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Pharmacognostic Studies Of Leaf Of *Abutilon Pannosum* (Forst.F)

Abutilon pannosum (Forst f) family (Malvaceae) commonly known as kanga. Medicinal plant played vital role in the world health, since time immemorial.` The traditional system of medicine in India prescribing various of recipes of Indian herbs led to the evolution of 'Ayurveda' which is becoming more and more popular for centuries. It is used in the treatment of Dysentery, Gonorrhea and various diseases. In present investigation an attempt was made to study it pharmacognostic feature, including physico-chemical parameter. Thus it was thought to explore the plant on the basis of its. Standardization parameter the study will provide a referential information for the correct identification the crude drug. Keyword : Abutilon pannosum (Forst.f). Standardization, Microscopy, Phytochemical analysis.

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Introduction :

Plant play a vital role in medicine and essential and integral part in complementary and Alternative Medicine and due to this they develop the ability for the formation of secondary metabolite like flovonides, alkaloids steroids and phenolics substance which are in turn used to restore health and heal many diseases. natural products of plant and animal origin after vast resource of newer medicinal agents with potential in clinical use.

Abultilon pannosum (Forst.f) family Malvaceae, commonly known as konga is an important medicinal plant used in our traditional system. The plant is used as laxative, diuretic, and sedative. The leaves are used as astringent (Kirtikar et al., 1991) bark is used astringent, laxative, expectorant and demulcent (The Wealth of India, 2005). The plant contains mucilage, tanning, asparagines, gallic acid and sesquiterpencs (Khare, 2004). Thus the present investigation was aimed at evaluating the pharmacognastical features and phytochemical analysis for authentication and identification of the plant and also to evaluate the extract responsible for the biological activity.

Materials and Methods :

Plant Material :

The fresh leaves of the plant Abutilon pannosum were collected from the wild sources of the Amravati district of Maharashtra in the month of February and were identified from the authentic sources. The collected leaves were wash, shade dried and was pulverized with a mechanical pulvanrized for the size reduction. It was then fine powder was collected and was used for the experiment for powder microscopy and preparation of extract. The fresh leaves sample was used for the microscopy identification.

Pharmacognastic Studies :

Morphological studies were done by using simple microscope to determine the shape, apex, base, margins, taste and odour of the leaves. Microscopic studies were done by preparing a thin hand section of the mid-rib and petiole and the lamina region of Abutilon pannosum. The section was cleared with chloral hydrate solution and was stained as per the protocol. Histochemical reaction were applied with concentrated Hydrochloric acid and phloroglucinol and were mounted in glycerin for the identification of lignifide elements iodine solution for identification of starch grains, ruthenium red for mucilage, 60% sulphuric acid for calcium oxalate crystal and ferric chloride for the phenolic compound in the powdered bark by reported method. (Kokate et al.,1994. Trease et al.,1996)

As a part of quantitative microscopy, stomatal number, stomatal index was determined by using fresh leaves of the plant.

Physico Chemical parameter :

The parameter was done to evaluate the fluorescence analysis carried out for the powder and for extract as per standardization procedure.

Powder Analysis :

Preliminary analysis of the powder of leaf of Abutilon

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Table 1 : Fluroscesce Analysis of the powdered leaf of Abutilon pannosum

Sr. No.	Sample	Colour in day light
1	Powder + Acetic acid	Green
2	Powder + Conc. H_2SO_4	Brownish
3	Powder + Conc. HNO_3	Brown
4	Powder + Conc. HCl	Dark Green
5	Powder + $FeCl_3$	Light Brown
6	Powder + aq. NaOH	Green

Table 2 : Quantitative Analysis of leaf constants of Abutilon pannosum

Sr. No.	Particular		Values
1	Stomatal Number	Upper Epidermis	2.42
		Lower Epidermis	4.13
2	Stomatal Index	Upper Epidermis	12.15
		Lower Epidermis	18.20

Table 3 : TLC Fingerprinting Analysis of leaf of Abutilon pannosum

Solvent System : Petroleum Ether : Benzene (6:4)
Iodine Developer

Sr. No.	Extract	Rf. Value	Colour
1	Acetone	0.34	Light Green
	Extract	0.75	Light Brown
2	Ethanol	0.23	Light Yellow
	Extract	0.40	Yellowish
3	Methanol	0.24	Light Green
	Extract	0.93	Yellow
4	Petroleum	0.37	Brownish
	Ether Extract	0.67	Green

pannosum with different chemical reagent was carried out. (Reddy et al.,1999, Pratt et al., 1949)

Preliminary Phytochemical Analysis :

In preliminary phytoconstituent analysis extract was prepared by weighing of the dried powder leaf and were subjected continuous extraction with different solvent as per the polarity, petroleum ether, ethanol chloroform, methanol. The extracts were filtered in each step. The presence or absence of the primary and secondary phytoconstituents was detected by usual prescribed methods.

