* is Indian native plant and is used for a long time in the history of the medicine. Plant was well studied in majority of the world because of its high potential medicinal value. Traditionally all different part of this plant, namely leaf, root, fruit, seed, bark and flower are used to cure various kinds of disorders. *Mimusops elengi* Linn. is traditionally used as antianxiety, cytotoxic, antimicrobial, antioxidants etc. Also, conventionally, *Alstonia scholaris* Linn. is used in treating cancer, psychosis, nociception etc. The present study was designed to appraise neuropharmacological and cytotoxic potential of *M. elengi* and *A. scholaris* leaves. Hole cross and hole board tests were conducted for assessing sedative effect, thiopental sodium induced sleeping time test for hypnotic property, elevated plus maze (EPM) test for anxiolytic potential, tail suspension test for antidepressant effect and finally brine shrimp lethality bioassay for evaluating cytotoxic potential of both extracts. In both hole cross and hole board tests, *M. elengi* leaves (MEL) displayed greater locomotion reduction compared to *A. scholaris*. Lower of *Mimusops elengi* were reported for treatment of various human ailments in traditional system of medicine. Pharmacological activities like antimicrobial, antifungal, antioxidant and free radical scavenging, anti-inflammatory analgesic, antipyretic, antiulcer, anti-tumor, wound healing, larvicidal activities have been scientifically evaluated for various parts of this plant. A number of phytochemical constituents have been identified in this plant that may be responsible for its pharmacological activities.

**Keywords-** elengilenn, taxonomy, chemical constituents, pharmacological activity.

## I. INTRODUCTION

Molsari (*Mimusops elengi* L.) is a large glabrous evergreen Indian origin tree attaining a height of 12-15 m distributed in peninsular region, western and eastern ghats and cultivated in the plains e.g., tropical forests in south Asia and in India. Plant is cultivated for its ornamental appearance, elegant look, shade and for fragrant flowers. The plant has vast description in Unani literature as Molsari. It is described

as large tree like mauwah, kherni and cheeku. This tree gives characteristic cool shade and fragrant flowers.

## TAXONOMY:

- Kingdom: Plantae
- Order: Ericales
- Family: Sapotaceae
- Genus: *Mimusops*
- Species: *Elengi*
- Botanical Name: *Mimusops elengi*
- Vernacular name: English :bullet wood, Spanish cherry, Hindi mul sari, Tamil magadam.
- Part use: stem, bark, leaves, flower, fruit, seed
- Distribution: *Mimusops elengi* tree is a native of Western peninsula.
- Traditional medicinal use: the bark is used for cardiotonic, stomachic, tonic, flower is cooling, fragrant flower.



Fig no 1: *Mimusopelengi*

## II. CHEMICAL COMPOSITION

Bark of *M. elengi* contains tannin, some caoutchouc, wax, coloring matter, starch and ash forming inorganic salts [4]. Saponin was isolated from the ethanolic extract of the bark, which on hydrolysis yielded  $\beta$ -amyryn and bassic acid. Hexane soluble fraction of the alcoholic extract yielded taraxerone, taraxerol,  $\alpha$ -spinasterol, sodium ursolate and betulinic acid, where as hexane insoluble fraction yielded  $\beta$ -D-glucoside of

$\beta$ -sitosterol and the aqueous extract, gave quercitol. Other pentacyclic triterpenoids betulinic acid (2-167), lupeol (4-167), taraxerol (3-167) and ursolic acid (3-167). Fatty acid ester of  $\alpha$ -spinasterol(3-167) was also isolate from bark[8]. The petroleum ether extracts of stem bark yielded  $\alpha$ -spinasterol and taraxerol, the same was also isolated from wood portion of *M. elengi* along with meso-inositol.

