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PHYTOCHEMICAL INVESTIGATION AND ANTHELMINTIC ACTIVITY OF *LANATA CAMARA*

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Keywords:

Lanata camara L. (Verbenaceae),
Macroscopy, Microscopy,
Phytochemical screening etc.

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ABSTRACT: *Lantana camara* is reported to be used in traditional medicine system for the treatment of itches, cuts, ulcers, swellings, bilious fever, cataract and rheumatism. Different part of plants are used in the treatment of cold, headache, chicken pox, eye injuries. The present study is an effort to give detail information regarding macroscopy, microscopy, physical constant, phytochemical screening, traditional uses of leaves of *Lanata camara*. This study helps in identification of this particular plant species. It provides guidelines for identification of plant species to the budding researchers. Further study on plant is need to be carried out.

INTRODUCTION: Aims and Objectives:

1. Phytochemical screening of leaves extract of *Lanata camara* L.
2. Isolation of different moieties by using TLC.
3. Extraction process by using solvents like methanol and water.
4. Anthelmintic activity of leaves extract of *Lanata camara*.

Synonyms: *Lanata camara* linn.

Ghaneri (in Marathi), *Lanata aculeata* L, *Camara vulgaris*.

Biological Source: It consists of dried whole plant of *Lanata camara* L. belonging to family Verbenaceae.

Methods:

Standardization and Phytochemical Investigation of *Lanata camara*:

- Collection and authentication of *Lanata camara* Linn.
- Macroscopy of leaves of *Lanata camara* Linn.
- Extraction
- Phytochemical investigation

Collection and Authentication: The leaves of *Lanata camara* were collected in the month of June from Satara District. The leaves are authenticated by Miss S. M. Deshapande, (H.O.D. of Botany) Y.C. Institute of Science Satara. The fresh leaves were used for study of macroscopic and anatomical characters. Collected plant material was shade dried and coarsely powdered. This coarse powder was used for determination of extractive values, ash value, LOD and preliminary phytochemical investigation.

Macroscopic Characteristic: The macroscopy of leaves were studied according to standard methods 17, 18.

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Microscopic Characteristics: For microscopy hand section of leaf was taken, stained and mounted following usual micro-techniques¹⁹.

Extraction: In the present study, the dried leaves of *Lanata camara* belonging to family Verbenaceae were reduced to coarse powder and around extracts was subjected to hot continuous extraction (Soxhlet) with methanol and then evaporated after the effective extraction, solvent were evaporated to dryness and the extract obtained with each solvent was weighed.

Phytochemical Investigation: The dried leaves were extracted with methanol and aqueous. The behavior of powder with various chemical reagent and preliminary chemical tests for various extracts were also carried out according to the standard procedures described by Kokate¹³ and Horborne¹⁴.

Isolation of Constituents:^{23, 24}

Chromatographic Studies: Thin layer chromatographic studies were carried out for various extracts to confirm the presence of different phytoconstituents in these extract. TLC is a mode of liquid chromatography, in which, the extract is applied as a small spot or band at the origin of thin sorbent layer supported on a glass/plastic/metal plate. The mobile phase migrates through the stationary phase by capillary action. The separation of solutes takes place due to their differential absorption/ partition coefficient with respect to both mobile and stationary phases. Each separation component has same migration time but different migration distance.

The mobile phase consists of a single solvent or a mixture of solvents. Although, a number of sorbent like silica gel, cellulose, polyamide, alumina, chemically modified silica gel *etc.* are used, silica gel (type 6) is most commonly used sorbent. handmade plates are prepared by using techniques like pouring, dipping or spraying. Now days, readymade precoated plates are also available. The plates need to activated at 100 °C for 1 h. This removes water / moisture loosely bound to silica gel surface.

The retardation factor (R_f) is calculated using following formula:

$$R_f = \frac{\text{Distance travelled by sample from base line}}{\text{Distance travelled by solvent from base line}}$$

Thin Layer Chromatography: The extract was subjected to thin layer chromatography for the presence of phytoconstituents.

In thin technique, the silica gel-GF254 (for TLC) was used as an adsorbent and plates were prepared by spreading technique, then air dried for an overnight and activated for one hour at 110 °C and used.

Thin Layer Chromatography of *Lanata camara* Linn.

- Mobile phase: Chloroform: acetone
- Proportion: (8:2)
- Detection: Iodine chamber
- Solvent front: 5.0cm
- Spot Detection: 2.9cm

Anthelmintic Activity:

Procedure:

1. Both extracts from the leaves of *Lanata camara* were investigated for their anthelmintic activity against *Pheretima posthuma*.
2. The various concentrations (50 - 100 mg/ml) of each extract were tested in the bioassay.
3. It involved determination of time of paralysis and time of death of the worms.
4. The albendazole was includes as standard reference and distilled water as control.
5. The anthelmintic assay was carried as per the method of Ajaiyeoba *et al.*,

RESULTS:

TABLE 1: OBSERVATION TABLE OF NATURE, COLOUR OF *LANATA CAMARA* LINN. LEAVES EXTRACTS

S. no.	Extracts	Plant part	Nature of extract	Colour	Weight (gm)
1	Methanol	Leave	Semisolid	Green	1.3gm
2	Aqueous	Leave	Semisolid	Brown	2.0gm

TABLE 2: QUALITATIVE CHEMICAL INVESTIGATION OF *LANATA CAMARA* LINN. (VERBENACEAE)

S. no.	Name of the test	Methanol	Aqueous
1	Test for Steroids	--	++
2	Test for triterpenoids	++	--
3	Test for glycosides	++	--
4	Test for carbohydrates	--	++
5	Test for alkaloids	--	++
6	Test for flavonoids	--	++
7	Test for tannins	--	++
8	Test for proteins	--	++
9	Test for Vitamins	--	++

TABLE 3: OBSERVATION OF THIN LAYER CHROMATOGRAPHY

Extract	Observation		R _f Value
	No. of spot	Colour of spot	
Leave	1	Faint Yellow	0.58

TABLE 4: ANTHELMINTIC ACTIVITY OF LANATA CAMARA LEAVES EXTRACT

Extract	Concentration (mg/ml)	Paralysis (P)	Dead (D)
Control	(0.5% CMC)	-	-
Albendazole	10 mg	1 min 12 sec	1 min 25 sec
Methanolic	50 mg/ml	1 min 45 sec	1 min 52 sec
	100 mg/ml	1 min 52 sec	1 min 58 sec
Aqueous	50 mg/ml	1 min 58 sec	2 min
	100 mg/ml	2 min	2 min 35 sec

CONCLUSION: Phytochemical investigation of methanol and aqueous extract were carried out which shows presence of tannins, steroids, flavonoids, alkaloids, saponins, proteins, glycosides chromatographic study of the extract was carried out where the extract selected on the basis of chemical investigation, anthelmintic activity of methanol and aqueous extracts were studied by using *Pheretima posthuma*. This study shows that methanolic extract shows potent inhibitory activity as compared to aqueous extract.

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CONFLICT OF INTEREST: Nil

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