Phytochemical Study on Dolichandrone Falcata

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Abstract

Finding out the qualitative and quantitative analysis of the plant species Dolichandrone falcatu is the goal of the current investigation. Using updated techniques, a qualitative phytochemical examination was performed to determine whether the extract samples included alkaloids, flavonoids, sugars, phenolic group, saponin, amino acids, and essential oils. The current endeavor is to assess the total flavonoid and total phenol content of various plant components, including fruits, leaves, and bark. Rutin's specific flavonoid content was estimated by the use of thin-layer chromatography. Dolicahndrone falcata, a plant species under estimation, is a member of the Bignoniaceae family.

Key words: Dolichandrone falcata, Phytochemical, Total flavonoid, Total phenol, Rutin.

Introduction:

In the local dialect of the Toranmal region of Maharashtra, India, the deciduous tree Dolichandrone falcata Seem., Bignoniaceae, is referred to as Medshingi. Bark juice is used to treat menorragia and leucorrhoea, and its paste is administered to broken or dislocated bones as a fish poison. The plant's leaves are the source of chrysin-7-rutinoside. The current work used animal models to examine the anxiolytic effects of isolated component DFB (V+VI) of D. falcata stem-bark, ethyl acetate extract (DFBEA), and methanol extract (DFBM). The elevated plus maze (EPM) and marble burying test (MBT) experiment were used to investigate the anxiolytic effect. Chrysin-7-rutinoside is produced by the leaves of the D. falcata plant (Subramanian et al., 1972). Plants contain chysin, a flavone that is widely dispersed and has been shown to have a variety of biological actions.including anti-oxidant, anti-allergic. Anti-inflammatory, anti-cancer, antiestrogenic and anxiolytic activities (Shin et al., 1999). Despite those traditional claims and successful isolation of the bioactive compounds, no indepth scientific study has been performed on D. falcata stem- bark pharmacological properties.The study of the chemical makeup of therapeutic plants or phytopharmaceuticals is known as phytochemistry. The market for herbal drugs is expanding quickly right now, and this expansion is being matched by a hunt for novel herbal medications. Standardized phytochemicals and plant extracts are highly sought after for both commercial and applied research applications. For plant-based medication quality control and dosage calculation, the identification of physiologically active chemicals is a crucial prerequisite (Ganesan et al., 2008).Finding novel physiologically active components in higher plants can be done in a variety of ways. Systematic screening is one such method that could lead to the identification of a novel, useful biocompound. Well-known plant species utilized in traditional medicine have been the subject of screening procedures for physiologically active medicinal chemicals. According to Suffredini et al. (2004), tests for bioactive compounds have been conducted on about 20% of the world's plant species. According to Aparna et al. (2009), Dolichandroside A is one of the chemical compounds in plants that exhibits antioxidant action.The data was gathered through ethnobotanical investigations conducted in Madhya Pradesh and Bihar's forests, and the results showed that it is also utilized to cure liver disorders (Singh et al., 2007). According to Yeine et al. (2005), Dolichandrone falcata is utilized in the Ayurvedic medical system. Traditional medicine makes use of the entire plant. Still, the bark is said to be the most potent component.

Chemical elements that give plants their therapeutic properties. Long-term neglect has been shown to the documenting of uncommon medicinal plants, and research into the phytochemical makeup of beneficial plants is falling behind. Many research on the phytochemistry of medicinal plants focus on a small number of "fashionable species that have been heavily marketed globally." Very little phytochemical research has been done on a wide variety of therapeutic plants.

Fig :.Geographical Presentation Of Plant.

1. **Need of study:**
Family The Bignoniaceae family includes the species Dolichandrone falcata, which is indigenous to the Indian subcontinent. This species is known for its possible pharmacological qualities and has historically been used in a variety of regional medical practices. Despite its historical applications, this plant has not received much thorough scientific investigation. In order to close this gap, a thorough investigation of D. falcata is necessary.

Medicinal imporatnce:
Medicinal significance D. falcata has historically been used to treat conditions like arthritis, inflammation, and gastrointestinal issues, which suggests that it may contain bioactive chemicals with substantial possibility for therapy. According to preliminary research, the plant has analgesic, antibacterial, and anti-inflammatory qualities.

