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EVALUATION OF ANTIHISTAMINIC POTENCY AND PHYTOCHEMICAL SCERRNINGOF FICUS GLOMERATA BARK

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ABSTRACT
The Antihistaminic potency of Ficus Glomerata was evaluated by clonidine and haloperidol induced catalepsy in mice. the plant material collected from Ahmednagar district in month of July, shade dried and powder prepared. The successive solvent extraction done by using soxhlet apparatus by petroleum ether and methanol as solvent. Plants that having curing properties are known as medicinal plants or herbs. Herbs have been used in treating human diseases for thousands of years by tribal communities and ancient civilizations. They may be used directly as such, or in other extracted forms for their natural chemical constituents they may also be used as constituents in different forms of medicine. Medicinal plants are not only a major source for the traditional medicine & herbal industry but also provide livelihood and health security to a large segment of Indian population. The methanolic extract of Ficus Glomerata bark shows significant Antihistaminic potency as compare to petroleum ether extract and standard drug chlorphenaramine malate in clonidine and haloperidol induced catalepsy.

KEYWORDS: Ficus Glomerata, chlorphenaramine.

INTRODUCTION

Ficus racemosa Linn

The genus Ficus constitutes an important group of trees with immense medicinal value. It is a sacred tree of Hindus and Buddhists. Among the varied number of species, the most important ones are the four trees that constitute the group "Nalpamaram", namely, F. racemosa, F.microcarpa, F.benghalensis and F. religiosa (Athi, Ithi, Peral and Arayal respectively).

Gular fig, Cluster fig or Country fig, which is considered sacred, has golden coloured exudates and black bark. This is native to Australia, South-East Asia and the Indian subcontinent. It is unusual in this plant that its figs grow on or close to the tree trunk. It is one of the herbs mentioned in all ancient scriptures of Ayurveda. It has various synonyms like yajnanga, yajniya, yajnayoga, yajnyasara etc. suggesting its use in ritual sacrifice. The plant grows all over India in many forests and hills. It is frequently found around the water streams and is also cultivated.

Scientific Classification

Kingdom: Plantae.
Division: Magnoliophyta.
Class: Magnoliopsida.
Order: Rosales.
Family: Moraceae.
Genus: Ficus.
Species: F. racemosa.
Synonyms: Ficus glomerata Roxb.
Common names: Udumbara, Gular fig, Cluster fig, Country fig, Cluster Fig Tree, Goolar Fig.

Leaves are ovate, ovate-lanceolate or elliptic, sub acute, entire and petiolate and are shed by December and replenished by January and April, when the tree becomes bare for a short period. It is seen dwelling in areas up to 1200 m altitude on hilltop. This requires well-drained, medium to heavy soils for its successful cultivation and comes up in all kinds of soils except in water logged and clay soil. The plant is propagated by using cuttings of stem and root suckers. Seeds can also be used for propagation. The flowers are pollinated by very small wasps. It has evergreen leaves, if it is close to a water source. Otherwise it sheds its leaves in January. Figs have been traditionally used by children to play. Thin sticks can be joined by inserting them in goolar figs to make interesting shapes.

In the traditional system of medicine, the plant is used for various health problems and diseases. Therefore, the aim of this paper is to present an overview of pharmacognostical, traditional, phtyochemical and pharmacological investigations carried out on this plant.

METHODOLOGY

The bark of "**Ficus Glomerata**" was collected in June 2015.The bark was authenticated from Dept.of Botany P.V.P College, Loni and specimen voucher deposited in department.The bark was shade dried and powder prepared from the bark.

Plant material

The fresh and healthy leaves of the plant Medicago sativa collected from Ahmednagar district, Loni, cleaned and dried at room temperature in shade, away from direct sunlight and ground into a coarse powder with the help of a suitable grinder. The powder was stored in an airtight container and kept in a cool, dark and dry place until analysis commenced.

Extraction

Hot continuous extraction-soxhletion

The use of commercially Soxhlet extractor is a convenient way to prepare crude plant extracts. This procedure is used mainly with pure solvent. In this method, the material to be extracted is placed in 'thimble' made of cellulose or cloth in a central compartment with a siphoning device and a side arm both connected to a lower compartment. The solvent is placed in the lower compartment and a reflex condenser is attached above the central sample compartment. The solvent in the lower compartment (RBF/FBF) is heated, boiling and vapor passes through the side arm up into reflex compartment. Here the vapor liquefies and drips into the thimble containing the material to be extracted. The warm solvent percolate through the material and the wall of the thimble and extracts gradually collects in the central compartments. Once height of extract reaches the top of the siphon, the entire liquid in the central compartments flows through this and back into the lower solvent container. The process is then repeated. In this method, the extract is collected in the lower vessel, gradually becoming more and more concentrated. The soxhlet process is useful for the exhaustive extraction of the plant material with a particular solvent. It is also useful were exhaustive sequential extraction with a series of solvent of increasing polarity is desired, e.g. Petroleum ether, ethanol. However, it is necessary to dry the plant material in between changes of solvent to prevent carry-over of trace of the previous solvent into the next one.

