

Phytochemical and Pharmacological activities of *dolichandrone falcata* - A Review

¹Roopa Kulkarni, ²Paramjyothi Swamy

¹Research Scholar, ²Professor in Biochemistry
Department of PG Studies and Research in Biochemistry,
Gulbarga University Kalaburgi.

Abstract: The medicinal ingredients from photochemical extracts of bark, leaves Seem leaf and fruits of *Dolichondroma falcata* is presented as a review. It is found that, these plant extracts are used as anti allergic, anti inflammatory, antioxidant, anti estrogenic, anxiolytic, anticonvulsant, anti parasitic treatments. This plant is also used in curing anemia, bloody diarrhea, anthelmintic, analgesic, antiviral, and antifungal agents in many cases. The bark extract of this plant is found beneficial in the treatment of menorrhagia and leucorrhoea. The leaves of this plant are used as antioxidant, antiestrogenic and anti diabetic and other diseases.

Keywords: *Dolichandrone falcata*, bark, leaves, fruit, phytochemical

I. INTRODUCTION

In recent years, the *Dolichandrone falcata* is becoming very vital plant in medical and pharmaceutical industry. *Dolichandrone falcata* is a small deciduous tree in the family Bignoniaceae. It is endemic to India. Tree attains a height of 15–20 feet. Leaves are compound 2-6 inches long with 3-6 obovate or oval shaped leaflets. Flowers are white and fragrant. The flowering of this occurs in April–May. Despite of these applications this plant is yet to be worked out for its chemical composition. The plant has numerous medicinal uses like antiallergic, anti-inflammatory, antioxidant, antiestrogenic, anxiolytic, anticonvulsant, and anti parasitic [1,2]. This plant is also used in curing anemia, bloody diarrhea, and also as anthelmintic, analgesic, antiviral, and antifungal agents [2,3]. The plant is used to prepare snake venom and also used in the treatment of liver disorder [2,3]. The bark paste of *Dolichandrone falcata* is applied in case of fractures [4]. The bark juice is used for menorrhagia and leucorrhoea [4]. The leaves of this plant are used as antioxidant, antiestrogenic and anti diabetic [4,5].

II. APPLICATIONS OF DOLICHANDRONE FALCATA AS MEDICINAL HERB USES OF LEAVES:

The leaves are shown to have the anti-inflammatory effect [3] due to the presence of n-hexadecenoic acid as this compound is known to have anti-inflammatory properties [4]. n-hexadecenoic acid is found in 24% and 9.24% in methanol and chloroform extract respectively. This property is also due to the presence of natural antioxidant vitamin E and its derivative β -tocopherol in leaves. Vitamin E found in chloroform extract with 52.57% concentration and in dichloromethane extract with 72.87% and its derivative tocopherol with 11.89% concentration.

The antibacterial activity of long chain unsaturated fatty acids is well known. Fatty acids play the key role in antimicrobial food additives also [5]. In present investigation we found the octa decanoic acid i.e., stearic acid, as responsible for antimicrobial activity of plant leaves. Octa decanoic acid found in methanol with 3.08% concentration. Phytol which is found in methanol extract used as a precursor for the manufacture of synthetic forms of vitamin E [5], this compound may be used as precursor in natural biosynthesis of vitamin E in this plant. The analysis of *Dolichandrone falcata* definitely proves its potential as alternative medicinal plant in pharmaceuticals and drug formulations.

Traditionally, the juice of leaves of *Dolichandrone falcata* is used for treatment of diabetes. The literature survey revealed that the herb is not yet explored for its anti diabetic activity, so the study was carried out to assess the anti diabetic activity of aqueous extract of *Dolichandrone falcata* leaves in rats. Alloxan induced diabetes resulting into increase in the blood glucose level, due to the selective necrosis of β -cells. The aqueous extract showed significant reduction in blood glucose level in diabetic rats. The anti diabetic activity was found to be significant and dose dependant.



Fig. 1 Photograph of leaves of Dolichandrone falcata

USES OF FRUITS:

The present study demonstrated that DFFM and DFFEFA possessed various potential pharmacological properties, namely anti-inflammatory and antinociceptive activities. Phytochemical screening revealed the presence of compounds such as flavonoids, tannins, glycosides, and steroids, which, it has been suggested, act synergistically to produce the observed activities. Thus, this study supports the folklore use of Dolichandrone falcata fruits for the treatment of various ailments, and the plant's potential pharmacological activities merit further investigations. The Fig.2 Shows the typical figure of Dolichandrone falcata fruit.



Fig.2 Photograph of fruit Dolichondrone falcata

Phyto chemical activity of plants:

Today we are witnessing a rapid growth of herbal drug industry and this growth story is accompanied by search of new herbal drugs. Standardized herbal extracts and Phyto-chemicals are in huge demand for applied research as well as for commercial use. The identification of biologically active compounds is an essential requirement for quality control and dose determination of plant-based drugs.

An examination performed to explore phytochemical activity of plant *Dolichandroma falcata* shows the presence of Alkaloids, tannins, saponins, terpenoids, flavonoids, Phenols, in bark and fruits. But there is an absence of terpenoids and saponins in leaves. (Sulekha Joshi at 2016)

Pharmacological Actions:

Anxiolytic: Anxiolytic effects were studied by elevate pulse maze test and marble burying test in animals. The DFBM and DFBEA crude dried extracts were prepared in doses of 100, 200, and 400 mg/kg, respectively, and the DFB compound was prepared in doses of 50, 100, and 200 mg/kg and administered orally to mice for anxiolytic activity evaluation. The stem-bark extract appeared to have substantial anxiolytic effects, while the DFBA extract had extremely significant activities [6].

