



## Research Article

### A RANDOMIZED CONTROLLED CLINICAL STUDY OF KARANJADHYA GHRITA ON ACUTE WOUNDS WITH SPECIAL REFERENCE TO ITS WOUND HEALING PROPERTIES

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#### ABSTRACT

**Background:** Acute wounds are frequently encountered problem in the present era produced due to trauma or pathological injury. *Chakradutt* has mentioned the wound healing properties of *Karanjadhya Ghrita*. In the present study *Karanjadhya Ghrita* was prepared and its wound healing properties were studied on various acute wounds.

**Methods:** *Karanjadhya Ghrita* was prepared using the standardization procedure the effects were studied on 40 patients selected from Outpatient and Inpatient department of *Shalya Tantra*, National Institute of Ayurveda, Jaipur. The patients were divided into two groups – Group A (*Karanjadhya Ghrita* dressing) and Group B (Hydrogen peroxide and EUSOL and dry Gauze bandage). The drug was applied topically and patients were studied daily for 30 days and results were analyzed.

**Results:** It was noticed that 70% of acute wound patients were cured. 100% cured result was observed in all cases of lacerated wound, fissure, burn, wart and Pressure sores.

**Conclusion:** From the studies made from clinical cases, it was concluded that, the drug "*Karanjadhya Ghrita*" possess sufficient efficacy in *Vrana Shodhan* and *Vrana Ropana* properties without producing any adverse effects. The drug also increased the rate of contraction producing healthier granulation tissue and rapid healing time. Hence, this study concludes that application of *Karanjadhya Ghrita* is highly effective on acute wounds.

**Key Words:** *Karanjadhya Ghrita*, Acute Wounds, Wound healing.

#### INTRODUCTION

Ayurveda is a science of life and is believed to exist as long as the origin of life on this earth as is mentioned in *Charak Samhita*. Ever since the life originated, human being has been susceptible to injury, which made him to think about healing from very early stage of development. The *Vrana* (Wound) "*Vrana gaatravichorne gaatra vivarnyam cha*" i.e. phenomenon of tissue destructions and discoloration of viable tissue due to various etiology<sup>1</sup>. It may have features of chronic in nature, foul smell, loss of normal colors, excessive discharge of pus and impure blood, excessive pain, elevated from surface, irregular shape with cavities, everted base and margins of wound (*Charak Chikitsa 25/83<sup>2</sup>, Madhav Nidan*

*42/7<sup>3</sup>, Vaidyaksabdasindhu*)<sup>4</sup>. In Ayurveda, particularly *Sushruta* has mentioned various types of *vrana*<sup>5</sup> and their management<sup>6</sup>, which is of prime importance in any surgical practice/procedure. In recent past, brilliant progress of surgery in various fields has immensely reduced the incidence of wound infection by decreasing the impediments associated with wound healing to certain limits. Still wound management continues to be a matter of speculation. After injury, healing is a natural phenomenon and continues in sequential manner until the formation as a healthy scar. Usually defense mechanisms of body takes complete care in order to keep the scar clean. But at times, when

infection is massive, surface area of wound is very large and slough or necrotic tissue is too much, this auto cleansing mechanism becomes inadequate<sup>7</sup>. *Acharya Sushruta* was aware of these facts and had indicated the process by which these impediments can be removed thus paving way for uninterrupted healing. It is true that number of scientists and medicine experts working on various preparations which may help in achieving wound healing. A close study of Ayurveda reveals that a number of plants were used to achieve the goal *Vrana-Ropana*. *Acharyas* have given beautiful description about wound and wound healing. For good healing, the drug must have three following properties:

1. *Vrana Shodhana*
2. *Vrana Pachan*
3. *Vrana Ropana*

It is important to find a single and simple composition, which have all the three viz. *Shodhan*, *Pachan* and *Vrana ropana* properties. In the present study *Karanjadhya Ghrita*<sup>8,9</sup> is selected to study its effects on acute wounds that described in *Chakrdudd Ratanprbha*, *Vranshoth Rogadhikar*.

#### AIMS AND OBJECTIVES

To evaluate the efficacy of *Karanjadhya Ghrita* in the management of acute wounds.

#### MATERIALS AND METHODS

The work was carried out in the department of *Rasa Shastra & Bhesaj Kalpana*, National Institute of Ayurveda, Jaipur.

#### Drug Contents

*Karanjadhya Ghrita*<sup>8,9</sup> contains:

*Naktamala* (leaves and tender fruits), *Maltipatra* (leaves), *Patola* (leaves), *Arista* (leaves), *Haridra*, *Daruharidra*, *Madhuka*, *Tikta rohini*, *Manjistha*, *Candana*, *Krisna sariva*, *Swet*, *Sariva*, *Trivrit*, *Utpala*, *Ushira*. Bee-wax, *Gau ghrita*.

