

## Research: In vivo wound healing activity of polyherbal formulation

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### ABSTRACT:

The study will be aimed to evaluate the in vivo wound healing activity of polyherbal formulation. Ointment of Arka Ksheer, Snuhi Ksheer and combination of both will be evaluated for their wound healing activity in comparison with standard drug Soframycin ointment. The two models of wound healing have five groups (each group having six rats) the 5 groups are as follows. Group A of 6 wistar strain albino rats will be applied ointment base twice a day. Group B of 6 wistar strain albino rats will be applied ointment of Arka Ksheer locally twice a day. Group C of 6 wistar strain albino rats will be applied ointment of Snuhi Ksheer locally twice a day. Group D of 6 wistar strain albino rats will be applied ointment of mixture of Arka, Snuhi Ksheer locally twice a day. Group E of 6 wistar strain albino rats will be applied Soframycin ointment locally twice a day.

**Keyword:** Arka Ksheer, Snuhi Ksheer, Albino Rats, Polyherbal Formulation, Ketamine Inj.

### I. INTRODUCTION

Plants have been used for health and medical purposes for several thousands of years. The number of higher plant species on earth is about 2,50,000. It is estimated that 35,000 to 70,000 species have, at one time or another, been used in some cultures for medicinal purposes. A majority of the world's population in developing countries still relies on herbal medicines to meet its health needs. Herbal medicines are often used to provide first-line and basic health service, both to people living in remote areas where it is the only available health service, and to people living in poor areas where it offers the only affordable remedy.

“Wound is defined as the disruption of the anatomical and cellular continuity of tissue caused by chemical, physical, thermal, microbial, or immunological injury to the tissue. Wound healing processes consist of integrated cellular and biochemical cascades leading to reestablishment of structural and functional integrity of the damaged tissue. Multiple growth factors are required to initiate and promote wound healing such as transforming growth factor beta (TGF- $\beta$ ), platelet activation factor (PAF), epithelial growth factor (EGF), and platelet growth factors (PDGF). Various treatments such as analgesics, antibiotics, and NSAIDs are available for wound management but most of these remedies have many unpleasant side effects. India is well endowed with a rich wealth of medicinal plants and is proud to have a well-documented and well-established program of medicinal plants. These plants have played a major role in the development of Indian ayurvedic medicine. Charaka Samithi's record suggests that there are over 340 drugs of plant origin. Herbal plants have a local value in global importance. More than three quarters of the world's population depends on drug treatment plants. There are 2,50,000 species of plants that are high in the world. Of these 80,000 are medically important. They are very important in the hope of safety and security. They tend to stay healthy in the face of constant stress and pollution. Despite the rich heritage, little attention is given to growing them as garden plants in the country. All of these medicinal plants are useful in the traditional medicine system. WHO's international bodies attempt to compile comprehensive information on policy, regulation, funding, education, research, practice of the use of various medicinal plants that will come under TCAM. Health practices, methods, knowledge and beliefs are related to plants, animal and minerals. Includes herbal medicines, phytomedicines, folk medicine, Siddha, Ayurveda, unani and homeopathic medicine. In recent years, several studies have been conducted on herbal remedies to use their potential in wound management and these natural remedies have shown their effectiveness as an alternative to the available synthetic drugs for wound healing. Many herbs that have been reported in medicinal do a powerful job of healing wounds.”

**II. REVIEW OF LITERATURE:-**

**Wubante D. (2018)** Suggested that Medicinal plants play indispensable roles to treat various ailments. *Acanthus polystachyus* is one of the medicinal plants used traditionally for treatment of wounds.

**Nagar H.K. and Srivastava A.K. (2016)** Suggested that The present study was aimed at investigating the wound healing effect of ethanolic extract of *Cestrum nocturnum* (L.) leaves (EECN) using excision and incision wound model.

**III. AIM AND OBJECTIVES:-**

**Aim:-**

-The study will be aimed to evaluation of In vivo wound healing activity of poly herbal formulation. Ointment of Arkaksheer, Snuhiksheer and combination of both will be evaluated for their wound healing activity in comparison with standard drug Soframycin ointment.