Antioxidant: The aqueous extract of *Dolichandrone falcata* Seem to possess significant antioxidant activity when investigated by using the DPPH scavenging test and reducing powder method. Chrysin found in plant have shown to have antioxidant in laboratory animals [7].

Antimicrobial: *Pseudomonas aeruginosa*, *Bacillus subtilis*, *Candida albicans*, *Vibrio cholerae*, and *Salmonella typhi* were tested in an antimicrobial assay using *Dolichandrone falcata* Seem leaf, fruit, and bark extracts. The fruit extract is active against *Vibrio cholerae*, *Candida albicans*, and *Pseudomonas aeruginosa*, but not against *Salmonella typhi* and *Bacillus Albicans*. According to the findings. *Salmonella typhi*, *Vibrio cholera*, *Candida albicans*, and *Pseudomonas aeruginosa* were all killed by the bark extract, but *Bacillus subtilis* was not. Only *Salmonella typhi* and *Candida albicans* are susceptible to the leaf extracts. Except for *Bacillus subtilis*, the fruit and bark extract demonstrate a strong zone of inhibition against all test species [8].

Anti-inflammatory:

Carrageenan-induced paw animal models were used to test the anti-inflammatory effects of methanol and ethyl acetate extracts of *Dolichandrone falcata* Seem fruits. Both extracts were used to make formulations that were tested in anti-inflammatory assays at doses of 100, 200, and 400 mg/kg. The findings show that the extracts have a substantial anti-inflammatory effect [9].

Antinociceptive: Methanol and ethyl acetate extracts of *Dolichandrone falcata* have antinociceptive efficacy. Animal models tend to bear fruit. The crude extract was used to make formulations that were tested in antinociceptive assays at doses of 100, 200, and 400 mg/kg. The findings show that the extracts have potent antinociceptive properties that are dose-dependent. [10].

Anti-diabetic: The anti-diabetic efficacy of *Dolichandrone falcata* Seem extracts were investigated pharmacologically by measuring blood glucose levels in rats. The anti-diabetic efficacy of the extract was investigated in rats using low doses of 200 mg/kg, medium doses of 400 mg/kg, and high doses of 600 mg/kg. Glibenclamide 10 mg/kg body weight was used as a standard guide for anti-diabetic activity against alloxan-induced diabetes. In diabetic rats, the aqueous extract significantly reduced blood glucose levels. It was discovered that the anti-diabetic activity was substantial and dose dependent [13].

Antimycobacterial

The antibacterial efficacy of *Dolichandrone falcata* aqueous and alcoholic extracts the MDR isolates DKU-156 and JAL-1236 of *Mycobacterium tuberculosis*, as well as the reference susceptible strain *Mycobacterium tuberculosis* H37Rv and the fast-growing mycobacterial pathogen *M. fortuitum*, were tested against Seem stem bark and leaves. The antimicrobial assays were performed using Lowenstein Jensen medium and Middlebrook 7H9 broth in the BACT/ALERT 3D process. The results of this study clearly showed that the aqueous extract of stem bark was effective as compared to aqueous and leaf extracts, as well as alcoholic stem bark and leaf extracts [14].

Anti-fertility: The present study was undertaken to analyze the antifertility and estrous cycle effect of *Dolichandrone falcata* Seem leaves. The alcoholic and aqueous leaf extracts had a high abortifacient effect at doses of 200 mg/kg and 400 mg/kg body weight, respectively. The leaf extract of *Dolichandrone falcata* Seem was found to significantly prolong the estrous cycle, especially the diestrous period [15].

Hepato-protective: The hepatoprotective function of an aqueous extract of *Dolichandrone falcata* Seem's stem-bark against a Carbon Tetra Chloride-intoxicated hepatitis mode was studied, At doses of 200 mg/kg and 400 mg/kg of aqueous extract, CCL4 caused a P=0.01 increase in serum SGOT, SGPT activity, and bilirubin level, indicating hepatotoxicity to be able to afford aqueous extract of *Dolichandrone falcata* stem-bark Seem [16]. Figure.3 shows the flower of *Dolichandrone falcata*.



Fig 3, Photograph of flower of *Dolichandroma falcata*

III. CONCLUSION:

From this detailed study it can be concluded that, the *Dolichandrone falcata* phytochemical extracts from leaves stem leaf and fruits are used as anti allergic, anti inflammatory, anti oxidant, anti estrogenic, anxiolytic, anticonvulsant, anti parasitic treatments. This plant is also used in curing anemia, bloody diarrhea, anthelmintic, analgesic, antiviral, and antifungal agents in many cases. The juice of this plant is found beneficial in the treatment of menorrhagia and leucorrhoea [6]. Hence this plant is found as good tool for curing various diseases and ailments in medicinal plants category.

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AUTHORS BIODATA



Mrs Roopa Kulkarni received her M.Sc and M.Phil degrees in the year 2005 and 2008 respectively. Presently working as Assistant Professor in Government College (Autonomous) Kalaburgi. She is active researcher in the field of Biochemistry.



Professor Paramjyothi Swamy received her M.Sc and Ph.D degrees in the year 1988 and 1994 respectively. Presently working as Professor in the department of PG Studies and Research in Biochemistry Gulbarga University Kalaburgi. She has published 39 papers in various National and International Journals. She is active researcher in the field of Nutrition and Nutraceuticals

