

FORMULATION AND EVALUATION OF HERBAL ANTI MICROBIAL CREAM OF TRIDAX PROCUMBENS AND CALOTROPIS PROCERA

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ABSTRACT

The main aim of the project was to prepare herbal anti-microbial cream from extract of *Tridax procumbens* and *Calotropis procera*. Herbal creams offer several advantages over other synthetic creams. The majority of existing creams which has prepared from synthetic origin and give benefits from any type of infection. But the herbal cream doesn't have that much side effects. The cream formulation includes borax, bees wax, liquid paraffin, methyl paraben and perfume with required amount of distilled water. Prepared cream was evaluated for physical Appearance, pH, spreadability, viscosity and phase separation.

KEYWORDS- *Tridax procumbens*, *Calotropis procera*, anti-microbial, extract.

INTRODUCTION-

The widespread interest in drugs derived from plants because of the belief that plants are safe and dependable, and with lesser side effects. With the techno-savvy lifestyle in 21st century human sufferings are coming out with different names. The basic herbs have the answer with no side effects and effective remedies and the golden fact is use of herbal treatment is independent of any age group A large number of medicinal plants belonging to the family of Apocynaceae and Asteraceae contain chemical compounds exhibiting anti-microbial activity. The anti-microbial formulations of plant origin have been proved to be effective with lesser side effects. Extracts of *Tridax procumbens* and *Calotropis procera* the dried leaves of it possess not only anti-microbial activity but also Other various activities.

1. *Tridax procumbens*- It is commonly called as coat buttons or tridax daisy is a species of flowering plant in the family of Asteraceae. The plant has been considered as a gregarious weed, distributed throughout the tropics and sub tropics. Traditionally in India, *Tridax procumbens* leaves have been used as one of the most popular remedy for dermal wounds.

Scientific classification

Kingdom- Plantae
Class- Asterales
Family- Asteraceae
Genus- *Tridax*
Species- *T.procumbens*
Botanical name-*Tridax procumbens*

Chemical constituent- the plant is rich in chemicals such as iron, copper, manganese, sodium and zinc and other trace minerals. The plant has also reported to contain various Alkaloids Glycosides and flavonoids.



2. *Calotropis procera* – *Calotropis procera* is considered as a medicinal plant family, surrounded throughout India and in other tropical area. *Calotropis procera* is native to Africa, Arabian Peninsula, Western Asia, the Indian Subcontinent, and Indo-China belonging to family Apocynaceae. The plant has various medicinal uses such as wound healing, Antimicrobial and Anti-inflammatory activity.

Scientific classification:

Kingdom- Plantae

Class – Asterids

Family – Apocynaceae

Genus – *Calotropis*

Species – *procera*

Botanical name- *Calotropis procera*

Chemical constituents- It shows presence of metabolites such as flavonoids, tannins, terpenoids, saponins, alkaloids, steroids and cardiac glycosides. The plant also contains of several heavy metals such as manganese, lead, chromium, iron, copper, nickel, cobalt, strontium, and cadmium



MATERIAL AND METHODS

Collection of plant material -

The whole plant of *Tridax procumbens* were collected from local area around Bhor, the plant sample was authenticated by Botanical survey of India Pune. The collected sample was wash thoroughly by water. The clean plant parts are then allowed for complete shade dry for week and then made to fine powder with mechanical grinder and stored in a container.

The leaves of *Calotropis procera* were collected from local area around Bhor, the plant sample was authenticated by Botanical survey of India Pune. The collected sample was wash thoroughly by water until all the latex of plant was removed. The clean leaves are then allowed for complete shade drying and then made to fine powder with mechanical grinder and stored in a container.

Preparation of plant extract –

Tridax procumbens – The powder is extracted 125 ml ethanol and 25ml of water in Soxhlet apparatus in about 45 to 50°C and the extraction was carried about 24hrs. Then the liquid extract was taken on china dish and water is evaporated on water bath till the thick dense extract is obtained.

