



Asian Journal of Research in Chemistry and Pharmaceutical Sciences

Journal home page: www.ajrcps.com

<https://doi.org/10.36673/AJRCPS.2020.v08.i02.A18>



FORMULATION AND EVALUATION OF *TRIDAX PROCUMBENS* HERBAL GEL

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ABSTRACT

Herbal gels are used since many years. Gel is the semisolid dosage form of at least two constituents, consisting of a condensed mass enclosing and interpenetrated by a liquid. It has an easy application, easy removable property. It is widely accepted dosage form, and it has more patient compliance. *Tridax procumbens* is an anti-bacterial drug, it also has wound healing activity for such activity it has been used in traditional medicinal systems in India, the rural parts of country still has a wide use of this plant. When it comes to its use in combination with certain modern dosage forms, gel seems to be a good option. This article gives 2 formulations of herbal gel, which contains. *Tridax procumbens* aqueous extract, carbopol 940 as a base in combination with triethanolamine.

KEYWORDS

Tridax procumbens, Anti-bacterial activity and Herbal Gel.

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INTRODUCTON

Traditional medicines has importance in India since hundreds of years and it has potential action on various diseases and disorders therefore it is an impactful way of treatment. As we are aware about importance of traditional medicines but it also has certain drawbacks, like lack of research, limited literature, and low patient compliance towards traditional medicine. As per reports of certain print media houses 77% of households in India uses ayurvedic herbal products. Plants which have medicinal properties can be seen in variety in India. After thorough research on this plant this can be an alternative to synthetic drugs. Use of this plant for the treatment of certain bacterial infections which are caused due to *Escherichia coli*, *Staphylococcus*

aureus and *Pseudomonas aeruginosa* has shown a desired effect¹.

Tridax procumbens is a plant belongs to family *Asteraceae* and genus *Tridax*; it is also called as Tridax daisy. This plant is found easily in all parts of country either tropical or subtropical, rural part of Maharashtra has variety of uses of this plant, mainly in farmers, workers and other people related with farming profession². Due its easy availability, its acceptance has grown exponentially. When we focus on uses and acceptance of this plant in the rural parts of the country, we also have to accept that its compliance and mode of application is still challenging. As far as dosage form is a matter of concern, gel becomes a good option. Gel has several advantages over other dosage forms³. Gels are semisolid systems consisting of dispersions of small or large molecules in an aqueous liquid vehicle rendered jellylike by the addition of a gelling agent. Gelling agents which are used in formulation of gels are synthetic macro molecules; like carbopol 940, some cellulose derivatives like carboxymethylcellulose and hydroxypropylmethyl cellulose. In some cases naturally occurring agents are also used like tragacanth. Advantages of gel dosage form over other dosage forms are less irritancy, softens the skin, easily removable⁴.

MATERIAL AND METHODS

Collection of Plants

For the purpose of formulation of gel *Tridax procumbens* plants was collected from farms and surrounding areas of and our village near solapur in Maharashtra, also some of leaves collected from surrounding areas of College of Pharmacy Solapur, Maharashtra.

Preparation of Extract

Flowers of collected plants were removed then remaining parts washed with tap water then with distilled water and dried on a filter paper in shade for seven days. After complete drying of plants which has leaves, stem and roots powdered in an electric blender then powder were collected and passed through sieve No.12 to remove unwanted materials. After this step powder was dissolved in water with proportion 1:10. This mixture was kept

for incubation for 24 hours. Then it was filtered and filtrate was collected and kept for evaporation of water, sticky extract was collected for preparation of gel¹.

Formulation of gel⁵

Procedure

1. Required quantity of carbopol was taken and 10ml of water was added in it; it was stirred at 300-500RPM in a homogenizer for 15 minutes.
2. After achieving a sticky consistency add triethanolamine and more 10ml of water. Again it was stirred at higher than 500RPM.
3. After another 20 minutes a gel base was formed then *Tridax procumbens* extract was added; and it was further stirred for 10 minutes at higher rpm, PEG and Propyl Paraben were further added in geometric proportions to yield a homogenous gel.
4. Finally this whole mixture was stirred for another 45 minutes with small incremental addition of water (Table No.1).

