

The Analytic Aspect of Phyto-Chemicals of *Ficus religiosa* Medicinal Plant of Khetri Region, Rajasthan

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Abstract - The area under study i.e. Khetri Region is located in South-eastern part of Jhunjhunu district, Rajasthan state with its geographical extension in between 27° 40' 24" to 28° 17' 12" N latitude and 75° 39' 59" to 76° 12' 59" E longitude. The district consists of three rivers which are seasonal by their nature of water stream flow point of view viz; Basai river, Kantli river, and Chandravati river.

I RESEARCH AREA

All these rivers fall under the pattern of the total area under internal drainage system of the district. The area under study is facing the problem of excess of fluoride contents in the water which has average value of 7.5 ppm and suffering from the disease of Fluorosis at many places which are scattered throughout the area under study.

II REVIEW OF LITERATURE

Being an applied researcher I feel my prime most duty to present here the specific interpretation of the studies who have carried out the research work of the analytic aspect of the nature, contents and details of available phyto-chemicals which are investigated or traced out within the applied parts and portion of medicinal plant species, with specific reference to my study area i.e. Khetri region of Rajasthan.

With the end of third decade of 20th century, the study on analytic aspect of phyto-chemicals of medicinal plants had already been started, during that period in 1929-30 Chopra, R.N. and Chosh, S. studied on "Medicinal Plants Used in Indigenous Medicine", Further in this context in 1984 studied in 1956-58 Chopra, R.N. on "Medicinal Plants" whereas in 1984 Basu, B.D. and Kirtikar, K.R. studied on "Indian medicinal plants", respectively.

It will be very interesting to mention here a descriptive account of certain medicinal plant species analytic aspect of available phyto-chemicals by some researchers, are being illustrated here in the following paragraph which alphabetically covers the medicinal plant.

Phytochemicals of applied parts and portion of medicinal plant - *Albizia lebbek* (A tree species) was studied by Tripathi, S.N. et al. in 1978, Tripathi, R.M. et al. in 1979, and Das, P.K. et al. in 1983. Another medicinal shrub/ tree species i.e. *Adhatoda vasica* was

studied in 1983 by Kanwal, P. et al. *Asparagus species* (Herb species) was studied by Inamdar, A.C. and Mahabale, T.S. in 1980. *Azadirachta indica* (Neem tree) a multipurpose medicinal plant species was studied by several researchers but the phyto-chemicals analytic aspect studied by K.C. Sinha et al. in 1984 with specific reference to Neem Oil is worthwhile to mention here.

Boerhavia diffusa (herb species) was studied by Srivastava, K. et al. in 1980 for its phyto-chemicals contents. In 1980 Dennis, T.J. et al. and in 1984 Pachnanda, V.K. et al. studied the phyto-chemicals of *Boswellia serrata* (Medicinal tree species). In 1981, the phyto-chemicals of *Corchorus depressus* (Medicinal herb species) was studied by Vohara, S.B., et al. in 1981. A very important multipurpose medicinal shrub species - *Commiphora mukul* was studied by some researchers from phyto-chemicals analytic aspect point of view which are as - Baldwa, V.S. et al. in 1978, Mester L. in 1978, Bordia, A. and Chuttani, S.K. in 1979 and Kotiyal J.P. in 1979. Sharma, H.K. et al. studied the phyto-chemical of *Cassia species* in 1982.

Occimum sanctum - a under shrub medicinal plant species phyto-chemically was studied by Bhargava, K.P. and Singh, N. in 1981. Phyto-chemicals of *Solanum nigrum* in 1982 was studied by Brindha, P. et al. In very early during 1932-33 Pandse, G.P. and Dutt. S. worked out the phyto-chemicals of an important medicinal climber species - *Tinospora cordifolia*.

In earlier studies, Venkataraghavan S. et al. in 1980 traced out the phyto-chemicals which are found in applied parts and portion of two plant species namely - *Boerhavia diffusa* and *Withania somnifera* - a multipurpose medicinal shrub species was phyto-chemically studied by some researchers which are as - Kuppurajan, S. et al. in 1980, Singh, N. et al. in 1982, Verma, V. in 1983 and Sharma, M. K. in 2007.

Although all of them as above mentioned researchers, botanists and authors contributed their valuable work from time to time but none of them upto now presented their work on exact lines of the analytic aspect of phyto-chemicals of Aloe vera medicinal plant of Khetri Region, Rajasthan.

III OBJECTIVES

Being a field of applied phyto-researcher with specific reference to the study of medicinal plants, naturally it

become a significant aim to illustrate the applied parts and portion of medicinal plants which are being used to cure certain disease. Further in this context, the research study objective also covers the illustration of analytic aspect of phyto-chemicals of the applied parts and portion of medicinal plants i.e. in other words to say phyto-chemistry descriptive interpretation due to which the particular medicinal plant has applied values as drug to cure certain kind of diseases for the welfare of healthy environment of human beings.

