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PHARMACOGNOSTICAL STANDARDIZATION, ANTIMICROBIAL AND PHYTOCHEMICAL STUDIES OF *DENDROPHTHOE FALCATA* (L.F) ETTINGSH (*LORANTHACEAE*) GROWING ON THE HOST PLANT *AZADIRACHTA INDICA*. (*MEALIACEAE*).

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ABSTRACT

The Present Study is designed to study the Pharmacognostical, Preliminary phytochemical and Antimicrobial Studies of *Dendrophthoe Falcatas* (L.f) Ettingsh (Loranthaceae) on the host plant *Azadirachta indica* (mealiaceae) Pharmacognostical Studies involved the anatomical sections and powder analysis of leaf, Physicochemical Studies Such as extractive values ash values and fluorescent analysis were performed. The five solvent extract were studied the chloroform, Alcohol and water extract preliminary phytochemical studies revealed the presence of carbohydrates, Alkaloids and saponins. These finding will be useful towards establishing standards on Identification, purity, quality and classification of the plant which is gaining relevance in the plant drug Research. The five solvent extract of the leaves prepared by soxhlet method of hot extraction was subjected. It was concluded that the antimicrobial activity due to the presence of carbohydrates alkaloids and saponins which are rich in *Dentrophthoe falcata* which grows *Azadirahta* indica plant which is rich in carbohydrates, alkaloids and saponins.

KEYWORDS: *Dentrophthoe falcate, Azadirachta indica,* Physicochemicals, Fluorescent analysis.

INTRODUCTION

This plant Dentrophthoe falcata L. IS evergreen, shrubby partial parasitic plant Distributed in the tropical and subtropical regions of the world. The whole parasitic plant is used in indigenous system of medicine. Dentrophthoe falcata L. belonging to the family loranthaceae is an angiospermic hemiparasitic plant was most frequently observed on many host plants, comprises of 20 species and about7 species are found in india. Dentrophthoe falcata has been traditional medicinal plants. The leaves is loss of Hair, woundhealing, womens including Ayurvedic medicinal plants chemically the plant has been found to be rich in carbohydrates and saponins. In spite of the numerous medicinal uses attributed to this plants. The plant to determine the anatomical and other physicochemical standards required for quality control of the crude drug. Dentrophthoe falcata wound healing, antimicrobial and antioxidant potential (pattanayak et al., 2008). Plant microtehnique mc graw hill book (Johnson, 1940). pharmacognostical evaluation of Dentrophthoe falcata (Dashora et al 2010). preliminary phytochemical investigation of Dentrophthoe falcata Linn(Balaram et al. 1981). Antibiofilm activity of Dentrophthoe falcata against different bacterial pathogens plant (karthikeyan et al…2012). pharmacognostical, phytochemical and anticancer studies of Dentrophthoe falcata(kodithala etal..,2013). Dentrophthoe falcata parasitic plant(Joshi et al…,2013). Macroscopical and microscopic Examination quality control for medicinal plant(Anonymous 1998). Antimicrobial activity of Dentrophthoe falcata(patil et al…,2012). Extraction and isolation in phytochemical methods (Harbone 1988). Hence the present investigation includes in morphological and anatomical evaluation, determination of physicochemical, constant and the preliminary phytochemical screening of the different extracts of Dentrophthoe falcata.

MATERIALS AND METHODS

Plant material

The leaves of *Dentrophthoe falcata* were collected. from Tamil University campus Thanjavur. The plant was Identificated by Dr.N.Nagarajan Department of Ancient science, Tamil University Thanjavur. A voucher specimen has been deposited in the Department of Ancient science for future reference.

Pharmacognostical standardization

Microscopical study of the leaves

Dentrophthoe falcate plant specimen for the proposed study were taken to select healthy plants and normal organs. The required samples of leaves were cut and remped from the plant

and fixed in FAA (Formalin-5ml+acetic acid 70%, alcocol-90ml). After 24hrs of fixing the specimens were dehydrated with hydrochloral. The specimens were cast into paraffin blocks. The paraffin embedded specimens were sectional with the help of rotary microtome. The thickness of the section was 10-12 microtometer. The sections were stained with saffranin. For studying the stomatal morphology, venation pattern and trichome distribution, paradermal sections as well clearing of leaf with 5% NaoH (or) epidermal pealing by partial maceration powered materials of different parts were cleared with NaoH and mounted in glycerin medium after staining Different cell components were studied and measured results were showedin fig 1.