Table 4 : Preliminary phytochemical screening of leaf extract of Abutilon pannosum

SN	Test	Petroleum ether extract	Ethanol extract	Chloroform extract	Metha`nolic extract
1	Alkaloids	-	+	+	+
2	FlaVonoids	+	-	+	+
3	Phenolics	-	+	+	+
4	Saponins	-	-	-	+
5	Steriods	-	-	-	+
6	Sterols	+	-	+	+
7	Glycoside	+	-	-	+
8	Tannins	-	-	-	+
9	Polyoses	+	-	+	+
10	Emodins	-	-	-	+

Table 4 : Preliminary phytochemical screening of leaf extract of Abutilon pannosum

Result :

The marcoscopical studies of leaf reveled certain characters

Shape	:	Ovate to orbicular cordate
Margin	:	Acuminate and toothed
Apex	:	Pointed
Base	:	Symmetrical
Venation	:	Reticulate
Odour	:	Odourless
Taste	:	Sweet
Surface	:	Rough and minute hairs present on plant body

Microscopy :

The Transverse Section should the following characteristics feature :

The lamina region consisted of upper and lower epidermis with covering the glandular trichomes covering trichomes were multicellular and uniseriate in nature while the glandular trichomes were multicellular with single stalk and multi head fused together stomata were of anomoyctytic type. Below the epidermis layer the next region was mesophyll which consist of long elongated palisad cell and calcium oxalate crystal. The mid rib Region resembles dorsi ventral leaf. It consist of closely packed collenchyma cell with 2-3 layered in upper part and 3-4 layered in lower part. Just below and above the collenchyma the parenchyma cells are arranged in a lossely packed with much of intracellular Space. The vascular bundles are composed of xylem and phloem cell. Figures are shown in fig.1a and 1b.

Powder Microscopy :

The powder was characterized on it morphological features as colour green, odour. Odourless and taste is sweet to characteristic in nature. The dried fine powder was stained with chloral hydrate to detect the presence of calcium oxalate crystal. They were prismatic in nature. When stained with phloroglucinol and concentrated

hydrochloric acid vascular bundles, lignified fibers were observed. With glycerin mounting trichomes were observed both of covering and glandular type. Stomata were anomocytic in nature. All the result are figured in Fig. 2a, 2b, 3a, 3b, 3c, 3d.

Fluoresence Analysis :

The powder was subject to flureocence analysis as per the standard procedure and shown in Table 1.

Quantitative Analysis :

The fresh leaf sample were subjected to quantitative analysis for various leaf constants like stomatal number, sotmatal index. The Result are shown in Table 2.

TLC Fingerprinting Analysis :

The extract were prepared and the TLC plate also for the successive identification. Further all the results are in the Table 3.

Preliminary Phytochemical Analysis :

The various extract were subjected to preliminary phytoconstituents analysis for their presence or absence of the constituents the result are shown in Table 5.

Discussion :

Lack of standardization techniques fails to identify the drug from its originality which there exploits the usage of drug from its traditional system of medicine. The plant Abutilon pannosum is used from the ancient time for its great medicinal values as a remedy in day to day life but in this aspect adulterations are also done which leads to its extinct. Thus a perfect protocol was designed for its authentication and identification on the basis of microscopy and chemical analysis. Thus the present investigation was aimed and the result were found to be significant and encouraging towards the goal for standardization.

Conclusion :

The present study on Anatomy preliminary phytochemical analysis, TLC fingerprinting provide the important information which may be help in authentication. The presence of the wide range of phytochemical constituent indicate that the Abutilon pannosum (Forst.f) could served as led for the development of novel agents for various pathological disorder.