IV HYPOTHESIS

1. I also hope that there may be a marked variation in the percentage of vegetational group of medicinal plants and their families. Naturally, the author presume that all parts of every medicinal plant should not be useful as drug but some specific parts and portion should be useful, it may be traced out during the course of study of research work details of analytic aspect of phyto-chemicals in this concerned.

2. The author may find or trace out that the region may include many medicinal plant species which may be useful according available phyto-chemicals one side for the cure of one disease particular, and another side many single medicinal plant species which may be useful as drug in the cure of many different kind

of diseases.

V METHODOLOGY

Phytochemical study of the crude medicinal plant parts, several of these medicinal herbs will be chemically analysed and their biologically active chemical compounds recorded Literatures will be searched to know those chemicals which give them their medicinal properties. The chemicals searched for would mainly their Alkaloid, Steroid, Glycoside, Saponin, and Tannin contents for the area under investigation i.e. the Khetri region of Rajasthan.

VI INTRODUCTION AND MORPHOLOGY

It is a full sized tree, thus, it falls under the group of 'tree' from vegetational group point of view. It is a religious plant of Moraceae family for Hindus from centuries back, hence, it's species is known as *Ficus religiosa*. From leaf-class classification point of view-the tree falls to the class of 'macrophylls'. From xerophytic categorization point of view, the upper surface of leaves are coated with waxy substances. From life-forms classification point of view - the tree falls in the group of 'phanerophytes'. Being, it's importance from religious point of view, it is protected from cutting and it is being worshipped throughout the Indian sub-continent wherever Hindu population is dominant (Plate).



Plate : *Ficus religiosa* Tree

In northern India, it is observed with it's 'poly-climax' nature, hence, it is observed in sand dunes Habitat as rare, frequent in sandy plains Habitat and commonly observed on stony and rocky Habitat of hilly patches for the area under study. The tree shows it's frequent to common occurrence on riverine and aquatic Habitat. Thus, the tree has been observed in arid climate (rare) semi-arid climate (frequent) and common in sub-humid and abundant in

humid climate of Rajasthan. More percentage of relative humidity places make favourable climatic conditions of this plant. It has no occurrence on top of the sand dunes but it's plantation favours the stony and rocky Habitat of the area under study. It is a tropical climate tree - favours warm but moist Habitat conditions. Such conditions are found in Khetri Region.

The tree has common occurrence within human settlements, it may be village, town and city due to more

plantation, specially where Hindu's population is more - as observed during the course of field visits on selected survey spots in Khetri Region. Two localities it is observed with common occurrence Mansamata (stony and rocky Habitat) and Ajit Sagar Dam (aquatic Habitat). It shows more or less frequent distribution over remaining Habitats of the area under study.

VII PHYTO-CHEMICAL (MEDICINAL) USES

The scientists mentioned it's following Phyto-chemical applied aspects - as a tonic, in the cure of leucorrhoea, it prevent bleeding, in rheumatism pain, thus used as a indigenous medicine by the vedhs in ayurvedic traditional medicine. It's wood is used in sacrificial fires.



Plate : Ficus religiosa Tree with Jata

Further in this context, at the part of medicinal uses for the cure of diseases, the native persons and vedhs - they consider it as a very useful in conditions where blood comes out of body in unnatural way. The condition may be haematuria (passing of blood with urine) or bleeding piles, Even sometimes when a women bleeds irregularly

due to disorder in menustuaral cycle. In all such conditions it helps to check the unnecessary flow of blood. Ficus religiosa and Ficus bengalensis both are religious plants, the scientists studied their comparative importance in the aspect of check the pollution in surrounding atmosphere as shown in the Chart.

Chart : Religious Plants to Check Pollution

S. No.	Applied Aspect	A	B	C	D	E
		Ornamental	Antimicrobial Activity	Climate Purifier	Insect Repellen	In Medicine
1.	Ficus religiosa	+	—	+	—	+
2.	Ficus bengalensis	+	+	+	—	—

VIII PHYTO-CHEMICAL ANALYSIS OF APPLIED PARTS AND PORTION

It's secretion products are parts and portion of the tree, which are important from phyto-chemicals study point of the tree, which are important from phyto-chemicals study point of view. It is a resinous substance dull red, rough, amorphous with granular fractures on the surface. It is exuded from an inset thriving an peepal tree.

It contains essential volatile oil, some Glycosides Enzymes and some minerals.