Conservation and sustainable use:
In its natural habitats, Dolichandrone falcata is a significant species that adds to the biodiversity of the area. Overexploitation for medical purposes, however, poses a threat to the sustainability of the resource.

Sl.No	Author	Title	Remark
1	Aparna, P., Tiwari, A. K., Srinivas, P. V., Ali, A. Z., Anuradha, V. and Rao	Dolichandroside A, a new glucosidase inhibitor and DPPH free-radical Scavenger from Dolichandrone falcata seem.	Hair Gel Dolicandrone Falcata
2	Ganesan, S., Roopam, Y. and Bhatt	Qualitative nature of some traditional crude drugs available in commercial markets of Mumbai.	Therapeutic uses Of Anti inflammatory
3	Yelne, M.B.. Sharma, P.C. and Dennis, T.J.	Database On medicinal plants. Used in Ayurveda	Dolicandrone Falcata
4	Suffredini, J.B., Sader H.S.. Goncalves, A.G., Reis. A.O., Gales, A.C.. Varella, A.D. and Younes, R.N	Screening of antimicrobial extracts from plants native to the Brazilian Amazon Rain forest and atlantic forest.	Uses of Dolicandrone falcata
5	P., Tiwari, A. K., Srinivas, P. V., Ali, A. Z., Anuradha, V. and Rao, J. M	Dolichandroside A. a new-glucosidase inhibitor and DPPH free-radical Scavenger from	Dolicandrone falcata
6	Joshi, K.C. and Singh	Constituents analysed from root of Tecomella undulata. Plant medica	Dolicandrone falcata
7	Gupta, M.K. and Sharma, P.K	Ext Book of Pharmacognosy. Volume III, Pragati Prakashan,	Dolicandrone falcata

Economic potential:

Given the rising demand for natural products and traditional remedies worldwide, D. falcata presents a promising opportunity for economic growth, especially in rural areas where the plant is found. New business prospects can be generated by comprehending the characteristics of plants and creating standardized extracts or products. Research can help with the creation of cultivation procedures, giving the community a another source of revenue.

Objective of study:

Main objective

This study aims to investigate the pharmacological, ecological, and economic aspects of Dolichandrone falcata in order to substantiate its traditional applications, guarantee its preservation, and augment its prospects for sustainable economic growth.

Plan of work

Literature review and preliminary studies

Review of the literature: Do a thorough analysis of the body of knowledge on Dolichandrone falcata, taking into account its historical applications, phytochemistry, and pharmacological research. Sample collection: Determine the species of D. falcata and gather a sample. Initial phytochemical screening: To determine the main groups of chemicals found in various plant parts, do an initial phytochemical screening.

Future prospectives:

Isolation and Identification of New Compounds

Isolating and characterizing novel phytochemicals from D. falcata is an ongoing task. Sophisticated methods such asmass spectrometry (MS) and high-performance liquid chromatography (HPLC).& NMR spectroscopy (nuclear magnetic resonance) can be used to find new compound

Pharmacological Activities

There is more room for investigation into D. falcata's pharmacological characteristics. Its possible anti-inflammatory, antibacterial, antioxidant, and anticancer properties have been demonstrated by studies. To confirm these results and comprehend the underlying mechanisms, further thorough research is required, including in vivo and clinical trials. Participant .

Therapeutic Applications

Due of its varied pharmacological characteristics. D. falcata may be investigated for use as a treatment in a number of illnesses. Creating formulations for its application in the management of infections, inflammatory conditions, and maybe as a supplement to cancer treatment is part of this.

Biotechnological Advances

Biotechnological techniques are being used to improve the manufacturing of beneficial phytochemicals in D. falcata, either by tissue culture or One possible avenue for future research is genetic alteration. By doing so, a stable and An expandable source of bioactive substances

Isolation and Identification of New Compounds

The necessity to separate and identify novel phytochemicals from D. falcata is constant. Innovative methods such as nuclear magnetic resonance (NMR) spectroscopy, mass spectrometry (MS), and high-performance liquid chromatography (HPLC) can be utilized to identify new compounds.

Materials And Methods.