#### Method of Preparation

The *Karanjadhya Ghrita* was prepared in the National Institute of Ayurveda Pharmacy under the guidance of Dr V Nageshwar Rao, Associate Professor and Guide, Department of *Rasa Shastra & Bhesaj Kalpana*. For the preparation of medicated oils/*ghritas*, following steps were done:-

First the *Ghrita* has to be subjected to *Murchana*<sup>9</sup> and then followed by following steps to prepare the *Karanjadhya Ghrita*.

#### Procedure

- a. Wash and grind fresh leaves of ingredients 1 to 3 of the formulation composition (*Kalka dravya*) in a wet grinder and convert in paste form. And, all other *Kalka dravyas* were made into the powder form.
- b. The paste and powder of *Kalka* drugs are mixed with water and bolus is prepared. *Madhuchista* keep aside for addition during *snehapāka*. *Murchita Ghrita* was taken in a steel vessel and heated over *Madhyam agni* till complete evaporation of moisture content, at this stage temperature gone up to 130° C. The bolus of *Kalka* was added to the *Ghrita* after slight cooling, and constant stirring is carried.
- c. Then four times quantity of water to *Ghrita* is added to the above vessel.
- d. It is kept over (*Mandagni*) fire and slowly stirred to mix well.
- e. After 3 hrs. and 40 minutes heating it is allowed for self-cooling and a plate is covered to prevent from any dust fall.
- f. On the next day, heating is again continued for 2½ hrs. carried in a day and constant stirring is carried to avoid sticking of the *Kalka* drugs
- g. On 3rd day, the heating process is continued till the *Ghrita* becomes water free and gets the *Laksanas* of *Snehasiddhi*. Stop heating when the *Kalka* breaks down into pieces on attempting to form a *Varti* and the froth subsides, the vessel is taken out from the fire and Filter while hot (about 70 °) through a clean cloth. Add small pieces of *Siktha*, in the warm-stage and filter through clean cloth and allowed to cool.
- h. Obtained *Karanjadhya Ghrita* is preserved in tightly closed glass jar to protect from light and moisture.

#### Clinical Study

**Source of data:** For the study 40 patients were randomly selected from the Out-patient and in-patient departments of Departments of *Shalya Tantra* and *Kaya Chikitsa*, National Institute of Ayurveda, Jaipur.

**Method of collection of data:** Detailed clinical history and clinical examination was carried out using the special *Performa* which was prepared before assessing the case and starting the proper treatment with trial drugs. The patients were divided into two groups – Group A (*Karanjadhya Ghrita* dressing) and Group B (*Hydrogen peroxide* and *EUSOL* and dry *Gauze* bandage).

**Intervention:** The Group A patients were asked to apply the *Karanjadhya Ghrita* locally on the wounds two times a day for 30 days and compared with the Group B patients.

**Duration of study:** The duration of study was 30 days.

**Follow up:** All the out-patients were asked to follow-up in the interval of every 10 days in 30 days. All IPD patients, who were included in study, were studied daily for 30 days.

**Inclusion Criteria:** All types of acute wounds patients including lacerated wound, Post-operative wounds, Fissure, Burn, Pressure Sores, Trophic ulcer, Varicose ulcer were selected.

**Exclusion Criteria:** Diabetic patients, malignant ulcers, HIV and TB patients, patients suffering from hepatitis and patients with signs of gangrene.

**Assessment Criteria:** The wounds were assessed using the following parameters.

#### 1. Symptom Rating Scale

- 0 : No Sign & symptoms
- 1 : Mild Sign & symptoms
- 2 : Moderate Sign & symptoms
- 3 : Severe Sign & symptoms

#### 2. Assessment of Size

- 0 : No discontinuity of skin/mucous membrane
- 1 : 1/4 of previous area & depth of the wound
- 2 : 1/2 of previous area & depth of the wound
- 3 : 1/2 of previous area & depth of the wound

#### 3. Assessment of Pain

- 0 : No pain
- 1 : Localized feeling of pain during movement only but no feeling during rest
- 2 : Localized feeling of pain even during rest but not disturbing the sleep
- 3 : Localized continuous feeling of pain, radiating & not relieved by rest

#### 4. Assessment of Tenderness

- 0 : Tolerance to pressure
- 1 : Little response on sudden pressure
- 2 : Wincing effect on super slight touch
- 3 : Resists to touch & rigidity

