



EVALUATION OF WOUND HEALING ACTIVITY OF ETHANOLIC EXTRACT OF *TAMILNADIA ULIGINOSA* OINTMENT IN RATS

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ABSTRACT

The present research work has been undertaken with an objective to screen the wound healing activity of the ethanolic extract of *Tamilnadia uliginosa* ointment, was studied on rats. The ointment of the ethanolic extract of *Tamilnadia uliginosa* produced significant response in the wound healing tested. In the excision model the extract treated wounds were found to epithelialise faster and the rate of wound contraction was higher, as compared to control wounds. The results were also comparable to those of standard drug Povidone iodine.

Key words; Excision wound model, *Tamilnadia uliginosa*

INTRODUCTION

Plants have been used in virtually all culture as a source of food, clothes and shelter. Beside, these they provide timber, fuel, dye, gum, resin, medicine etc. to us and have very significant role in human civilization. The dependence of tribal and rural people on plant based material is increasing day by day. Medicinal plants have always been the principle source of medicine in India since ancient time and presently they are becoming popular throughout the developed countries. They also play an important role in the life of tribal and rural people, particularly in remote part of developing countries. Obviously, these plants help in alleviating human suffering. These plants are being integrated to the field of foods as additives, beverages and cosmetics. *Tamilnadia uliginosa* belong to the family Rubiaceae. It is a small shrub, which grows upto 1-2 m and it is used widely in our Traditional System of Medicine for curing various diseases like ulcers, laxation and in the treatment of eye diseases. The leaves are used in kidney troubles and in muscular pain and are applied on boils and carbuncles. Infusion of plant is used against rheumatism, cold and bronchitis^[1,2]. In Unani medicine, a confection of tender leaves and purified sugar is prescribed in anuria, retention of urine and kidney troubles

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The aim of the present study is to detect the wound healing activity from natural resources and to support the traditional uses of *Tamilnadia uliginosa*.

MATERIAL AND METHODS

Preparation of extracts from the stem of *Tamilnadia uliginosa*

The stem of *Tamilnadia uliginosa* were collected from Tirumala hills, Chittoor, Andhra Pradesh, India and authenticated by Mr. P. Prasadarao, Department of Botany, PSC & KVSC Govt College, Nandyal, Kurnool (Dist), Andhra Pradesh. Shade dried stem of *Tamilnadia uliginosa* were powdered and separately extracted in a Soxhlet apparatus for 6 hrs with ethanol and then concentrated under vacuum at temperature of 45°C by using rotary evaporator, dried completely, weighed and stored in desiccators.

ANIMALS USED

Albino rats of either sex weighing 200-250gm were used in the studies. The animals were maintained under standard laboratory conditions at an ambient temperature of 23.2°C having 50% relative humidity with 12h light and dark cycle. The rats are divided in to 5 groups each consisting of 6 animals and allowed free access to water along with standard pellet diet for one week before the experiment.

STATISTICAL ANALYSIS

Wound healing data were expressed as mean \pm S.E.M and evaluated by ANOVA.

EXPERIMENTAL DESIGN

Three different ointments containing 1.25%, 2.5%, 5% ethanolic extract of *Tamilnadia uliginosa* were prepared as per procedure of British pharmacopeia. [3] Animals were divided in to 5 group's i.e group A, group B and respectively they treated as control, standard, and test groups T₁, T₂, T₃.

EXCISION WOUND MODEL

Animals were divided in to 5 groups each of 6 animals. The hairs on the skin of vertebral surface of all animals were removed by wiping hair remover (veet) with the help of a cotton swab. Under light ether and aesthesia, an impression of 500 mm² was made on the shaved back of the rat [4]. The skin of the impressed area was excised carefully. Group A

TREATMENT

considered as standard was treated with 5% povidone iodine ointment, group E is considered as control and group B, group C, group D, are *Tamilndia uliginosa* treated groups and applied ointment 1.25%, 2.5% & 5% respectively. The percentage of wound closure was recorded on day 4, 8, 12 and 16. Wound area was traced and measured with the help of mm graph paper.

WOUND CONTRACTION AND EPITHELIALIZATION TIME:

Wound contraction (w.c) was measured daily until the wound healed completely and expressed as the percentage of reduction in wound area (w.a) of the original surgical excision as follows:

S.No	Group	Treatment	Treatment
1	Group A (S)	Standard	Received povidone-iodine ointment 5% w/w topically
2	Group B (T ₁)	1.25%	Received 1.25% w/w crude ethanolic extract ointment topically.
3	Group C (T ₂)	2.5%	Received 2.5% w/w crude ethanolic extract ointment topically.
4	Group D (T ₃)	5%	Received 5% w/w crude ethanolic extract ointment topically
5	Group E	Control	Simple ointment