Abutilon pannosum (Forst.f)
Plate No. 1

Plate No. 1 (a) T.S. of Leaf

Fig. 1(b) Vascular bundle

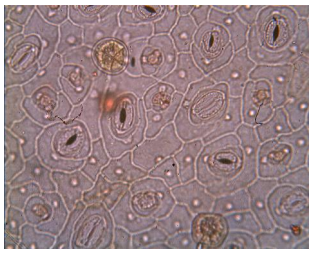

Fig.2 (a) Upper epidermis

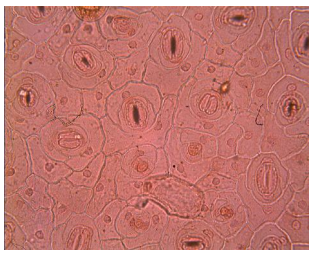

Fig.2 (b) Lower epidermis

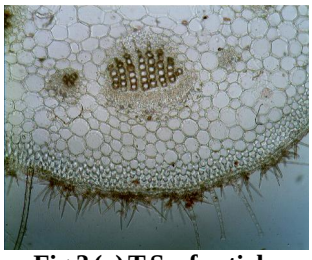

Fig.3 (a) T.S. of petiole

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Roost, Habitat and General Behaviour of Bat *(Cynopterus)* at Barshi, Dist. Solapur (Maharashtra)

The present paper deals with behavioural aspects and habitat of bat (Cynopterus). The present study was carried out at Jawaharlal Nehru Hospital Barshi for a period of one year July 2011 to June 2012. It was observed that Bats were roosted at day time on trees of garden at hospital. They disperse from roost site at 7.00 pm. The roosted bats are frugivorous. We evaluated the daily movements of individuals and groups among roosts.
Keywords : Bat, Roost, Habitat, Behaviour, Barshi.

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Introduction :

Order Chiroptera includes bats (Cynopterus) which are the only true flying mammals that compete very well with the birds whose forelimbs form webbed wings, making them the only mammals naturally capable of true and sustained flight. Bats are present throughout most of the world, performing vital ecological roles of pollinating flowers and dispersing fruit seeds. Many tropical plant species depend entirely on bats for the distribution of their seeds. Bats are found in almost every habitat available on earth. Different species select different habitats during different seasons, ranging from seasides to mountains and even deserts but, bat habitats have two basic requirements, roost and places for foraging. Roost is the place where they spend the day or hibernate. Roost of bat can be found in hollows, crevices, foliage and even human made structures and include tents constructed by bats by biting leaves. Cynopterus roosts are mainly found beneath large leaves, or in other semienclosed plant structures such as creepers and fruit clusters, which the bats may modify by chewing or severing plant material, increasing protection from the elements and potential predators (Boon and Corlett 1989; Balasingh et al. 1995; Tan et al. 1997; Storz and Kunz 1999). Cynopterus fruit bats forage singly and remove fruit to nearby night roosts (Boon and Corlett 1989; Tan et al. 2000; Fletcher 2001). Removal of plantation has been causing serious threat to bats hence such studies might have important implications.

Objectives of The Study :

The study is made to describe the day roost of bat (Cynopterus) at Jawaharlal Nehru Hospital Barshi. The important objectives are :

(1) To know about the Day Roost of bat at Barshi.
(2) To study host Plants at roost sites.
(3) To study threat to roost sites.

Study Area and Method :

The present study was carried out at Garden of Jawaharlal Nehru Hospital, Barshi, Dist. Solapur, Maharashtra (India). Study area lying between 18014'01.92" North and 75041'21.43" East. Though study area is a garden but it lies on wayside, which is the main road of city. Traffic and crowd is always common on the road. Large numbers of tallest trees are present in the garden. These are the host trees where bats were roosted. Observations were carried out during July 2011 to June 2012. Roosting bats and their behaviour were recorded by using Canon 40 D with lens 100 mm and 500 mm Camera and Video recorder. Video recordings were analyzed in the laboratory. Photographic documentation was done at a distance of 4-6 m from roost.

Results and Discussion :

During the period of Study (July 2011 to June 2012), we have seen Roost place of Bat at Barshi city. Roosts of bats were present in garden of Jawaharlal Nehru Hospital, Barshi. The roosted bat is Cynopterus because it is a larger bat, Head fox- like, Eyes large, Snout elongated, Pinna is small and simple, First and second fingers clawed, Tail is absent, it is frugivorous, during day they sleep on trees, hanging upside down by hind claws (R.L. Kotpal). The host trees where bats were roosted at Barshi were Peltophorum ferruginum (copepods), Delonix regia, Leucena latislliqua, Polyalthia longifolia, Azadirecta indica and Tamarindus indica. All the trees are tallest and fruit bearer. We have observed 'flocks' of bat on a single tree at study area. In the study area number of

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Polyalthia longifolia is larger. This was the plant where number of bats was large. The overlapping leaves of Polyalthia longifolia offered wind resistance, support of large roosting groups, protection against predators and rain.