#### 5. Assessment of Burning

- 0 : No burning
- 1 : Little, localized & some time feeling of burning sensation
- 2 : More localized & often burning sensation which does not disturbed

sleep

- 3 : Continuous burning sensation with disturbed sleep

#### 6. Assessment of Itching

- 0 : No itching
- 1 : Slight, Localized itching sensation which is relieved by rest
- 2 : More, Localized & often itched but not disturbs sleep
- 3 : Continuous itching with disturbed sleep

#### 7. Assessment of Color

- 0 : Normal pigmentation & of skin
- 1 : Slight red
- 2 : Reddish black
- 3 : Pale yellow! Blackish / Bluish

#### 8. Assessment of Margin & Surface

- 0 : Adheres margin
- 1 : Smooth, even & regular
- 2 : Rough, regular & inflamed
- 3 : Rough, irregular & angry look

#### 9. Assessment of Base/Floor

- 0 : Smooth, regular & with healthy granulation tissue
- 1 : Smooth, irregular, slight discharge, less granulation tissue, needs dressing & soft scar
- 2 : Rough, regular wet with more discharge, needs dressing & having firm scar
- 3 : Rough, irregular with profuse discharge, needs frequent dressing & having hard scars

#### 10. Assessment of Smell

- 0 : No smell
- 1 : Bad smell
- 2 : Tolerable unpleasant
- 3 : Foul smell which is intolerable

#### 11. Assessment of Swelling

- 0 : Absent
- 1 : Slight red, tender & hot with painful movement & without indurations
- 2 : More red, having painful movement, with more local temperature & with indurations
- 3 : Angry look, hot, resist to touch & with more indurations

#### 12. Assessment of Discharge

- 0 : No discharge / dry dressing
- 1 : Scanty occasional discharge & little wet on dressing
- 2 : Often discharge & with blood on dressing
- 3 : Profuse, continuous discharge which needs frequent dressing

### 13. Assessment of unhealthy Granulation Tissue

- 0 : Healthy granulation tissue  
 1 : Smooth less & irregular granulation base covered with slight discharge  
 2 : Little unhealthier granulation tissue & discharge which needs dressing  
 3 : Rich unhealthy granulation tissue with profuse discharge, & needs frequent dressing

All information which is based on various parameters was gathered and statistical analysis was carried out in terms of mean (X), standard deviation (S.D.), standard error (S.E.), paired test (t-value) and finally result were incorporated in term of probability (p) as – p < 0.05 - Insignificant p < 0.01 - Significant p < 0.001- Highly Significant.

### RESULTS

Based on the statistical analysis, the effects of the drug on various parameters were studied and following results were obtained.

### STATISTICAL ANALYSIS

**Table 1: Showing Effect on cardinal sign and symptoms of Group A patients (Karanjadhya Ghrita)**

Cardinal symptoms	Mean Score (BT)	Mean Score (AT)	Percentage Relief	SD	SE	T	P
Pain	2.4	0.07	97.05	0.99	0.17	14.32	<0.001
Tenderness	2.34	0.07	97	1.06	0.18	12.98	<0.001
Burning sensation	3.05	0.09	97.12	0.75	0.13	23.99	<0.001
Swelling	1.05	0.1	90.90	1.09	0.18	5.72	<0.001
Color (Abnormal)	1.45	0.19	87.09	0.65	0.11	13.31	<0.001
Margin (Unhealthy)	1.02	0.0	100	0.38	0.06	16.14	<0.001
Base (Abnormal)	1.11	0.0	100	0.39	0.06	16.56	<0.001
Smell	1.40	0.0	100	1.27	0.21	6.52	<0.001
Discharge	2.28	0.07	97.05	0.77	0.13	17.39	<0.001
Unhealthy granulation tissue	0.3	0.06	78.94	0.83	0.14	2.08	<0.05
Itching	1.63	0.0	100	0.68	0.11	14.17	<0.001

BT = No of Patients before Treatment, AT = No of Patients after Treatment, SD =Standard Deviation, SE = Standard Error of Mean, T = Paired T Test, P = Probability Value

**RESULT:** Maximum relief was seen in all the patients with signs and symptoms. Foul smelling, Abnormal base, Unhealthy margin and Itching showed relief in 100% followed by Pain, Tenderness, Burning sensation, Discharge and Swelling etc. showing relief in 97% and 90%. Colour and unhealthy granulation tissue were relived in 87% and 78% respectively in patients.

