



A Review: Exploring a valuable medicinal plant and diverse therapeutic potential of Dolichandrone Falcata

Jayesh Mahadu Sabale, Akshada Ramesh Pawar, Rishikesh Madhukar Kante

Siddhi's Institute of Pharmacy, Nandgaon

ABSTRACT

This review presents the medicinal properties of Dolichandrone falcata Seem, highlighting its wide range of pharmacological effects. The plant's extracts from bark, leaves, and fruits are utilized for their anti-allergic, anti-inflammatory, antioxidant, anti-estrogenic, anxiolytic, anticonvulsant, and anti-parasitic properties. It is also effective in treating anemia, bloody diarrhea, anthelmintic, analgesic, antiviral, and antifungal conditions. Additionally, the bark extract is beneficial for menorrhagia and leucorrhoea, while the leaves are used in the treatment of diabetes and other diseases. Phytochemical analysis revealed the presence of alkaloids, phenolics, flavonoids, terpenoids, tannins, and steroids, with significant antibacterial activity against multidrug-resistant pathogens. Furthermore, the plant's flavonoid content, particularly chrysin-7-rutinoside, exhibits potential anti-cancer effects, as demonstrated in studies on mammary carcinoma. These findings support Dolichandrone falcata as a promising source of therapeutic agents.

Keywords: Dolichandrone falcata, phytochemicals, antibacterial, anti-cancer, anti-inflammatory, pharmacological effects.

INTRODUCTION:

For a several year Dolichandrane Falcate has become bulge in medical sector and pharmaceutical sides . This plant is deciduous plants belonging to family Bignoniaceae and native to India, tree reaches height 15-20ft and the leaves are 2-6 inch long, shaped- oval leaflets tree give rise to white colour flower and fragrant. The blossoming takes place in April and May. Instead of these application this plants can not yet figure out for its chemical constituents .The plant has multiple medicinal properties like Anti -Parasitic, anxiolytic , Anti-estrogenic, Anti-oxidant , Anti allergic, Anti-inflammatory properties. (1) Additionally Dolichandrane Falcate used to cure Anti-Viral, Analgesic, Anti fungal , Anemia, Bloody Diarrhoea. (2) The plant is utilized to make snake venom antidote and cure liver disorders. (3) The paste of bark is applied on fracture part. (4)



Fig 1. Dolichandrone falcate plant



Fig 2. Flower

TAXONOMICAL CLASSIFICATION: (5) (6)

- COMMON NAME: Menedhshingi , Meshsa-sringi .
- SYNONYMS: Bignonia Falcata , Bignonia spathcea, Markhamia Falcata.
- BIOLOGICAL SOURCE : It is a small deciduous tree.
- FAMILY : Bignoniaceae.
- KINGDOM : Plants
- ORDER : Lamiales .
- CLADE : Tracheophyta.
- CLADE : Eudicots.
- CLADE : Asterides.
- GENUS : Dolichandrone.
- SPECIES : D. falcata .
- PARTS OF PLANTS : Leaves , fruits , roots , Bark, flowers .
- GEOGRAPHICAL REGION : Rajasthan , Maharashtra , Karnataka.
- SYSTEM OF MEDICINAL USED IN : Folk medicine,[Ayurveda].
- SUBSTANCE CLASS : Structurally diverse
- SOURCE : Organism .
- SOURCE MATERIAL TYPE: plant.

- **MATERIALS AND METHODS** : (7)

Authentication and plant collection.

From (**SAVITRIBAI PHULE PUNE UNIVERSITY**) . The aerial plant is collected of dolichandrone falcata . The specimens verified by the Botanical survey of India in Pune.

- **MORPHOLOGY** :

Dolichandrone falcata is also called as markhamia falcata, belonging to family Bignoniaceae. The size of a tree is medium normally reach to at 15 meter in height. With a dense canopy and pliantly flowering . The tree producing high aromatic, creamish – white, flowers that bloom. In evening fall by morning . The ripe fruits from the previous year often remaining on the trees as a new a new flowers appears .