- To study the toxicity of the *Calotropis procera*. Based on the available literature we planned to develop a novel polyherbal formulation more potent than currently available medicines.

**Objectives**

1. Literature survey from Libraries of various universities and colleges in India and internet.
2. Sample collection.
3. Plant authentication.
4. Phytochemical screening.

5. Toxicity study of *Calotropis procera*
6. Compiling results of various studies.
7. Analysis and interpretation of results.
8. Conclusion and Recommendations.

**IV. METHODOLOGY AND MATERIAL**

**Material :-**

**Test Sample**

Ointment Base, Ointment of Arka Ksheer, Snuhi Ksheer, Arka + Snuhi Ksheer mixture Ointment was prepared.

**Chemical and Consumables**

Inj. Ketamine, Inj. Xylazine, Picric acid, Savlon, ethanol, Halothane, Diethyl ether, 10% formalin solution, Glycerin, Safranin, Eosine, Acetone, Benzene, Paraffin wax, Xylene, urethane etc.

**Equipment's or Apparatus:**

Anaesthesia chamber, polypropylene cages, Digital balance machine, Common glass wear, Required surgical instrument, Microscope, Tissue Processer, Microtome etc.

**METHODOLOGY:-**

**Preparation of Ointment**

Weight specific qty of Ingredients of category A and B in a beaker.

Melt on hotplate at temperature 60°C

Mix both category of beaker (A and B) stirrer and cool and pack in suitable container and label it.





















Part	Name of Ingredients	Qty in gm			
		Ark	Snuhi	Ark: Snuhi (5:5)	Ointment base
A	Arka	40 gm	--	--	--
	Snuhi	--	40 gm	--	--
	Ark: Snuhi (5:5)	--	--	40 gm	--
	Water	--	--	--	40 gm
	Steric Acid	3 gm	3 gm	3 gm	3 gm

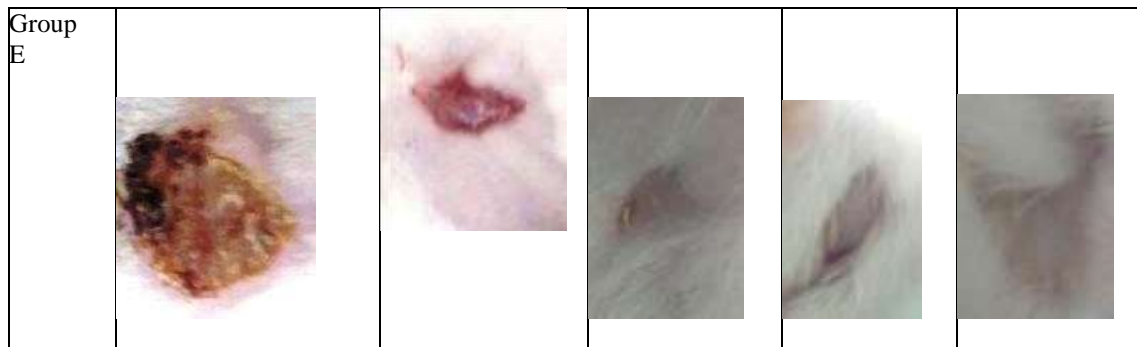
	Glycerin	3 gm	3 gm	3 gm	3 gm
B	Tila Tail	6 gm	6 gm	6 gm	6 gm
	Triethalomine	5 gm	5 gm	5 gm	5 gm
	CetroCetyAlchole	3 gm	3 gm	3 gm	3 gm

Excision Wound Model:

Diameter of wound (mm)					
Groups	0 <sup>th</sup> Day Mean ± SEM	4 <sup>th</sup> day Mean ± SEM	8 <sup>th</sup> day Mean SEM	12 <sup>th</sup> day ±Mean ± SEM	16 <sup>th</sup> day Mean ± SEM
Group A	18.67±0.919	12.50±0.719	6.17±0.477	1.50±0.428	0.0±0.0
Group B	17.00±0.856	7.83±0.872	1.00±0.365	0.0±0.0	0.0±0.0
Group C	19.00±1.211	13.00±1.065	7.50±0.885	1.83±0.307	0.0±0.0
Group D	18.33±1.282	7.50±0.671	0.33±0.333	0.0±0.0	0.0±0.0
Group E	17.67±1.085	8.17±0.307	0.50±0.342	0.0±0.0	0.0±0.0