Physicochemical evaluation

Dried leaf powdered materials was used for the determination of ash values, extractive value, moisture content, stomatal number, stomatal index, palisade ratio, vein termidnation number and vein islet number (Table no 1) phytochemical, constituents such as carbohydrates, Alkaloids, Tannins and phenols, Flavonoids, gum and mucilage, Fixed oils and fats, saponins and phytochemicals. All the reagents used were of analytical grade.

Extraction procedure

The leaves of the plant were shade dried and graind to get a coarse powdered of 60-80 mesh sieves 120 gm of the powdered plant material was extracted successively using solvents of increasing polarity by soxhlet apparatus. The hot extracts were concentrated by distillation to yield solid residue.

Antimicrobial study

Antimicrobial activity

The Dentrophthoe falcata aqueious extracts required amount of muller Hinton plates [Himedia] is prepared as per manufacture instruction. The following pathogens were collected from veterinary hospitals and research characterized based on bergey,s manual of systematic bacterial classification. The pathogens identified as *Escherichia coli, staphylococcus aureus and psudomonous auruginosa* were used for the antibacterial activities A sterile cotton swab was dipped into the turbit culture suspension.

The dried surface of muller Hinton agar plate was inoculated by streaking all the pathogens. Added 2Ul of crude Dentrophthoe falcata leaves extract to the sterile disc and evaporate the solvent. After drying the discs were incubated at 35°c for 24 h to permit good disc diffusion

and the transfer to as incubated at 37°c for 2h for bacterial cultures. The antibacterial activity was recorded by measuring the width of the clear inhibition zone around the disc.

Taple -2 Physicochemical Values of *Dendrophthoe falcata* parasitic on *Azadirachta indica*

RESULT

Phytochemical studies

Qualitative phytochemical screening

The results of the preliminary phytochemical screening of various solvents [pet.ether, Benzene, chloroform, Alcohol and water extracts of Dentrophthoe falcata leaves samples was recorded and presented in the table -1. The results revealed that the presence of alkaloids, carbohydrates and saponins in the leaves samples. Extracts however, there are variations in the presence and absence of phytochemical compounds. Various solvents extracts of Dentrophthoe falcata leaves samples qualitative phytochemical screening hot extracts.

Preliminary phytochemical screening of Dentrophthoe falcata leaves samples collected from Azadirachta indica host tree.

Compound Tested	Reagent Useld	Pet. Ether	Benzene	Chloroform	Alcohol	water
carbohydrates	Fehlings	-	-	+	+	+
	Molishs	-	-	+	+	+
Alkaloids	Dragendraffs	-	-	-	+	-
	Wagners	-	-	+	+	+
	Hagners	-	-	+	+	+
	Mayers	-	-	+	+	+
Tannins and phenols	10% lead Acetate	-	-	-	+	+
Flavonoids	NaoH+HCL	-	-	-	-	+
Gum and mucilage	Alcohol precipitation	-	-	-	-	+
Fixed oil and fats	Spot test	+	-	-	-	-
saponins	Foamtest	-	-	-	+	+
phytosterol	LB Test	-	+	-	-	-

Presence +, Absence -

Table-2: Physicochemical values of *Dentrophthoe falcata* parasitic on *Azadirachta indica*.

SI. No	Parameters	Value %
1	Water Solublesh	5.96%
2	Acid insoluble ash	0.42%
3	Total ash	14.35%
4	Sulphated ash	18.37%s
5	Loss on drying	7.79%

Table – 3: Extractive Value of *Dentrophthoe falcata* parasitic on *Azadirachta indica.*

s.no	solvent	Extractive Value (%)
1	Pet. ether	9.00
2	benzene	7. 02
3	chloroform	12.07
4	Alcohol	10.01
5	water	34.00

Table – 4: Quantitative Microscopical values of *Dentrophthoe falcata* parasitic on *Azadirachta indica*.

SI. N0.	Parameter	Value
1.	Stomatal index Upper surface Lower surface	 25 30
2.	stomatal frequency Upper surface Lower surface	 28 36
3.	Vein islet number	14-16
4.	Vein termination number Palisade ratio	25-28 3

Table -5: Antimicrobial activity of Aqueous 50% leaves extracts of *Dentrophthoe falcata parasitic on Azadirachta indica.*

s.no	Organism\ samples	Zone of inhibition (in mm).
1.	Escherichia coli	-
2.	Staphylococcus aureus	10
3.	Pseudomonas auruginosa	-

Table-6: Fluorescent behavior of dried leaves powder of *Dentrophthoe falcata* parasitic on *Azadirachta indica*.