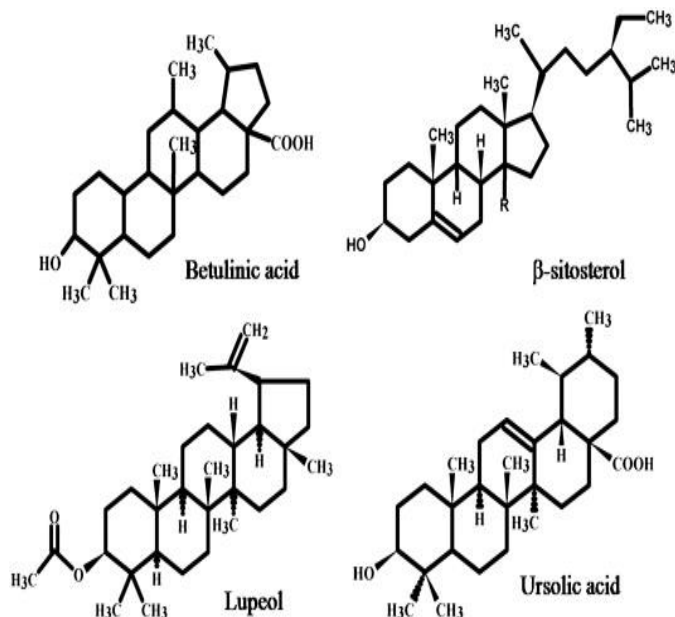


Fig no 2: Chemical constituents of *M.elengi*.

### III. BIOLOGICAL ACTIVITY

*M.elengi*: The leaf extract showed in vitro antibacterial activity against *Bacillus anthracis*, *Bacillus mycoides*, *Bacillus pumilus*, *Bacillus subtilis*, *Salmonella paratyphi*, *Staphylococcus albus*, *Vibraechlorae*, and *Xanthomonasmalvacearum*, the inhibition was significant against *Xanthomonascampestris* and *Bacillus anthracis*.

### IV. PHARMACOLOGICAL ACTIVITIES

- **Antioxidant activity:**

Saaha et al., evaluated the Antioxidant potential of the methanol extract of the leaves of *Mimusopselengi* by using 1, 1-diphenyl-2-picrylhydrazyl (DPPH) scavenging assay, reducing power and total antioxidant capacity. The extract showed significant activities in all antioxidant assays compared to the reference antioxidant ascorbic acid in a dose dependent manner. In DPPH scavenging assay the IC<sub>50</sub> value of the extract was found to be 43.26 $\mu$ g/ml while the IC<sub>50</sub> value of the reference standard ascorbic acid was 58.92 $\mu$ g/ml. Total antioxidant activity was also found to increase in a dose

dependent manner. *M. elengi* extract also showed strong reducing power.

- **In-vitro anti-inflammatory activities:**

Kar et al., assessed the antioxidant and invitro anti-inflammatory activities of alcoholic extract of *Mimusopselengi* leaves. The leave extract exhibited dose dependent free radical scavenging property in peroxyxynitrite, superoxide and hypochlorous acid models and the IC<sub>50</sub> value were found to be (205.53  $\pm$  2.30), (60.5 $\pm$ 2.3), (202.4 $\pm$ 5.3)  $\mu$ g/mL respectively.

- **ontotoxic activity:**

The cytotoxic effect of ethanolic extract of barks of *M.elengi* was investigated on meristematic cells of root tips of *Allium cepa*. The experiment was carried out by using different concentrations (2.5, 5, 10 mg/ml) of standard cytotoxic drug cyclophosphamide and ethanolic extract. After 48 h and 96 h root length and mitotic index were calculated.

- **Antibacterial activity:**

The antibacterial activity of petroleum ether, chloroform, ethyl acetate and methanol extracts of the flowers of *Mimusopselengi* were screened against various pathogenic Gram positive and Gram negative bacterial strains viz. *Bacillus cereus*, *Enterobacterfaecali*, *Salmonella paratyphi*, *Staphylococcus aureus*, *Escherichia coli*, *Proteus vulgaris*, *Klebsiellapneumoniae*, *Pseudomonas aeruginosa* and *Serratiamarcescens* by 'agar well diffusion' method.