Groups	0 <sup>th</sup> Day	4 <sup>th</sup> day	8 <sup>th</sup> day	12 <sup>th</sup> day	16 <sup>th</sup> day

Group A					
Group B					
Group C					
Group D					



Incision Wound Model

Marking	Group A	Group B	Group C	Group D	Group E
H	160	168	174	241	219
B	156	162	184	220	221
T	150	174	174	189	203
HB	158	162	221	204	217
BT	161	145	218	210	207
HT	164	159	217	198	228

Incision Wound Model	Group A Mean ± SEM	Group B Mean ± SEM	Group C Mean ± SEM	Group D Mean ± SEM	Group F Mean ± SEM
Wound Breaking Strength	158.17±1.973	161.67±3.989	198.00±9.377	210.33±7.486	215.83±3.781

Dunnett's multiple comparisons test	Mean Diff.	95.00% CI of diff.	Significant?	Summary	Adjusted Value	P
Group A vs. Group B	-3.5	-25.5 to 18.5	No	ns	0.9811	
Group A vs. Group C	-39.83	-61.84 to -17.83	Yes	***	0.0003	
Group A vs. Group D	-52.17	-74.17 to -30.16	Yes	****	0.0001	
Group A vs. Group E	-57.67	-79.67 to -35.66	Yes	****	0.0001	

## V. CONCLUSION

In-vivo wound healing study- Wound healing is a natural process of regenerating dermal and epidermal tissues. Whenever there is a wound, a set of overlapping events takes place to repair the damage. These processes have been categorized into phases which include the inflammatory, proliferative and the remodeling phases. In the inflammatory phase, bacteria and debris are phagocytosed and removed and cytokines and mediators are released that cause the migration and division of cells involved in the proliferative phase. Angiogenesis, collagen deposition, granulation tissue formation, epithelialization and wound contraction occur in the proliferative phase. During epithelialization, the epithelial cells crawl across the wound bed to cover it.

To see the effect of different test samples (Ointment of Arka Ksheer, Snuhi Ksheer combination of Arka, Snuhi Ksheer) on wound healing, the in-vivo wound healing excision and Incision wound model was used. Wistar rats were employed as experimental animals. One of the important reasons for employing this model for the present study was that this model offers very easy to follow surgical procedure and subsequent ease of monitoring the wound area measurement profiles of all the experimental animals during the course of the wound healing process. Apart from these apparent advantages, this model was aptly suitable for studying normal wound healing process in acute wounds.

In excision wound healing model, the skin including the epidermis and dermis is removed completely by excising the skin area from the back of the animals. Thereafter, the repair processes of the injured skin which require coordinated cellular movements for the restoration of the lost skin structures and functions are initiated. In the beginning, the animals were anesthetized and subsequently, the fur from the skin of the back area of the animal where the experimental excision wound is to be created was removed by shaving. The excision wound was created by cutting away a 200 mm<sup>2</sup> full thickness of skin from predetermined shaved area with the help of sharp knife. Wound closure (contraction) and epithelialization time were studied in this model. Contraction was studied by tracing the raw wound area on tracing paper on the wounding day (0<sup>th</sup> day) followed by 4<sup>th</sup>, 8<sup>th</sup>, 12<sup>th</sup> and 16<sup>th</sup> day. The wounds thus created were then subjected with topical application of Ointment of Arka Ksheer, Snuhi Ksheer combination of Arka, Snuhi Ksheer which was done twice a day

and was repeated everyday till complete wound healing and closure of the wound area occurs. The healed skin of each of the animals of the study, after completion of the study period would be conveniently excised and subjected to histopathological examination for determination of the structural composition and arrangements of different components in the newly synthesized and healed skin.

## REFERENCE

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