**Table 2: Showing Effect on cardinal sign and symptoms of Control group (Group B)**

Cardinal symptoms	Mean Score (BT)	Mean Score (AT)	Percentage Relief	SD	SE	T	P
Pain	2.3	0.18	92.14	1.05	0.13	11.02	<0.001
Tenderness	2.41	0.35	85.42	0.98	0.16	10.78	<0.001
Burning sensation	3.12	0.73	76.54	0.75	0.11	22.98	0.044
Swelling	1.04	0.12	87.6	1.09	0.16	8.02	<0.001
Color (Abnormal)	1.4	0.3	78.07	1.15	0.18	13.31	<0.001
Margin (Unhealthy)	1.04	0.14	86.23	0.42	0.05	14.14	<0.001
Base (Abnormal)	1.16	0.08	93	0.38	0.07	14.56	<0.001
Smell	1.20	0.0	100	0.97	0.23	11.52	<0.001
Discharge	2.34	0.18	92.44	0.77	0.11	16.39	<0.001
Unhealthy granulation tissue	0.4	0.07	82.34	1.27	0.56	2.14	0.0132
Itching	2.23	0.24	89	0.46	0.41	12.17	<0.001



**Table 3: Showing improvement in various types of the wounds**

Diagnosis	Cured	Cured %	Markedly improved Pts.	Markedly improved %	Improved Pts.	Improved %	Unchanged Pts.	Unchanged %
Lacerated wound	2	100	-	-	-	-	-	-
Post-Operative wounds	5	83.33	1	16.67	-	-	-	-
Fissure	2	100	-	-	-	-	-	-
Burn	2	100	-	-	-	-	-	-
Pressure sores	1	100	-	-	-	-	-	-
Trophic ulcer	1	25	2	50	-	-	1	25
Varicose ulcer	-	-	1	50	1	50	-	-
Others (wart cyst)	1	100	-	-	-	-	-	-

**Overall result of therapy**

Analysis of various types of wounds was also performed and effect of *Karanjadhya Ghrita* on different types of wounds were studied. It was noticed that 70% of acute wound patients were cured. 100% cured result was observed in all cases of lacerated wound, fissure, burn, wart and Pressure sores. At the same time 83.33% cases were observed cured in post-operative wound category, 16.67% cases were markedly improved in postoperative wound category and 50% in Trophic ulcer and varicose category, 50% cases were improved in varicose ulcer category categories and 25% patients were unchanged in Trophic ulcer wound category.

**DISCUSSION**

Wound healing is a normal physiological event which outsets immediately after injury till the formation of healthy scar. *Karanjadhya Ghrita* contains 16 ingredients including *Go-ghrita*. "*Vrana Ropana*" property of *Karanjadhya ghrita* is primarily due to *Haridra*, *Nimba*, *Karanja* and *Yashthimadhu* and "*Vrana Shodhana*" property is due to *Anantmool*, *Raktchandan*, *Patola* and *Jati*. "*Vrana Pachan*" property is mainly attributed to *Haridra*, *Patola*, *Ushira* and *Krishana Sariva*<sup>11</sup>. *Go-ghrita*, due to its "*Shothar*, *Agnideepak*, *Vrana Ropak*, *Dhatuvaradhak* and *Sankskaranuvartan*" properties, increase the wound healing.

**Mode of Action:** The mode of action (*Karmukta*) of *Karanjadhya Ghrita* along with its properties is given below.

**Table 4: Showing the properties of Karanjadhya Ghrita**

S.No.	Ingredients	Karmukta
1	<i>Karanj</i> and other drugs	<i>Vedanasthapaka</i> , <i>Sothahara</i> , <i>Dipana</i> , <i>Dahahara</i> , <i>Vrana Shodhaka</i> , <i>vrana ropaka</i> . <i>Putihara</i> , <i>Krimighna</i> , <i>Kandughna</i> , <i>Shoolhara</i> and <i>AmaPachaka</i> .
2	<i>Gau ghrita</i>	<i>Agnidipaka</i> , <i>Varnya</i> , <i>Dhatuvaradhaka</i> , <i>Shothahara</i> , <i>Jivaniya</i> , <i>Balya</i> , <i>Vishaghna</i> , <i>Vrana Ropaka</i> , <i>Prasadak</i> , <i>Dhatuvaradhaka</i> , <i>Prinana</i> and <i>Vranya</i> .