- **Hypotensive activity:**

The methanolic extract of *Mimusopselengi* showed hypotensive activity in anaesthetized rats. On intravenous administration (i.v.) at a dose range of 2–16mg/kg, it produced about a 7–38% fall in mean arterial blood pressure, in a dose dependent manner. The effect was independent of adrenergic, muscarinic and histaminergic receptors.

- **Wound Healing Activity:**

In an study wound healing activity of extract of bark part of *Mimusopselengi* was evaluated. A methanolic extract was examined in the form of ointment in three types of wound models on mice: the excision, the incision and dead space wound model. The extract ointments showed considerable response in all the above said wound models as comparable to those of a standard drug Betadine ointment in terms of wound

contracting ability, wound closure time, tensile strength and dry granuloma weight.

## V. CONCLUSION

In spite of our great dependence on modern medicines and tremendous advances in synthetic drugs, a large portion of the world population still likes drugs of plants origin. *M. elengi* (Bakul) is one of the most important medicinal plants used in preparations of Ayurveda because of having a number of medicinal properties. It is the source of a variety of biologically active phytoconstituents which are responsible for antimicrobial, antioxidant, antihyperglycemic, anticancer and protective effects on various vital organs such as nerves, heart, kidney and liver.

## REFERENCES

- [1] Ganu G, Garud A, Agarwal V, Talele S, Jadhav S, Kshirsagar A. Anticonvulsant activity of a *Mimusops elengi* in experimental animals. *J Pharm Res* 2011; 4(9):2938-
- [2] Satishchandra, Sumithra M. Synergistic effect of *Mimusops elengi* and *Moringa* on high fat diet induced atheroma in rats. *Int J AdvPharmaceut Res* 2011; 2(6):293–300.
- [3] Prabhat, Ajaybhan, Navneet, Chauhan A. Evaluation of Antimicrobial Activity of Six Medicinal Plants against Dental Pathogens. *Report Opinion* 2010; 2(6):37.. Ali MA, Mozid MA, Yeasmin MS, Khan AM, Sayeed MA. An Evaluation of
- [4] Antimicrobial Activities of *Mimusops elengi* Research Journal of Agriculture and
- [5] Biological Sciences 2008; 4(6): 871-874.
- [6] Gupta N, Jain U K. Investigation of Wound Healing Activity of Methanolic Extract of Stem Bark of *Mimusops elengi* Afr J Tradit Complement Altern Med. 2011; 8(2): 98-103.
- [7] Ganu G, Jadhav S. In Vitro Antioxidant and In Vivo Antihyperglycemic Potential of *Mimusops elengi* in Alloxan-Induced Diabetes in Mice. *Journal of Complementary and Integrative Medicine* 2010; 7(1): 1553-3840.
- [8] Behbahanian DS, Malik A, Jahan N. Hypotensive effect of the methanolic extract of *Mimusops elengi* in normotensive rats. *Phytomedicine* 1999; 6(5):373.
- [9] Shah PJ, Gandhi MS, Shah MB, Goswami SS, Santani D. Study of *Mimusops elengi* bark in experimental gastric ulcers. *J Ethnopharmacol* 2003; 89(2-3):305.
- [10] Jana GK, Dhanamjayarao M, Vani M. Evaluation of anthelmintic potential of *Mimusops elengi* (Sapotaceae) leaf. *J Pharm Res* 2010; 3(10):2514- 2515.
- [11] Alkilany AM, Lohse SE, Murphy CJ (2013) The gold standard: gold nanoparticle libraries to understand hydrogenation catalyst. *AccChem Res* 46:650–661.
- [12] Bag BG, Dash SS (2011) First self-assembly study of betulinic acid, a renewable nano-sized, 6-6-6-6-5 pentacyclic monohydroxy triterpenic acid. *Nanoscale* 3:4564–4566
- [13] Zhang Y, Cui X, Shi F, Deng Y (2012) Nano-gold catalysis in fine chemical synthesis. *Chem Rev chemical synthesis. Chem Rev* 112:2467–2505.