Phtyochemical Screening

Phtyochemical screening of the prepared extracts was conducted with various qualitative tests to identify the presence of chemical constituents. To perform the tests the following chemicals and reagents were used: Carbohydrates with Molisch's test, glycoside with water and sodium hydroxide solution, saponins with the capability of producing suds, steroids with chloroform and sulphuric acid, flavonoids with Mg and HCl, tannins with ferric chloride solution, gum with Molish's reagents and concentrated sulfuric acid. Alkaloids were tested with Mayer's reagent, Hager's reagent and Dragendroff's reagent. These were identified by characteristic color changes using standard procedures (Ghani, 2003).

Pharmacological study

Clonidine-induced catalepsy.[12]

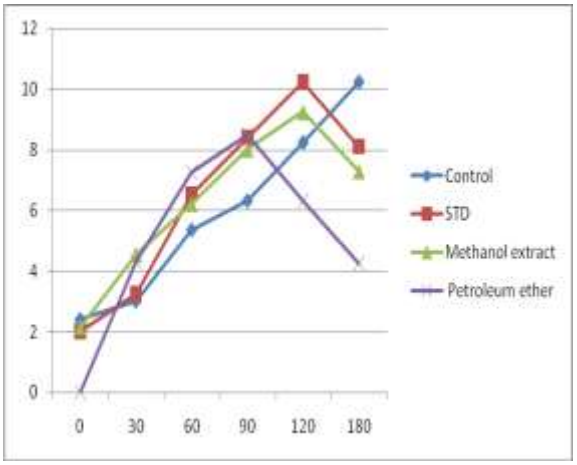
Catalepsy is a condition in which the animal maintains imposed posture for long time before regaining the normal posture. Catalepsy is a sign of extrapyramidal effect of drugs that inhibits dopaminergic transmission or increase/release histamine (inhibitory neurotransmitter) in brain. Clonidine α2- adrenoreceptors agonist induces dose dependent catalepsy in mice, which is inhibited by histamine H1 receptor antagonist but not by H2 receptorantagonist.

Procedure

Bar test was used to study the effect of test drug extracts on Clonidine induced catalepsy. Mice were divided into five groups, six animals in each group. Animals belonging to group I served as control and were administered the vehicle (5 ml/kg, oral). Animals belonging to groups II to IV received petroleum ether and methanol extracts of Ficus Glomerata (50 mg/kg, oral). Whereas animals belonging to group V received standard drug Chlorphenaramine Maleate (10 mg/kg, oral). All the groups received Clonidine (1 mg/kg, oral), 30 min. after the test drug administration and the duration of catalepsy was measured at 0, 30, 60, 90, 120 and 180 min. The forepaws of mice were placed on a horizontal bar (1 cm in diameter, 3 cm above the table) and the time required to remove the paws from bar was noted for each animal.

Result of Clonidine induced catalepsy

Group	Duration of catalepsy (min)					
	0 min	30 Min	60 min	90 min	120 Min	180 Min
Control	2.4 min	3.00 min	5.36 min	6.32 min	8.25 min	10.25 min
STD	2 min	3.25 min	6.54 min	8.42 min	10.25 min	8.11 min
Methanol extract	2.14min	4.54 min	6.21 min	8.01 min	9.25 min	7.29 min
Petroleum ether	3..21 min	4.32 min	7.25 min	8.5 min	6.32 min	4.25 min



**P<0.001,*P<0.05, one way ANNOVA followed by Dunnett's Test.

Fig.1 Effect of various extracts of bark of Ficus Glomerata (Moraceae) on clonidine induced catalepsy in mice

