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<p>Wound healing activity of virana sanjeevi thylam in animal models</p>		
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<p>History of Article:</p> <p>Received 26 September 2015 Received in revised from 30 September 2015 Accepted 10 October 2015 Available online 25 October 2015</p>	<p>ABSTRACT</p> <p>Skin ulcer is a basic and fundamental problem for surgeons as well as biomedical researchers. Siddha system of medicines is one of the ancient systems in the world which deals with the spirit of multidimensional approach in healing simple and chronic ulcers with a very good range of drugs. Siddha herbal formulation Virana sanjeevi thylam was taken from classic Siddha literature in treating skin ulcers. The aim of the study was to evaluate the wound healing effect of the drug in healing ulcers. The experiment was conducted on six albino rats allocated to three groups containing two rats each namely control (Group A), Standard (Group B) and Treatment (Group C).Virana sanjeevi thylam was applied over the wound surface of Group C rats twice daily. For the standard Neomycin was applied over the wound surface of Group B rats twice daily. Control Group A received no drug treatment. The contracture of the wound and complete epithelialization was noted. Percentage of wound healing was calculated and tabulated which revealed the efficacy of the drug. From the results obtained, I conclude that the drug Virana sanjeevi thylam has significant wound healing action equal to that of the modern drug neomycin.</p> <p>Keywords: Skin ulcer, Wound healing, Neomycin, Epithelialization.</p>	

INTRODUCTION

Mother India is not only pride to be the land for tradition and culture but also for its own indigenous system of medicines. Siddha system of ancient medicine found by siddhars, the spiritual scientists had profound knowledge about the universe. They shared their spiritual experience, knowledge and wisdom with the human beings and guided them in achieving salvation which is the ultimate aim of human birth.

In human body, skin is an extra ordinary structure which acts as a barrier separating the potentially harmful environment from the body's vulnerable interior. Skin problems are not often dramatic but cause considerable discomfort and much disability.

Worldwide prevalence of skin ulcers are believed to be 1% of population. In India, prevalence of acute ulcers are believed to be 10.5 per thousand and chronic ulcers are 4.5 per thousand. According to worldwide world prevalence of Etiology CAGR (2007-2016) of Diabetic ulcers will be 9.3%, Pressure ulcers about 6.9% and venous ulcers will be 6.7% and ulcers of other types will be 3% and less than 3%(Incidence et al., 2009).

The therapeutic efficacies of many indigenous plants, for various diseases have been described by traditional herbal medicine practitioners (Natarajan V et al., 2003). Wound healing is a complex and dynamic process of restoring cellular structures and tissue layers in damaged tissues as closely as possible to its normal state (BS Nayak et al., 2006). Siddha medicine plays an excellent role in treating

wounds. Common herbs, metals, minerals and animal products were used to prepare medicines in treating lot of medical ailments (Thiyagarajan R., 2008). This paper explains the therapeutic efficacy of the drug Virana sanjeevi thylam in healing skin ulcers which contains Purified Semecarpus anacardium (anacardiaceae, common name: Marking nut), Purified Arsenic trisulphide and Gingelly oil together promotes the healing activity significantly equal to that of the modern drug.

Skin problems are not often dramatic but cause considerable discomfort and much disability. People from all over the world are looking for safer and effective traditional treatment for diseased conditions with minimum negative offshoots (Vijay K shukla et al., 2007). So the aim of the study was to evaluate the drug “**Virana sanjeevi thylam**” for its **Wound healing activity** in animal models.

MATERIAL AND METHODS

The siddha drug Virana sanjeevi thylam was selected from a classical Siddha literature (Thiyagarajan R., 2008).

Ingredients: Ingredients were listed below

- | | |
|---|--------------|
| 1. Purified Serangottai-
semecarpus anacardium | Purified |
| 2. Purified Thalagam -
Arsenic trisulphide | Purified |
| 3. Nalennai - | Gingelly oil |

Collection, Identification and authentication of the drug

The required raw drugs were purchased from a well reputed country shop. They were authenticated by the Medical Botanist of Government Siddha medical College, Palayamkottai.

Purification of the drug

All the ingredients of this herbal formulation were purified according to the proper procedure methods described in Siddha classical literature (Sarakku suthi, 2008, Muruges., 2007).

Preparation of the drug

Gingelly oil was poured in a vessel. Powdered thalagam were sprinkled into the vessel. Each serangottai was cut into two pieces and put into the oil. Heat was applied gently until the extract gets mixed with the oil. Then the oil was poured into the mixture of equal amount of rice water and water. The vessel was kept without any disturbance. Next day the oil floating on the surface was collected and applied heat. Then the oil was filtered and taken in an air tight container. It was labelled as Virana sanjeevi thylam (Deva et al., 2008).

