

Evaluation of Healing activity of Marketed Formulations on Excision wounds models in Albino Rats

Sandeep B. Patil*, D.S.Ghodke, C.S.Magdum and N.S.Naikwade

Appasaheb Birnale College of pharmacy, South Shivaji nagar, Sangli 416416

**Email: sandeep_pharmacology@rediffmail.com*

ABSTRACT: To evaluate the traditional marketed ayurvedic ointment formulation for wound healing activity using albino rats. In the present study ayurvedic marketed herbal formulations Jakhmeruz Pink ointment and Zadpola malam was evaluated for wound healing activity in excision model in albino rats.

The Wister albino rats (180-210g) of either sex used in the study. For the excision wound study, each group containing 6 animals respectively. A circular wound of about 2.5 diameter made on the depilated dorsal thoracic region of the rats under light ether anesthesia in aseptic condition. the ointment was applied for 16 days the observation of percentage wound closure were made on 4th, 8th, 12th and 16th post wounding days.

The activity was compared with that of control and silver sulfadiazine ointment as standard drugs. The parameters like epithelisation, weight of granuloma, scar formation, were counterchecked. The formulation showed a significantly higher contraction rate and shortened epithelisation period in the model. In excision model the 99 % healing ($p < 0.001$) on sixteenth day compared to 85 % and 75 % of healing with silver sulfadiazine and control respectively. Thus it is concluded that the formulation has got potential wound healing activity justifying its use in traditional practice.

Keywords: - Connective tissue response, Excision, Zadpola malam, Zakme-Ruz ointment.

INTRODUCTION

Wound in a normal state of body get healed by various processes which is fundamentally a connective tissue response, initial stage of this process involves an acute inflammatory phase followed by the synthesis of collagen and other extra cellular macromolecules which are later remodeled to form a scar¹.

Normally on wound site various mechanisms of body participate in wound healing i.e. white blood cell², fibroblasts, keratinocytes etc. While carbohydrates³, lipids⁴ and proteins⁵ metabolism increases with the increase in the resting energy expenditure (RES). Wound healing is also affected by the other diseases such as diabetes etc, antineoplastic drug and antibiotics may also interfere with the wound healing.

MATERIALS AND METHODS

The marketed formulation brought from the Ayurvedic medical shop with checking with the Mfg date, Exp.date, packing date.

Experimental:

Wound Healing Evaluation:

Healthy albino rats of either sex weighing between 150-200 g were taken for study. They were individually housed and maintained on normal diet, water and vitamin b tablets.

Screening for wound healing activity was performed by excision wound model. The hair on the skin of back surface of animals was removed by using a suitable depilatory. The selected animals were divided into four groups of six in each. All the test samples were applied topically.

Excision Wound Model:

For excision wound model⁷, the animals were starved for 12 h prior to wounding. A circular wound of about 2 cm. (200mm²) diameter was made on the dorsal thoracic region of rats under light ether anesthesia in semi aseptic condition and observed through out the study. The animals were housed individually and all the test samples were applied once daily. The wound area of each animal was measured on 4th, 8th, 12th and 16th post wounding day. The percentage of wound contraction was calculated from the days of measurement of wound areas (Table 1).

Statistical Analysis:

Results were analyzed by the ANOVA test and the values of $p \leq 0.001$ were considered as statistically significant.

RESULT AND DISCUSSION

The studies on the excision wound reveals that all the four groups showed the decreased wound area day by day. However, on the 16th post wounding day, control

group showed 75.00% of healing which may be due to self immunity of the animal, whereas standard (Silver Sulphadiazine) treated animals showed 85.00 % healing. For the Zakme-Ruz and Zadpola of the test exhibited 94.26% and 90.31% wound healing respectively. When compared with the controls, the activity of the extract was found to be highly significant.

TABLE 1: Effect of Topical Application of Drug on Excision Wounds.

Treatment	Percentage Wound Contraction On Post Wounding Day*			
	4 th	8 th	12 th	16 th
Control	12.33±1.03	24.5±1.87	58.28±0.20	76.61±0.15
Silver Sulphadiazine	31.66±0.15	74.92±0.23	85.61±0.25	91.23±0.22
Zakmeruz pink oint.	34.00±0.70	72.00±0.70	85.8±0.86	93.20±0.70
Zadpola malam	34.2±0.73	72.80±1.15	84.8±0.86	94.2±0.73

Values are expressed as mean ± SD; $P \leq 0.001$ when compared to control.

Table 2 Effect of Topical Application of Drug on Excision Wounds

Treatment	Epithelization in Days	Scar area (sq mm)	Granuloma weight (mg/100g)
Control	22.00 ±0.060	43.66±2.05	34.72±0.361
Silver Sulphadiazine	19.00±0.070	42.50±1.81	36.83±0.307
Zakmeruz pink oint.	14.00±0.707	38.00±1.58	37.05±0.428
Zadpola malam	14.8±0.860	37.50±1.39	40.72±0.361

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