EVALUATION⁵

Anti-bacterial activity

1. LB broth was mixed in 100ml of water.
2. The petri dishes and media were autoclaved for 30 minutes.
3. Then media was spread over the petridish under laminar air flow.
4. 100µgm *E. coli/S.aureus* was spread over the media.
5. After that petridishes were kept in refrigerator for 10 minutes.
6. Under sterile conditions, drug was poured on plates.

Anti-inflammatory activity

For this study following procedure was adopted.

1. Weigh the animals and number them.
2. Make a mark on both the hind paws just beyond tibio-tarsal junction, so that every time the paw is dipped into the mercury column up to the fixed mark to ensure constant paw volume.
3. Note the initial paw volume of each rat by mercury displacement method.
4. The results were compared and studied.

Spreadability

A 1gm quantity of gel was placed between two slides one of which is movable. On the movable slide desired force was applied so that the gel gets spread and according to that spreadability was measured (Table No.2).

Viscosity

It had studied on the Brookfield viscometer.

pH

It had studied on the benchtop pH meter.

RESULTS AND DISCUSSION

After completion of evaluation parameters like anti-inflammatory action, anti-bacterial action we can say that *Tridax procumbens* has a good anti-bacterial and anti-inflammatory properties. Amongst batches batch F2 was observed as a good batch and it has also shown a good Spreadability, viscosity and desired pH, therefore it is an optimized batch ((Table No.3 and Figure No.1).

Table No.1: Formulations

S.No	Ingredient	F1	F2
1	<i>Tridax procumbens</i> extract	500mg	500mg
2	Carbopol 940	-	1.5gm
3	HPMC	1.5gm	-
4	Triethanolamine	4ml	2ml
5	PEG 400	5ml	5ml
6	Propyl Paraben	50mg	50mg
7	Water	up to 50ml	up to 50ml

Table No.2: Evaluation Parameters

S.No	Parameters	Observations	
		F1	F2
1	Appearance	Transparent	Transparent
2	Colour	Pale green – white	Pale green – white
3	pH	5.2-5.6	5.7-5.9
4	Viscosity	18600cp	19210cp
5	Spreadability	14mm	18mm

Table No.3: Zone of Inhibition

S.No	Organisms	Zone of inhibition for F 1	Zone of inhibition for F 2
1	<i>E.coli</i>	13mm	15mm
2	<i>S.aureus</i>	2mm	4mm

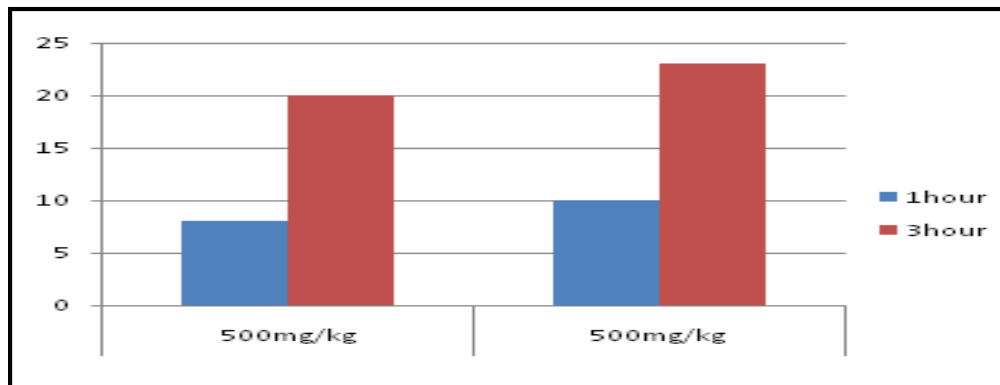


Figure No.1: Anti-inflammatory activity

CONCLUSION

F2 batch has shown the craved results therefore this gel formulation can be used for anti-bacterial and anti-inflammatory activities.

ACKNOWLEDGEMENT

Authors are thankful to V.G. Shivdare College of Biotechnology for providing culture media's of *S.aureus* and *E.coli* for evaluation purposes.

CONFLICT OF INTEREST

We declare that we have no conflict of interest.

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Please cite this article in press as: Paralkar S D et al. Formulation and evaluation of *Tridax procumbens* herbal gel, *Asian Journal of Research in Chemistry and Pharmaceutical Sciences*, 8(2), 2020, 110-113.