Raw Material Characterization

Methods for gathering and extracting plants The plant pieces of Dolicahandrone falcata utilized in this study were collected in the early summer from their native habitats. The plant was certified by the Herbarium of Rajasthan University in Jaipur after being identified from various floras. With the use of a mortar and stone pestle, all samples were ground up. After that, airtight polythene coverings were used to keep the finely powdered samples. Next, a conical flask containing 0.1g of each powder sample was filled with 20ml of distilled water. In order to ensure proper extraction, the setup was let to stand for roughly thirty minutes. After that, it was filtered into several conical flasks.

Phytochemical analysis

Using conventional protocols (Kumar et al., 2007; Gupta and Sharma, 2005) for various phyto-chemicals, the active components of crude medicines were qualitatively screened. It is required to mention that a Spectrophotometer System was used to assess total phenol and total flavonoid: UV-5704M

Estimation of Total Flavonoids:

Plant components are a rich source of flavonoid chemicals. These are substances that are polyphenolic. They enhance the taste and color of plants. Among the many jobs that flavonoids perform in the plant include coloring the flower and other sections of the plant yellow, red, and blue.

Experimental Work

Thin layer chromatography (TLC)

Soaking in methanol produced extracts of several plant components. For 12 hours, each 100g of dried plant material was soaked in 250ml of methanol. Whatmen filter paper was used to filter each extract three times. Phytochemical screening was carried out using TLC on the filtrate. The stationary phase for TLC profiling was percolated silica gel nested on 250 µm thick aluminum plates (E. Merk). The mobile phase consisted of five distinct solvent system types. A reference standard Rutin solvent was bought. Rutin (10 mg) was dissolved in 100 ml of methanol to create the standard solution.

Triplets of a 10-microliter plant extract from the test solution, obtained using capillary tubes, were put to percolated silica gel TLC plates. Rutin's existence was verified by contrasting the obtained Rf values and color band with those of the reference standard.

Result And Discussion

TLC, or thin-layer chromatography Soaking in methanol produced extracts of several plant components. For 12 hours, each 100g of dried plant material was soaked in 250ml of methanol. Whatmen filter paper was used to filter each extract three times. TLC was performed to screen for phytochemicals once more using the filtrate.TLC profiling employed percolated silica gel as the stationary phase, nested on 250 µm thick aluminum plates (E. Merk). The mobile phase consisted of five distinct solvent system types.

Standard of reference Rutin's solvent was bought. In 100 milliliters of methanol, 10 milligrams of rutin were dissolved to create the standard solution. Triplets of 10 µl plant extracts from the test solution were applied to percolated silica gel TLC plates using capillary tubes. By contrasting the resulting Rf values and color band with those of the reference standard, the presence of rutin was verified.By using phyto-chemical analysis, the chemical substances that are biologically active can be identified. Dolichandrone falcata, a medicinal plant of the Bignoniaceae family, has undergone a qualitative and quantitative investigation of its phytochemical contents. A qualitative phytochemical assessment was conducted to determine whether the extracts contained alkaloids, flavones, sugar, phenolic group, and saponin. Samples using adapted techniques. In all three of the plant sections under study, alkaloids, phenol, tanins, and flavonoids were found. Leaves did not contain terpanoids or saponins.Alkaloids, terpenoids, flavonoids, glycosides, saponins, tannins, and other constituents of the basic medicine were what dictated its pharmacological action. Thirty plant species, representing 19 families, were gathered from the Shahrbabak area in the west of the province of Kerman. Mahadavi et al. (2006) screened the specimens to determine their contents, such as alkaloids. Both flavonoids and terpenoids. Processing plant-based herbal medications requires the identification of physiologically active compounds. In order to guarantee the authenticity and caliber of the preparation, identifying chemicals or biomarkers are extracted from the plant portion; these must be accountable for the medicinal action

CONCLUSION

In both developed and developing countries, breast cancer is a leading cause of death for women. Dolichandrone falcata's potential appears. The ability of leaf extract to prevent mammary cancer in experimental animals was examined. Morphological analysis and in vivo assessment outcomes. The potential of the Dolichandrone falcata Seem. Leaves ethanolic extract against cancer and its ability to function as a potential anti-cancer agent against breast cancer are demonstrated by hematological, biochemical, and tumor e

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