We have seen bat never leave the roost site at day, but few bats were flying at day from one roost trees to other in the same periphery. We have seen bat changes their place by somewhat climbing. In the Monsoon season, at the time of rain they never fly even in day hours. Most of bats are nocturnal creatures. Their daylight hours are spent in grooming, sleeping and resting. They hunt during the nighttime hours.

At 7.00 7.30 pm, Bats were dispersing from roost site. This is the evening time observation at Barshi. During dispersing they loudly cried. They disperse in a flock of 7-8 Bats. There was a great distance between Bats in flocks. Flocks were dispersing in various directions. We have observed there was a little competition between Bats and Birds. We have seen after 3-4 hours most of the members of bats returned to roost place at Barshi. During night hours all the members were present in roost site. In bats use of roosts is an integral and vital part of their survival and reproductive success (Kunz 1982; Kunz and Lumsden 2003). We have observed roost of bat at Barshi city. It has been postulated that roost characteristics are important factors influencing the social biology and mating system in bats, although our knowledge on this aspects of roosting ecology is deficient (Goymann et al. 2000; Kunz and Lumsden 2003).

It was common observation at study area, different level of disturbances were created by man and their activities.

Plate- A

Plate- B

Roosts of bats were disturbed due to heavy noise of automobiles. This is in accordance with (M. Munoz-Romo et al. 2007). We have observed, roost of bats not only disturbed but also break due to loud noise of 'Cracker' during day, evening and night hours at Barshi.

Roost of Bat

Plate- C

Plate- D

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Impact of 20-hydroxyecdysone on female reproduction in *Dysdercus similis*

Ecdysone is a primary moulting hormone. If the ratio of one hormone to the other is improper, the insect may not become adult, adults may fail to produce viable eggs affecting, certain physiological regulatory processes or their progeny. The 20-hydroxyEcdysone, Insect Growth Regulator (IGR) applied topically on virgin females of insects produce. Here on attempt has been made to study the role of ecdysone on the adult female of Dysdercus. The insect were infected with different concentration of the 20-hydroxy ecdysone and the tissue studied was neurosecretory complex, ovary and adipose tissue. The experiments were done on newly emerged adults to the period till they laid eggs. Here in the ovaries the period of vitellogenesis and chorion formation is delayed.
Keywords : Ecdysone, Neuroendocrine complex chorion, Adipose tissue, ovariole.

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Introduction :

In last two decades to control insect pest is the use of substances that adversely affect insect growth and development. These substances are the insect hormone mimics or insect growth regulators (IGRS), such as juvenile hormone and ecdysteroid. It owing to their effects on certain physiological regulatory processes essential to the normal development of insects or their progeny.

The role of ecdysone (moulting hormone) is known in the larval stages of insects. It has also been found that in some insects like the grass hopper and beetles, the ecdysone is resynthesized and secreted. But the ecdysone in adult insects is hardly known.

Horn (1971) and Langueux et al. (1977) have suggested that the ecdysteroid in the adult female might play a role in reproduction, while according to Stay and Tobe (1981) the secretion of ecdysteroids from the late ovaries inhibited the JH synthesis.

Here an attempt has been made to study the role of ecdysone on adult insects, neurosecretory complex, ovary and adipose tissue of Dysdercus similis (Red Cotton Bug) which may deprive an ability of insect species to reproduce an offspring or disruption of gametogenic cycle.

Material and Methods :

Dysdercus similis nymphs were collected from bhindi fields near Saugar (M.P.) India. They were reared in the laboratory in glass-fronted cages and were fed regularly on moinst cotton seeds to prevent starvation.

20-Hydroxyecdysone of commercial grade was obtained from sigma, USA a stock solution of the hormone was prepared in acetone (AR grade, BDH, England) further dilutions of 1.5%, 0.75% mg/2ml concentration were prepared freshly.

One day old insects (the day of emergence) were kept in 4 groups each group consisted 20 adults.

All the insects of one group were treated prenotally with one concentration of hormone, once in 48 hours by Hamilton microsyringe (Australia). Individuals of control group were given 2 ml acetone only. All the insects were maintained in laboratory conditions viz. natural diet, 12:12 light darkness regine at 28ºC ± 1ºC. Insects were dessected on 2nd, 4th, 6th and 8th day of treatment. The neuroendocrine complex ovary and the adipose tissue were fixed in cornay's fluid (6:3:1) for 3 hours, paraffin blocks prepared in the usual way were sectioned at 6mm. Methyl green - Pyronin staining technique (Baker et al., 1955) was used for histopathological studies.

