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

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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.

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, Chitoor, Andhra Pradesh, India and authenticated by Mr. P. Prasadaraao, 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.

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*

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STATISTICAL ANALYSIS
Wound healing data were expressed as mean ± S.E.M and evaluated by ANOVA.

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EXPERIMENTAL DESIGN

Three different ointments containing 1.25%, 2.5%, 5% ethanolic extract of Tamilnadia uliginosa were prepared as per procedure of British pharmacopeia. Animals were divided into 5 groups 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 into 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 anesthesia, an impression of 500 mm² was made on the shaved back of the rat. The skin of the impressed area was excised carefully. Group A considered as standard was treated with 5% povidone-iodine ointment, group E is considered as control and group B, group C, group D, are Tamilnadia 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:

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

RESULTS:
Measurement of wound Area (in mm²)

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Group</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Group A (S)</td>
<td>Standard</td>
</tr>
<tr>
<td>2</td>
<td>Group B (T₁)</td>
<td>1.25% Received 1.25% w/w crude ethanolic extract ointment topically.</td>
</tr>
<tr>
<td>3</td>
<td>Group C (T₂)</td>
<td>2.5% Received 2.5% w/w crude ethanolic extract ointment topically.</td>
</tr>
<tr>
<td>4</td>
<td>Group D (T₃)</td>
<td>5% Received 5% w/w crude ethanolic extract ointment topically.</td>
</tr>
<tr>
<td>5</td>
<td>Group E</td>
<td>Control Simple ointment</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Post wounding days</th>
<th>4th day</th>
<th>8th day</th>
<th>12th day</th>
<th>16th day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group A</td>
<td>459±0.88</td>
<td>328±1.71</td>
<td>229±2.22</td>
<td>84±1.37</td>
</tr>
<tr>
<td>Group B</td>
<td>489±1.92</td>
<td>396±1.48</td>
<td>289±1.35</td>
<td>124.3±1.75</td>
</tr>
<tr>
<td>Group C</td>
<td>478±1.55</td>
<td>376±1.29</td>
<td>265.2±1.06</td>
<td>110.1±1.01</td>
</tr>
<tr>
<td>Group D</td>
<td>466±1.57</td>
<td>358±1.65</td>
<td>249±1.36</td>
<td>95±1.29</td>
</tr>
<tr>
<td>Group E</td>
<td>497±0.74</td>
<td>479±1.99</td>
<td>375±1.34</td>
<td>229±1.59</td>
</tr>
</tbody>
</table>

MEAN+SEM
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 compatible to that of standard povidone iodine ointment. Further studies on this plant may provide a good wound healing agent of nature.

REFERENCES


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