Plate : Ficus religiosa Fruits

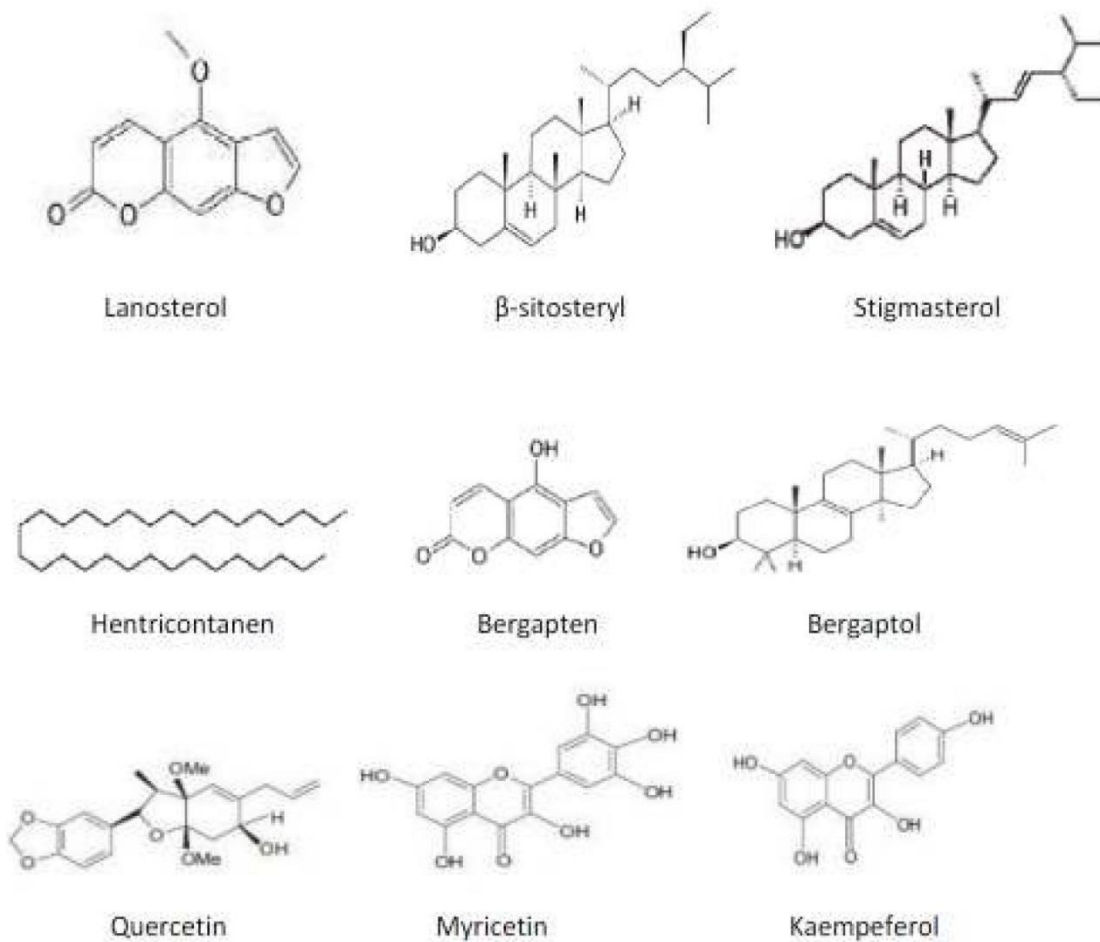


Figure: 1 Structure of the Phytoconstituents

The aqueous extract of dried bark of *Ficus religiosa* is stated that they have favonoids, tannins, phytosterols and begaptol and bergapten (furanocoumarin derivatives). The stem bark of *Ficus religiosa* affirmed the phytoconstituents of tannins, phenols, favonoids, alkaloids and steroids, vitamin K, n-octacosanol, methyl oleanolate, lanosterol, β -sitosteryl-D-glucoside, stigmasterol, lupen-3-one. The root bark of *Ficus religiosa* has active constituents such as β -sitosteryl-D-glucoside, that reveals a hypoglycemic effect in diabetic rats and rabbits. 4.9 percent of the *Ficus religiosa* fruits have protein with the essential amino acids, phenylalanine and isoleucine. The *Ficus religiosa* seeds contain fatty matter, albuminoids, coloring matter, phytosterolin, carbohydrate, glycoside and β -sitosterol. The fruits and leaves of *Ficus religiosa* have protein, carbohydrate, lipid and minerals such as calcium, sodium, potassium, and phosphorus. The fruits of *Ficus religiosa* contain natural favonols namely quercetin, myricetin and kaempferol. They also contain significant amounts of total favonoid, total phenolic contents and linoleic acid.

In a recent review given by Damanpreet, the studies reveal that the phytochemical analysis of the leaves of *Ficus religiosa* have given rise to the isolation of

phytosterols, triterpene alcohols, long-chain hydrocarbons, aliphatic alcohols, amino acids, fibres, tannins and minerals.

IX RESULTS AND DISCUSSION

The wide literature review has discovered the *Ficus religiosa* as a holy and significant phytochemical plants used for the treatment of different ailments. The World is blessed with an amusing prosperity of phtochemical plants. Phytochemical plants show a significant role in the lives of poor people, with few medical facilities. Phytochemical research is done in *Ficus religiosa* that led to the discovery and isolation of plant metabolites. This review exposes that the *Ficus religiosa* has various phytochemicals like β -sitosteryl-D-glucoside, vitamin K, n-octacosanol, kaempferol, quercetin, and myricetin. Various pharmacological activities like anti-oxidant, antibacterial, hypoglycemic, hypolipidemic, wound healing activities, anti-helminthics, immunomodulatory, anti-convulsant and anti-ulcer activities have been studied in *Ficus religiosa*, one of the natural treasures of India.

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