Results and Discussion :

In case of experimental insects, when ecdysone was injected in different doses. The high dose inhibited the synthesis of neurosecretory material, the lesser material reached into carpus cardiacum. Further, it also inhibited the growth of CA, but it promoted the vitellogenin synthesis in adipose tissue. In case of normal insects the NSC get activated and secreting in two or three days and the cells was appear filled in 5 to 6 days (fig 1,2,3)

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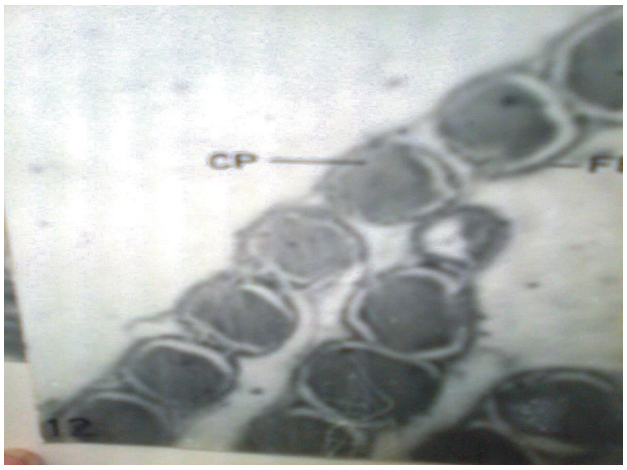

Fig. No. 1

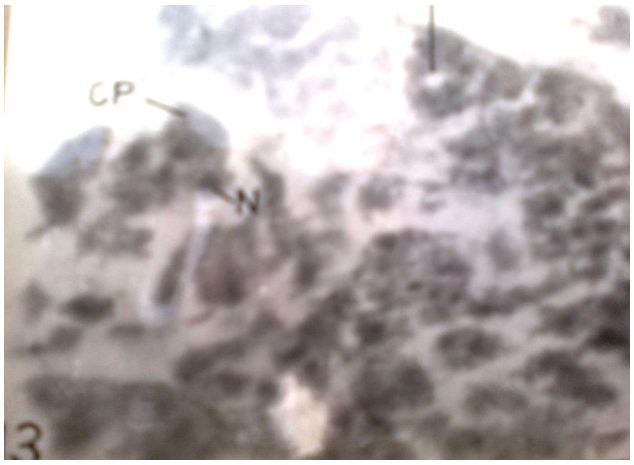

Fig. No. 2

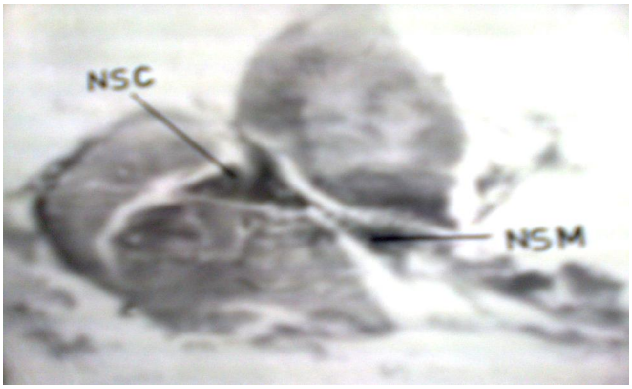

Fig. No. 3

In case of experimental insects the cells did not show secretory activity but they were pack in 8-9 days. In normal insects the NSM was reached CC in 3days.While in experimental it was reached CC in 6days. CA get enlarged on 4 to 5 days in normal insects while CA get enlarged in experimental insects within 6to 8 days and finally in the ovaries the period of vitellogenisis and chorion formation was delayed.

Conclusion :

In ecdysone treated insects the high dose of ecdysone inhibits the synthesis of neurosecretory material that results into the period of chorion formation and vitellogenesis was delayed.

Acknowledgement :

Authors are thankful to the Head, Department of Zoology, Dr. Hari Singh Gour University, Sagar (M.P) for providing Research facilities.

Abbreviations :

CA	:	Corpus allatum
CC	:	Corpus cardiacum
NSC	:	Neuro secretory cells
IGRS	:	Insect growth regulatory substances

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