Leaflets are alternative, measuring 1.3-3.8 in length and 1.1 -3.8 in width , either pungent or glabrous. These are generally suborbicular or obovate with the bases that are cuneate or rounded, and they are unsymmetrical in side . The main nerves are prominents on the underside and the petioles of the lateral leaflets are very shorts around 0 to 0.5mm long. (8)

- **CHEMICAL CONSTITUENTS** :

Dolichandrone falcata contains many chemicals constituents identify in several extracts. The alkaloids are present in methanol and acetone extract . Terpenoids are analysis in both aqueous

and alcohol extracts. Tannins are present across aqueous, alcohol, methanol, ethyl acetate, extracts. (9)

Cardiac Glycosides are isolated from methanol ,acetone , ethyl acetate, in aqueous , alcohol, methanol extracts. Also dolichandrone isolated from the ethyl acetate extract from heartwood , alongside seven other known components : aloesaponarin11 , alpha-lapachone, lapachol, beta-sitosterol, 3,8-dihydroxydehydroiso-alpha-lapachone, 8-hydroxydehydroiso-alpha-lapachone, and verbascoside. (10)

There 6 chemical components are found in flowers of dolichandrane serrulata include hellerone, renyolone, ixoside, protocatechic acid , isomaltose, cleroidicin B. (11)

Iridioids from dolichandrone spathaceae have been found to be anti diabetic properties to prevent alpha-glucosidase (PDB-3W37), and oligo-1,6-glucosidase (PDB-3W37). 5 catapol iridioids (1, 2,10,13,14) are isolated, and derivatives are (3, 4,5,6,7,8,9,11,12,15) we're synthesized various chemical process are involved reduction, o-alkylation, acetonization and acetylation and Hydrolysis of the naturally isolation compounds. (12)

● **PRELIMINARY PHYTOCHEMICAL TEST :** (13)

1] Test for Carbohydrate:

TEST	OBSERVATION	INFERENCE
1] Molish test In sample extract add few drops of alpha naphthol and H ₂ SO ₄ 1 ml.	violet ring indicates	Presence of carbohydrates
2] Fehlings test Fehling A solution and fehling B is mixed at 1:1 ratio	Brick red colour indicate	Presence of reducing sugar.
3] Benedict test When Benedict's reagent is added and the mixture is heated on water bath.	Red precipitate indicates	Absence of monosaccharides
4] Barfoed test Mixing a equal volume of barfoed's reagent with the test solution	Red color precipitate does not observed	Absence of monosaccharides

2] Test for sugar

TEST	OBSERVATION	INFERENCE
1] Test for pentose sugar Addition of two drops of HCL in test solution and add crystals of phologlucinol.	Red colour absent	Absence of pentose sugar
2] Test for Hexose sugar Heat the salviano's reagent and add 1.5 ML of test solution in water bath for 2 to 3 minutes	Red colour absent	Absence of hexose sugar

3] Test for protein.

TEST	Observation	INFERENCE
1] biuret test. Mixing E-mail of test solution and add of 4% NaOH and also 1% CuSO_4 solution	Violet colour appear	Presence of protein s
2] millin test Addition of 3 ml of millins solution in a test solution	Show red colour	Presence of protein

4]Test of alkalioids

TEST	OBSERVATION	INFERENCE
1] Dragendorff test. Add few drops of dragendorff reagent in test solution	Orange or brown ppt is formed	Presence of alkaloids
2] Mayers test. Add 2-3ml of test solution along with mayers reagent	It give ppt	Presence of alkaloids
3] Hager's reagent. add Hager's reagents with test solution	Give yellow ppt	Presence of alkaloids..