Calotropis procera- The extraction was carried out with 120 ml ethanol and 30 ml water in Soxhlet apparatus for 24hrs. Then the extract was evaporated on water bath till the semisolid extract is obtained.

phytochemical analysis of extract:

The phytochemical screening of prepared extracts and reported the presence of alkaloids, tannins, phenolic compounds and flavonoids

Test	Methods	Inference	Result
1. Test for Tannins	2ml extract + 1% Lead acetate solution	Yellow precipitate	Tannins are present.
2. Test for Phenolic compounds	2ml extract + few drops of Ferric Chloride solution	Black colour Observed	Phenols are present.
3. Test for Alkaloids	2ml extract + 1ml Hcl + Heat and then Cool	Yellow colour precipitate	Alkaloids are present.
4. Test for Flavanoids	1ml extract + Sodium hydroxide	Dark yellow solution	Favanoids are present

Thin layer chromatography

Tridax procumbens: Extract was loaded onto 4 × 7 cm pre-coated silica gel plates using a capillary tube, and ethyl acetate: ethanol: water (8: 1.2: 0.8) was used as the mobile phase system. The chromatograms were placed in Iodine chamber for staining and was observed under light and Rf values were calculated.

Calotropis procera: Extract was loaded onto 4 × 7 cm pre-coated silica gel plates using a capillary tube, and chloroform: methanol (4:1) was used as the mobile phase system. The chromatograms were placed in Iodine chamber for staining and was observed under light and Rf values were calculated.

Uv analysis:

The Uv analysis of extracts were carried out using Uv visible spectrophotometer (Jasco V-530) and observed peak was recorded

Procedure for formulation of cream

The cream was prepared by using liquid paraffin, methyl paraben, bees wax, borax and water. The oil phase is made by melting bees wax on water bath after melting the liquid paraffin was added and temperature was maintained at 70°C. The aqueous phase was prepared by adding, methyl paraben and borax in water and it was dissolved in water at 70°C. Then the aqueous phase was added in oil phase while constantly stirring and prepared extract was added simultaneously. After the cooling of cream the perfume was added in cream and was packed in air tight container.

Formulation Table-

INGREDIENTS	QUANTITY	Role
<i>Tridax procumbens</i>	3gm	Anti-microbial activity
<i>Calatropis procera</i>	2gm	Anti-microbial activity
Bees wax	8gm	Base
Methyl paraben	0.4ml	Preservative
Liquid paraffin	25ml	Emollient
Borax	0.4gm	Emulsifying agent
Water	12ml	Vehicle
Perfume	q.s.	Fragrance

Evaluation of cream formulation-

- pH-** The pH was measured by digital pH meter which was first calibrated. The solution of cream was prepared by using 20ml Ethanol, the rod was dipped in the prepared solution and pH was recorded after stabilization.
- Viscosity** – The viscosity of cream was checked using brook field viscometer at 50 rpm
The viscosity was found to be 120cp
- Spreadability** – 500mg cream is sandwiched between two slides and 100gm weight is placed on upper slide. The weight was removed and extra formulation was scrapped off. The lower slide was fixed on board of apparatus and upper slide was fixed with non flexible string on which 20gm load was applied. Time taken by upper slide to slip off was noted down.
- Homogeneity-** The test was done by physical touch with hands.

5. **Appearance-** The appearance of the cream was found by observing its colour, opacity, etc.
6. **Washability-** The washability of cream was determined by applying the cream over the skin and the extend of easy washing with water with minimal force to remove the cream.
7. **Irritancy test-** The cream was applied on left hand dorsal side surface of 1sq cm and observed in equal intervals upto 24hrs for irritancy and redness.
8. **Accelerated stability studies-** It were performed on all the formulations by maintaining at room temperature for 20 days with constant time interval. During the stability studies the parameters like homogeneity, viscosity, physical changes and pH.
9. **Anti-microbial test-** The test was performed on *Staphylococcus auris* and *Candida albicans*

Sr. no	Sample	Concentration	Zone of inhibition (mm)	
			S.aureus	Candida albicans
1	Control			
2	Standard	1mg/ml	42	4
3	A	10mg/ml	8	8
4	B	10mg/ml	10	2
5	C	10mg/ml	2	12

Observation:

Sr. No	Evaluation parameter	Observation
1	Colour	Light green
2	Odor	Perfumed odor
3	Homogeneity	Homogeneous
4	Appearance	Smooth
5	pH	Neutral (7.72)
6	Skin irritation	No irritation
7	Spreadability	Spreadable
8	Viscosity	120 cp

Conclusion –

From our ancient period herbal plant parts and crude drugs were directly used as a medicine. But in this various research papers the plant and their plant parts *Tridax procumbens* and *Calotropis procera* was taken for study and formulated for cream and their properties. As this o/w formulation was found to be good with characteristics such as pH, viscosity, spreadability, etc. Natural remedies are more acceptable in the belief that they are effective with lesser

side effects then the synthetic ones. Herbal formulations have growing demand globally. It is very good attempt to establish the herbal cream containing extract of *tridax procumbens* and *Calotropis procera*.

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