Haloperidol-induced catalepsy

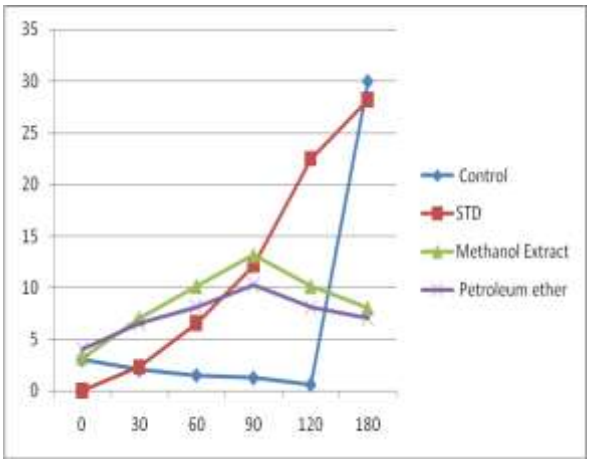
Neuroleptic agents also induce catalepsy, but have different mechanism.Neuroleptics inhibit dopamine D2 receptors in the substantia nigra.Since catalepsy is a common extrapyramidal side effect of neuroleptics agents, the effect of Ficus Glomerata extract on haloperidol-induced catalepsy was also studied in the present study.

Procedure

Mice were divided into four groups, six animals in each group. Animals belonging to group I served as control and were administered the vehicle. (10 ml/kg oral). Animals belonging to groups II to IV received petroleum ether and methanol and extracts of Ficus Glomerata (50 mg/kg, oral). All the groups received Haloperidol (1 mg/kg,oral) 30 min. after the drug administration and the duration of catalepsy was The Bar test was used to study the effect of test drug extract on measured at 0, 30, 60, 90, 120 and 180 min, interval after administration of Haloperidol. The forepaws of mice were placed on a horizontal bar (1 cm in diameter, 3 cm above the table) and the time required to remove the paws from bar was noted for each animal.

Result of Haloperidol induced Catalepsy

Group	Duration of catalepsy (min)					
	0 Min.	30 Min.	60 Min.	90 Min.	120 Min.	180 Min.
Control	3 min	2.03min	1.50 min	1.25 min	0.59sec	30sec
STD	2 .10 min	2.32 min	6.53 min	12.15 min	22.48 min	28.22 min
Methanol Extract	3.18 min	7.03 min	10.15 min	13.15 min	10.15 min	8.02 min
Petroleum ether	4.00 min	6.56 min	8.15 min	10.25 min	8.06 min	7.02 min



**P<0.001,*P<0.05, one way ANNOVA followed by Dunnett's Test.

Fig.1 Effect of various extracts of bark of Ficus Glomerata (Moraceae) on haloperidol induced catalepsy in mice.

RESULT AND DISCUSSION

Several drugs are known to induce catalepsy in animals. The neuroleptic agents induce catalepsy by inhibiting dopamine D2 receptors in the substantia nigra. Chopra and Dandiya (1975) have studied the relative role of acetylcholine and histamine in perphenazine-induced catalepsy and suggested that anticholinergic activity of antidepressant might be due to an increase in dopamine content in brain or their ability to inhibit release of acetylcholine. They also showed that different stages of catalepsy appear to be directly correlated with brain histamine content. Uvnas (1969) studied the mast cell degranulation and its correlation with the release of histamine after administration of mast cell degranulating agent (Compound 48/80). Lakdawala et al., (1980) have shown that clonidine releases histamine from mast cells in a similar manner to a selective liberator like compound 48/80.

Clonidine α2 adrenoreceptor agonist induced dose dependant catalepsy in mice, which was inhibited by H1

receptor antagonist but not by H2 receptor antagonist. Clonidine releases histamine from mast cells which is responsible for different asthmatic conditions. Catalepsy produced by clonidine is mediated by histamine via.H1 receptor. The maximum catalepsy is developed after 90 min. of clonidine administration (50mg/kg sc.). In prior treatment with methanol and ethanol extract (50 mg/kg ip.), ethanol extract showed significant decrease in duration of action at the end of 90 min, thus ethanol showed decreased in activity while control group showed maximum catalepsy at the end of 90 min. Amongst all the extracts only ethanol ($p<0.05$) extracts showed significant inhibition in catalepsy. Results were comparable with standard drug pheniramine maleate ($p<0.001$). The effect of these extracts on clonidine-induced catalepsy is probably due to their mast cell stabilizing property and the plant does not have activity on dopaminergic transmission. These effects on clonidine induced catalepsy may be due to its antihistaminic activity. Methanol extract did not inhibit clonidine induced Catalepsy.

CONCLUSION

Ethanol extract (50 mg/kg, i.p.) of ficus glomerata bark significantly inhibited clonidine-induced catalepsy. Clonidine releases histamine from mast cells which responsible For different asthmatic conditions. Catalepsy produced by clonidine is mediated by histamine Via. H1 receptor. Thus we may conclude that ethanol extract of bark of ficus glomerata is having antihistaminic effect. As ethanol extract inhibited clonidine-induced catalepsy than Other extracts so it can be concluded that the antihistaminic activity of ficus glomerata may be due to polar constituents.

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