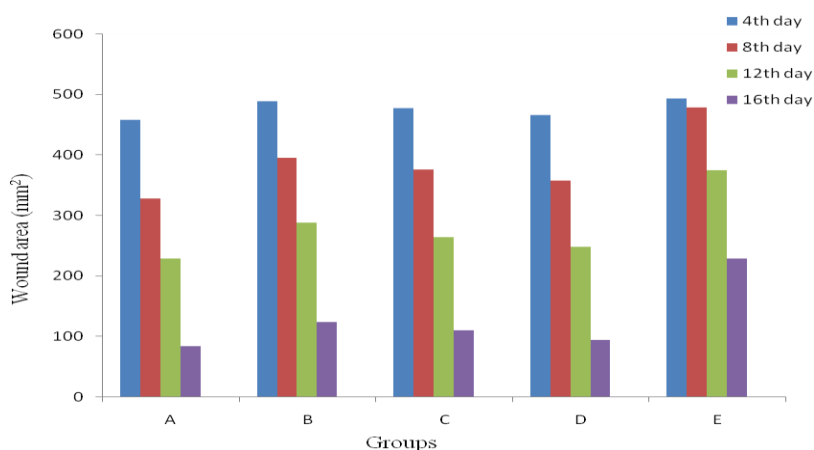
$$\% \text{wound contraction} = \frac{\text{wound area on day 0} - \text{wound area on day } n}{\text{wound area on day 0}} \times 100$$

RESULTS:

Measurement of wound Area (in mm²)

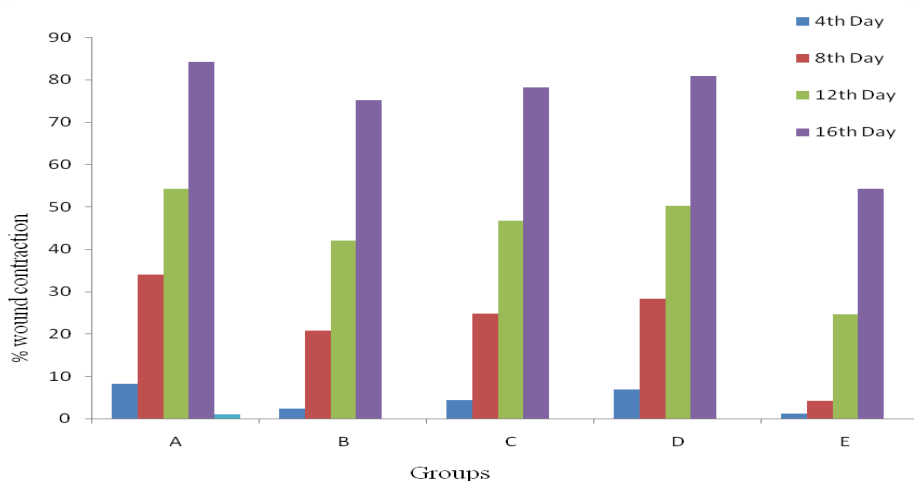
Post wounding days	Wound area (mm2) (mean ± SEM)			
	4 th day	8 th day	12 th day	16 th day
Group A	459±0.88	328±1.71	229±2.22	84±1.37
Group B	489±1.92	396±1.48	289±1.35	124.3±1.75
Group C	478±1.55	376±1.29	265.2±1.06	110.1±1.01
Group D	466±1.57	358±1.65	249±1.36	95±1.29
Group E	497±0.74	479±1.99	375±1.34	229±1.59

MEAN+SEM



Percent of wound contraction and Epithelisation Time

group	% wound contraction				Epithelization time for 100%(wound healing)
	4 th day	8 th day	12 th day	16 th day	Days
A	8.2%	34.02%	54.3%	84.34%	18
B	2.3%	20.86%	42.02%	75.26%	22
C	4.4%	24.82%	46.7%	78.30%	22
D	6.8%	28.33%	50.29%	80.93%	20
E	1.2%	4.25%	24.69%	54.29%	24



DISCUSSION

The results of the excision wound model are shown in Table 1 and Table 2. The ethanolic extract 5% w/w exhibited better wound healing activity than compared to 1.25% & 2.5% w/w. Thus the present study offers evidence of the folk use of *Tamilnadia uliginosa* for wound healing.

CONCLUSION

Tamilnadia uliginosa is a plant because each and every part of it can be used for its medicinal values. Other parts of the plants such as fruit, root, pulp and unripe fruits are documented to possess important medicinal uses and pharmacological effects.

The present study reports wound healing activity of *Tamilnadia uliginosa*. The results of the wound

healing activity, of the ointment containing 5% w/w of ethanolic extract of *Tamilnadia uliginosa* is comparable to that of standard povidone iodine ointment. Further studies on this plant may provide a good wound healing agent of nature.

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