SI.No	Treatment of Chemicals	Visible light	Ultraviolet light (256 nm).
1	P +H_2SO4	Green	Green
2	p + NaoH	Green	Darkgreen
3	P + picric acid	Pale yellow	Yellow
4	P + $Fecl_3$	yellow	Yellow
5	P + NH_4OH	Pale yellow	Yellow
6	P + CH_3COOH	Pale green	Green
7	P + Iodine	Brown	Brown
8	P + HCL	Green	Dark green
9	P + HNO_3	Green	Green

Microscopical characteristics

The transeverse section of leaf of *Dentrophthoe falcata* shows an isobilateral nature. The section is broadly divided into lamina and midrib region(fig.1). The lamination of the leaf shows three distinct region viz. upper epidermis is single layered with more with more or less rectangular cells covered by a thick cuticle.

The mesophyll is differentiated Into palisade and spongy parenchyma. The palisade parenchyma is made up of two three layers of compactly arranged, radially elongated cells. The spongy parenchyma is multilayered and loosely arranged with intercellular spaces. Vascular strands are found in the upper layer of the spongy parenchyma sclereids are found to be isolated or in groups prismatic calcium oxalate crystals are also seen in this region lower epidermis is similar to that of upper epidermis.

The epidermal layers of the lamina are continuous in the midrib region strips of collenchyma appear below the upper and above the lower epidermis. This is followed by the cortical parenchyma which contains abundant tannins, sclereids similar to that of the spongy mesophyll are scattered either singly or in groups in the cortical parenchyma prominent collateral vascular bundles occupy the center portion of the midrib with xylem towards the dorsal surface associated with a patch of collonchyma and phloem towards the ventral surface preparation revealed presence of paracytic or rubiaceous type of stomata.

Physicochemical constants

Ash values of a drug give an idea of the earthy matter or the organic composition and other impureties presented along with the drug ash values [Table-2] of the powdered *dentrophthoe falcata* leaves revealed a high concentration of sulphated ash.

Leaf constants

The leaf constants viz. the vein islet number, vein termination number and stomatal index are presented in Table-3.

Antimicrobial activity

Antimicrobial activity of *Dentrophthoe falcata* leaves samples were reported in the tables 4. The results of antibacterial activity of *Dentrophthoe falcata* leaves samples were recorded in the table 4. The bacteria such as Escherichia coli, staphylococcus aureus, pseudomonas auruginosa, were used for the antibacterial activity of *Dentrophthoe falcata* was determined

by agar well disc diffusion method. The aqueous leaves extract of *Dentrophthoe falcata* showed high activity of *staphylococcus aureus* samples. There is no observable zone of inhibition in aqueous leaves extract of *Dentrophthoe falcata* Escherichia coli and pseudomonas auruginosa.

Fluorescent Behaviour of leaves powders

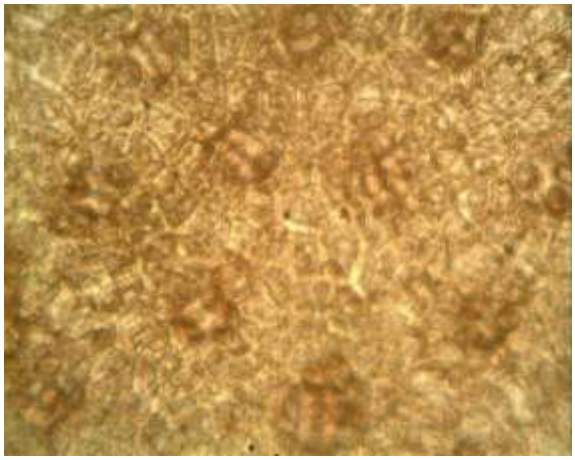
Fluorescent behaviour of leaves powders of *Dentrophthoe falcata* parasitic on *Azadirachta indica* showed distinct colour reactions in different chemicals visible light and ultraviolet light (uv) [Tables-5]. Hence leaves of *Dentrophthoe falcata* presence of phytochemical compounds.

