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Chemical Constituents and Pharmacological Effects of Dolichandrone Species: A Review

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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Review Article

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ABSTRACT

Previously conducted study confirmed that Dolichandrone species showed antimicrobial, anti-oxidant, and antinociceptive properties, as well as anti-cancer, thrush therapy, and fish poisoning effects. This review focuses on the chemical constituents and pharmacological effects of the Dolichandrone genus.

Keywords: Chemical constituents; dolichandrone species; pharmacological effects.

1. INTRODUCTION

Dolichandrone species are traditionally used medicinal herbs that are classified under Bignioniaceae Family. This plant's constituents can be used to cure a variety of ailments. Trumpet tree is the common name for these plants. Using methanol, it can be extracted.

These plants are found in the Asia-Pacific region, namely in Asia, India, Sri Lanka, Malaysia, and

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Singapore. Plant parts of the Dolichandrone genus are used as an anti-tumor, anti-septic, anti-oxidant, and anti-bacterial agent, as well as in the treatment of thrush [1,2].

2. TAXONOMIC CLASSIFICATION

Kingdom : Plantae
Order : Lamiales
Class : Magnoliopsida
Family : Bignoniaceae - bignonias
Genus : Dolichandrone
Species : Dolichandrone alba (Sim) - Sprague
Dolichandrone alternifolia (R. Br Seem)
Dolichandrone arcuata (Wight) C. Bclarke
Dolichandrone Columnaris Samtisuk
Dolichandrone Fakata (wall. ex DC) Seem
Dolichandrone filiformis (DC) fenzl ex.F.muell
Dolichandrone Heterophylla (R.Br) F.Muell
Dolichandrone Occidentalis Jackes
Dolichandrone Spathacea (L.F) Seem

3. COMMON NAMES

Tamil - Padhiri
English - Mangrove trumpet tree
Malayalam - Attulottappala
Hindi - Medhshingi
Kannada - Udure Godmurki
Sanskrit - Mesasinghi

4. DESCRIPTION

The Dolichoderine tree is a short deciduous tree belonging to the Bignoniaceae family. The tree grows to a maximum height of 15-20 feet. Compound leaves are 2-6 inches long and have 3-6 obovate or oval-shaped leaflets. Flowers are fragrant and white. Flowers bloom between April and May.

Dolichandrone is another name for mangrove trumpet tree. It is a common tree that grows wild along river banks and mangroves across Asia and the Pacific.

5. CHEMICAL CONSTITUENTS

Dolichandrone falcate shows the presence of alkaloids in methanol and acetone extracts. Saponin was obtained using aqueous, alcohol, and ethyl acetate. Terpenoids are constituents of both aqueous and alcohol extracts. Tannins found in aqueous, methanol, alcohol, and ethyl acetate extracts. Cardiac glycosides isolated from extracts of methanol, alcohol, acetone, and ethyl acetate [3].

Flavonoids are found in aqueous, methanol, and alcoholic extracts. Dolichandroside – A was isolated from the activity ethyl acetate soluble extract of Dolichandrone falcate's heart wood, along with seven previously identified compounds: alpha-lapachone, lapachol, aloesaponarin 11, 8-hydroxydehydroiso-alpha-lapachone, beta-sitosterol, 3, 8-dihydroxydehydroiso-alpha-lapachone, and verbascoside [4].

Hellerone, protocatechuic acid, rengyolone, cleroindicin B, ixoside, and isomaltose were identified as six chemical components in Dolichandrone serrulata flowers [5]

Iridoids from *Dolichandrone spathacea* are anti-diabetic by inhibiting -x glucosidase (PDB-3W 37) and oligo-1,6-glucosidase (PDB-3W 37). (PDB-3AJI). Five catalpol iridoids (1,2,10,13,14) were isolated from the mangrove plant D. Spathacea and their derivatives (3,4,5,6,7,8,9,11,12,15) were synthesized by reduction, acetylation, O-alkylation, acetonisation, or hydrolysis of naturally isolated chemicals [6].

Octacosanol, dehydro-alphaloapachone, lapachol, and beta sitosterol were identified in *Dolichandrone crispa*. *D.Crispa* stem heartwood contains gamma sitosterol, dehydrotectol, tectol, and paulownin; the stem bark contains gamma sitosterol, dehydrotectol, tectol, and paulownin [7].

5.1 Antioxidant Activity

The anti-oxidant and free radical scavenging properties of a methanolic extract of *Dolichandrone atrovirens* leaf and bark were determined using a variety of in vitro antioxidant test methods [8] When the DPPH Scavenging test and reducing Powder technique were used to evaluate the aqueous extract of *D.falcata*, it seemed to exhibit substantial antioxidant activity. Chrysin, a compound present in plants, has been demonstrated in laboratory animals to be anti-oxidant [8].

5.2 Anxiolytic Effect

Anxiolytic effects were investigated in animals using the elevate pulse maze and marble burying test. *Dolichandrone falcate* stem-bark extract proved to have significant anxiolytic properties [9].

5.3 Antimicrobial Activity

The antimicrobial activity of *D*. *spathacea* extracts in several solvents including pet ether, ethyl acetate, chloroform, and ethanol was determined using six microorganisms including Bacillus cereus, *Staphylococcus aureus*, and *Pseudomonas aeruginosa* Antimicrobial investigations were conducted on extracts from *Dolichandrone falcate* leaves, fruit, and bark against Pseudomonas aeruginosa, Bacillus subtilis, Candida albicans, vibrio cholera, and salmonella typhi [10].

5.4 Anti-diabetic Effect

D. *atrovirens* leaf and bark extracts have the ability to reduce blood glucose levels in diabetic patients. It possesses the capacity to avert diabetic complications [11].

D. *Falcata* extract's anti-diabetic activity was studied in rats at dosages of 200 mg/kg, 400 mg/kg, and 600 mg/kg. The anti-diabetic activity of glibenclamide 10 mg/kg body weight was determined using this as a reference. The aqueous extract effectively decreased blood glucose labels in diabetic rats. Anti-diabetic action was determined to be significant and dosage dependent [10-12].

6. CONCLUSION

The review discussed the chemical constituents, pharmacological activities, and therapeutic significance of Dolichandrone species as a potentially beneficial herbal remedy due to its effectiveness and safety.

CONSENT AND ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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