In order to achieve the main goal of wound healing, it is necessary to remove maximum debridement at the site of *Vrana* (*Vrana Shodhan*). By virtue of *Lekhana Putihara*, *Dahahara*, *Kandughana* and *Vrana Ropana* properties of *Karanjadhya Ghrita* contents, the *sthaniya Dhatu Dushti* is ceased. The second step in the path of healing is *Vrana Pachan* and is due to *Ama Pachaka* properties of the contents. The third step of healing is to enhance *Vrana Ropan* and for this purpose, *Go-ghrita* makes easy. Lipophilic action of ghee easily facilitates transportation to a target organ and final delivery, inside the cell, because cell membrane also contains lipid. This lipophilic nature of ghee facilitates entry of the formulation into the cell and its delivery to the mitochondria, microsome

and nuclear membrane. According to Ayurveda, *Go-ghrita* is beneficial for *Rasa Dhatu* and *Rakta Dhatu*. It also possess *Sheta Guna*. With these properties, *Ghrita* enhances the *Rasagni* and *Raktagini* and thus increases the *Ropana Karma*<sup>12</sup>.

**CONCLUSION**

Observation, analysis and results of the present study can be concluded as follow.

- Topical application of *Karajadhya Ghrita* is found efficacious in the wound healing. It possesses sufficient efficacy in "*Vrana Ropana*" without producing any adverse effects.
- Topical application of *Karajadhya Ghrita* showed 100% relief in Foul smelling,

Abnormal base, Unhealthy margin and Itching in all the patients.

- More than 90% relief was observed in Pain, Tenderness, Burning sensation, Discharge and Swelling in all acute wounds.
- 100% cured result was observed in all cases of lacerated wound, fissure, burn, wart and Pressure sores.

Hence, from the present study, it can be speculated that *Karanjadhya Ghrita* possess sufficient efficacy in *Vrana Shodhan* and *Vrana Ropana* without producing any adverse effects.

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#### REFERENCES

1. Shastri Ambikadutt, Sushruta Samhita – Ayurveda tattva sandipka Hindi commentary, Chukhamba Sanskrit Sansthan, Varanasi, reprint edition, Sushruta Chikitsa Sthana, 01/06, p 04, sushruta sutra 21/40; 2010. P 122.
2. Tripathi Brahmanand, Charak Samhita – Charak Chandrika, Hindi Commentry Vol I and II, Chaukhamba Subharti Prakashan, Varanasi, reprinted, Charak Chikitsa, 25/24, 25, 83; 2003.p.840-41, 853.
3. Shastri Sudarshan Madhav Nidana madhukosha-vidyotini, Hindi commentary, Uttaradha, Chukhamba Sanskrit Sansthan, Varanasi, Ch 42 (sharir vrana nidana); p 102.
4. Vadiyaksabdasinghu, by Umesh Chandra Gupta, Chaukhamba Orientalia, Varanasi, 5<sup>th</sup> edition; 2005, p 553.
5. Sushruta, Sushruta Samhita, Ayurveda Tatwa Sandeepika Hindi Commentry, edited by Kaviraj Ambika Dutta Shastri, Chikitsa Sthana, Dvivranayee Adhyaya – 1/3, Chukhamba Sanskrit Sansthan, Varanasi, Edition-11, 1997, p1.
6. Sushruta, Sushruta Samhita, Ayurveda Tatwa Sandeepika Hindi Commentry, edited by Kaviraj Ambika Dutta Shastri, Chikitsa Sthana, Dvivranayee Adhyaya – 2/86-88, Chukhamba Sanskrit Sansthan, Varanasi, Edition-11, 1997, p26.
7. Clark RA. Cutaneous Wound Repairs. In Goldsmith LA, editor. Physiology, Biochemistry and Molecular biology of skin. New York: Oxford University press; 1991.p576.
8. Chakradutta Ratnaprbha Nischalkarkrat, edited by Acharya Priyavrat Sharma - Vranashoth Chikitsa 42/ 81-83, published by Swami Jayaramdas Ramprakash Trust, Jaipur, Edition 1, 1993.
9. Sushruta Samhita Chikitsa Sthana, Ayurveda Tatwa Sandeepika Hindi Commentry, edited by Kaviraj Ambika Dutta Shastri, Ch 16/ 16-21. Chukhamba Sanskrit Sansthan, Varanasi, Vol I Edition Reprint 2009.
10. Bhaisajya Ratnavali, Govinddas, Hindi Commentry by Ambika Dutt Shastri, Chapter Jwaradhikara 5/1285, Chaukhamba Sanskrit Sansthan, Varanasi, Edition 15<sup>th</sup> 2002.
11. Database of Medicinal plants; Vol II, p 292; Vol III p 332, 561; Vol I p 152, 289, 394; Vol V, p 269.
12. Hiremath SG. A Text Book of Bhaishajya Kalpana. 2nd revised ed. Part 1, Sneha Kalpana, Chapter 22, Varanasi: Chaukhamba Orientalia, 2005; 243.

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**STUDY PHOTOGRAPHS**



**Preparation of *Karanjadhya Ghrita* - different steps**



**Figures of the wounds - before and after treatment**