Animals

The animal model for this activity was the Wistar albino rat of either sex. The weight of each albino rat ranges from 200-300 gms. The animals were caged individually in a controlled environment. The animals were kept in a ventilated room with food and water. The experimental protocol was approved by the Institutional Ethical Committee (IAEC) with reference of No.3/IAEC/GSMC.

Pharmacological activity

Screening the drug Virana sanjeevi thylam against the Wistar albino rats with excisional wounds. Staphylococcus aureus organism was injected into the wounds created in the rats.

Chemicals and drugs

Staphylococcus aureus organism was used to induce infection in the wounds and it was bought from Malar Diagnostic Labs from Tirunelveli. Neomycin was the reference standard drug used which was bought from Tirunelveli medical college pharmacy, Tirunelveli. All the drugs and chemicals used in this study were of analytical grade.

Methodology

Prior to creating excisional wounds the rats were anesthetized and then the animals were shaved on the back and the skin was disinfected using cotton and alcohol wipes. Using sterile surgical instruments round full thickness skin wounds measuring 500 mm² were created in the paravertebral area, 1.5 mm from midline on the back of rats. 0.1ml of Staphylococcus aureus

organism from the peptone water medium maintained at 37°C is injected into the subcutaneous area of the excision wounds created in the albino rats.

All the 6 rats were then randomly allocated to three groups, each group containing two rats each, namely control (Group A), standard (Group B) and treatment (Group C). For the treatment Virana sanjeevi thylam was applied over the wound surface of Group C rats twice daily. For the standard Neomycin was applied over the wound surface of Group B rats twice daily. Control Group A received no drug treatment. The applications continued for 14 days from the start of the experiment.

To measure the contracture of the wound, a transparent plastic paper was placed on the location of wound and its shape was drawn on the

same paper with a marker and then matched with the graph paper for finding the area of the wound (expressed in mm²).

Wound healing was measured on Days 2, 4, 6, 8, 10, 12 and 14 of the experiment. Percentage of wound healing was calculated according to the Walker formula (Hasamnis A et al., 2010).

The total number of days required for complete epithelialization of the wound was noted in each rat in both the groups (e.g. fall of scab without any raw area).

From the table 2, the complete wound healing was found on 14 th day in both Group B and Group C. The siddha drug Virana sanjeevi thylam has significant wound healing action equal to that of the modern drug.

Table-1. Readings of wound area in sq.mm

Groups	Initial	Day2	Day4	Day6	Day8	Day10	Day12	Day14
Group A	500	476	402	350	285	198	132	109
Group B	500	395	356	290	200	113	34	0
Group C	500	400	386	300	215	136	45	0

From the table 1, the wound area was found to be reduced to 0 in case of Group B and Group C.

Table-2. Percentage of wound healing

Groups	Initial	Day2	Day4	Day6	Day8	Day10	Day12	Day14
Group A	0	4.2	11.6	30	39	58.4	62.6	65.2
Group B	0	21	28.8	42	60	77.4	93.2	100
Group C	0	20	22.8	40	57	72.8	91	100

From the table 2, the complete wound healing was found on 14 th day in both Group B and Group C. The siddha drug Virana sanjeevi thylam has significant wound healing action equal to that of the modern drug.

Walker Formula

Wound healing was measured by using Walker formula. It was represented in percentage. The formula is given below,

Percentage of wound area = Wound area on day X/ Wound area on day 1 x 100
 Percentage of wound healing = 100-Percentage of wound area.

RESULT AND DISCUSSION

The wound healing activity of the drug Virana sanjeevi thylam was evaluated in Wistar albino rats. The results were tabulated below in table 1 representing readings of wound area in sq mm and table 2 representing percentage of wound healing.

The wound healing activity of the drug Virana sanjeevi thylam is evaluated in Wistar albino rats with Staphylococcus aureus organism

injected in the excisional wounds in order to produce local skin infection.

The drug is applied over the excisional wounds externally and the contracture of the wound is measured for 14 days. The drug neomycin is taken as the standard drug which is used for healing wounds. The test drug shows a significant wound healing action equal to that of the standard drug.

The mode of action of the test drug Virana sanjeevi thylam which brings about the wound healing action may be due to the increase in reepithelialization of the wounds and enhancing the process of wound healing. It may be due to the presence of Growth factors promoting healing, Phenols, collagens, Flavonoids, Anti-Oxidants, calcium, Ferrous iron and also Anti-Bacterial activity (V.N.Bandra et al., 2011).

CONCLUSION

Virana sanjeevi thylam is a Siddha drug taken from a classical Siddha literature used in the treatment of wounds. The drug is screened for its wound healing activity in Wistar Albino rats. The results showed significant contracture of the wound. Treating wounds with this drug is found to be efficient in healing skin ulcers without any side effects. Further comprehensive chemical and pharmacological analysis are needed to evaluate the exact mechanism of the wound healing activity of Virana sanjeevi thylam and the drug has its own potency to undergo further research.

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