DISCUSSION

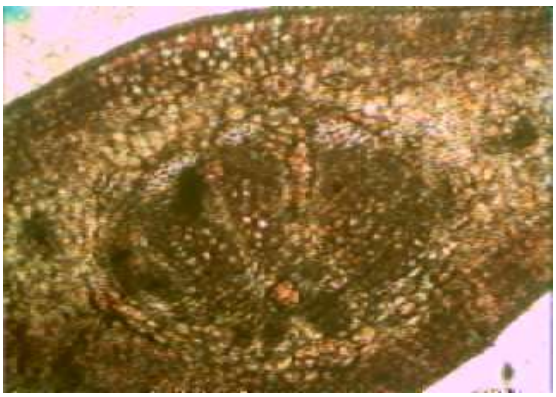
The *Dentrophthoe falcata* (L.f) Ettingsh family loranthaceae is a hemiparasitic plant which grows on different host plants.in the present study the *Azadirachta indica* [neem] is the host plant. Traditional uses of *Dentrophthoe falcata* cooling, Bitter, tonic, astringent the plant was selected based on the literature survey morphological studies determines the evergreen leaves, coriaceous, highly variable in size and shape , most often ovate-oblong 7.5 to 20cm long and 2to 10cm wide apex and base usually obtuse, margins often minutely white petiole 0 to 13 mm. microscopical evaluation performed transverse section of the leaf midrib lamina, petiole and the powder microscopy, leaf has smooth even abaxial and adaxial sides midrib is more prominent on abaxial side. Adaxial side is broadly semicircular or slightly convex midrib has thin epidermal layers of small rectangular cells-with thick cuticle. Ground tissue inner to the adaxial epidermis consists of small angular densely tannin cells. Since toluidine blue is a polychromatic stain and the staining results were remarkably good. Physicochemical studies determines the stomatal index (25-30). Stomatal frequency (28-30), vein islet number (14-16) vein termination number(25-28), palisade ratio (3).

The determination of ash values was carried out which gives an idea of the earthy matter or the inorganic composition and other impurities present along with the drug water soluble ash (5.96), Acid insoluble ash(0.42%), Total ash (14.35%), sulphated ash (18.37%), loss on drying (7.79) respectively. The aqueous extractive values were determined highest and was recorded to be 34.00(ww) and chloroform extract 12.07(%WW), Alcohol 10.01(%WW), pet ether 9.00(5%), benzene 7.02 (%ww) in table-2. Preliminary phytochemical screening revealed the presence of carbohydrates, alkaloids and saponins.

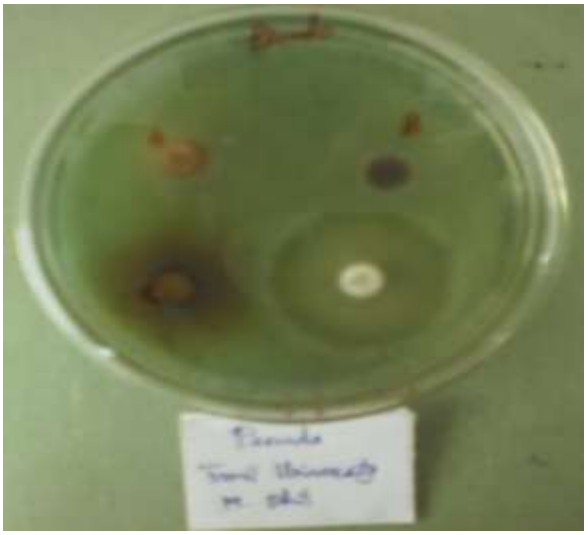
Fluorescent behaviors of leaves powders of *Dentrophthoe falcata* parasitic on *Azadirachta indica* showed distinct colour reactions in different chemicals visible light, ultraviolet light table-6. Hence leaves of *Dentrophthoe falcata* phytochemical compounds.



***Dendrophthoe falcata* parasitic on *Azadirachta indica* T.S. of Lower surface.**

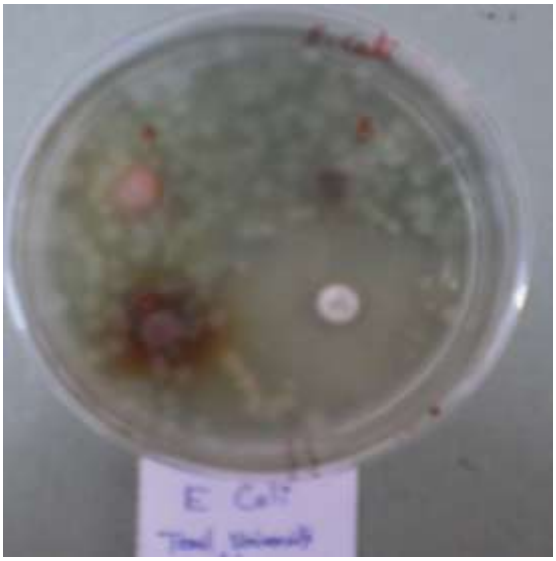


Dendrophthoe falcata* parasitic on *Azadirachta indica T.S. of leaf.



Sudomonas aeroginosa.

Staphylococcus aureus.



E. coli.

Dendrophthoe falcate* parasitic on *Azadirachta indica.

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