- **PLANT LEAVES MATERIAL**

The *Dolichandrone falcata* leaves contain n-hexadecenoic acid which shows anti-inflammatory properties. 24% of n hexadecenoic acid present in leaves and 9.24% in methanol and chloroform extract. The leaves contain vitamin E and n hexadecenoic acid compounds which shows anti-inflammatory properties. Vitamin E present in chloroform extract and dichloromethane extract with 52.57% conc. And 72.87% and it has derivative B-tocopherol with 11.89% conc. (14) (15)

Leaves has antibacterial properties shows long chain unsaturated fatty acids which has potency to kill bacteria and microbes.

In current investment we found the octadecanoic acid i. e stearic acid which reduce microbes. Octadecanoic acid with 3.08% conc. contain in methanol extract. Phytol which is found in methanol extract used in manufacturing of synthetic forms of vitamin E as a precursor. This compound may be used in natural biosynthesis of vitamin E in plant and phytol is used as a precursor in this synthesis.

Analysis of *Dolichandrone Falcata*. Proves that it has potential as alternative medicinal plant in pharmaceutical and drug formulation. Traditionally, the juice of *Dolichandrone Falcata*. Leaves used in treatment of diabetes. (16)

- **MEDICINAL USES (17) (18)**

1. The plant has many health benefits like anti-inflammatory, antioxidant, antiestrogenic, antiallergic, anxiolytic, anticonvulsant, antiparasitic.
2. The Plant is also works to curing anemia, anthelmintic, antiviral, bloody diarrhea, analgesic, antifungal agent.
3. It can be used to treat snake venom and to treatment of liver disorder.

- **PREPARATION OF EXTRACT**

1] Methanolic extraction (DFFM):- This extract was prepared by the continuously extracting 900g of the dried fruit powder with the methanol (3L X 4) using a soxhlet apparatus . The material extract was being filtered and distilled on water bath, and then concentrated under the vacuum with a Rota vapor, yielding agreenish-brown powder weight 10%(90g) powder weight.

2]Ethyl acetate extract (DFFEA):- 10 grams of the Methanolic extract was dissolve in 500ml H₂O and successively fractionated with n-hexane (800ml × 4),ethyl acetate (500ml×4), chloroform (600ml×4)and n-butanol(500ml×4). This process broadly froactions of n- hexane(0.5g), ethyl acetate(2g), chloroform (3.5g), and n-butanol(1.2). This ethyl acetate extract (DFFEA) was use for the pramacological screening.

- **DRYING AND PULVERIZING OF PLANT LEAVES MATERIALS :**

The leaves of dolichandrone falcate are shade dried for 2 to 3 weeks and grind in fine powder. The powder pass through sieve no. by 2mm mesh to obtain finer particles.

- **EXTRACTION : (19)**

1. Take 100gm of powder sample then macerated in 100ml petroleum ether and mix well to remove fatty acids, lipids and oil.
2. The remaining insoluble was dried and forward to Soxhlet extraction for 72hrs an using 1000ml of ethanol.
3. Next 72hrs of post incubation,the Dolichandrane falcate leaves extract was concentrated in rota evapourator under vaccum condition.
4. And keep in refrigerator at 2°C to 4°C and further proceed for study.

- **THIN LAYER CHROMATOGRAPHY : (20)**

- A. (TLC) thin layer chromatography has carried out by following given methods.
- B. Several solvent system were performed and tested.
- C. The ratio of Chloroform: Ethyl Acetate: Methanol (6:2:2) determine as suitable solvent system.
- D. The spots were detects under UV light at 254 nm.

- **CONCLUSION**

Dolichandrone falcata Seem. demonstrates a wide range of pharmacological activities, including anti-allergic, anti-inflammatory, anti-oxidant, anti-estrogenic, anxiolytic, anticonvulsant, and anti-parasitic properties. It is also effective in treating conditions such as anemia, bloody diarrhea, menorrhagia, leucorrhea, and various infections. The plant's phytochemical constituents show strong potential for use in medicinal applications and hold promise in the global market. Additionally, studies suggest its effectiveness as a potential anti-cancer agent, particularly in treating mammary carcinoma, making it a valuable tool for future therapeutic use.

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