

**WOUND HEALING ACTIVITY OF *Murraya koenigii* LEAF EXTRACT**

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**ABSTRACT**

The wound healing activity of topically applied extract of leaf of *Murraya koenigii* was evaluated in albino rat by excision wound model for a period of 16 days. Extract of *Murraya koenigii* showed marked reduction in wound area in comparison to control group from 4<sup>th</sup> day onwards. The result obtained indicates that aqueous extract of *Murraya koenigii* accelerates the wound healing process by decreasing the surface area of the wound.

**Keywords:** Wound healing, excision wound model, *Murraya koenigii* leaf, topically applied.

**INTRODUCTION**

A wound which is disrupted state of tissue caused by physical, chemical, microbial or immunological insult ultimately heals either by regeneration or fibroplasias<sup>1</sup>. Wound healing is a complex process that result in the contraction and closure of the wound and restoration of a functional barrier (1) Cutaneous wound repair is accompanied by an ordered and definable sequence of biological events starting with wound closure and progressing to the repair and remodeling of damaged tissue (2) Repair of injured tissues includes inflammation, proliferation, and migration of different cell types (3) Inflammation, which constitutes a part of the acute response, result in a coordinated influx of neutrophils at the wound site<sup>2</sup>.

The Indian plant *Murraya koenigii* belong to family Rutaceae, commonly called "curry leaf" in English and locally known as Karivepu<sup>3</sup>. The species is native of India and found everywhere in India<sup>4</sup>. It commonly occurs in foothills of Himalaya, Assam, Skim, Kereala, Tamil Naidu, Andra Pradesh, Maharastra<sup>4</sup>. The leaves are pinnate, with 11-21cm broad, and flower are small white and fragrant<sup>5</sup>. On phytochemical investigation researcher claimed that leave of *Murraya koenigii* found to contain alkaloids, volatile oil, Gycozoline, Xanthotoxine and sesquiterpione<sup>6</sup>. The leaf has been found to show antioxidant activity<sup>7</sup>, hypoglycemic activity<sup>8</sup>, antibacterial activity<sup>3</sup>, anti-dysentery<sup>9</sup> and also act as a hepato-protective<sup>5</sup>.

In the present investigation the wound healing effect of aqueous leaf extract were investigated on albino rats using excision wound model.

**MATERIALS AND METHODS****Plant material**

The plants *Murraya koenigii* were obtained from medicinal garden of Shri Dhairya prabha devi sojatia ayurvedic medical college, neemthur, Bhanpura Dist, mandaur and authenticated by Dr. Rakesh Gupta, Department of Dravyaguna, Shri Dhairya prabha devi sojatia ayurvedic medical college, neemthur, Bhanpura. Voucher specimen

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was deposited to herbarium of Shri Dhairya prabha devi sojatia ayurvedic medical college, neemthur, Bhanpura vide Specimen no. SDPS/10/PS/175 After authentication, fresh leaves collected in bulk from plants, washed shade dried and then milled to a coarse powder by a mechanical grinder.

**Preparation of the extract**

The powder dried leaves were packed in to soxhlet column and extract with distilled water. The extract was filter through a Whatman filter paper no.1 and concentrated under reduced pressure (yield of extract was 7.70% with respect to dry material). The dried extract was mixed with ointment I.P. (10% W/W).

**Experimental animal**

Sixteen adult healthy albino rats of either sex, weighting between 160-200gm were used for the study. The animals were house in standard condition (temperature 240±2 with 50-60% relative humidity and a 12 hours light dark cycle). The entire animal had free access to water and normal diet (Hindustan lever). The study was approved by Institutional Animal Ethical Committee (IAEC) and was in accordance with the guideline of the Committee for the Purpose of Control and Supervision of Experimental Animal (CPCSEA).

**Wound healing activity by Excision Wound model**

Adult albino rats of either sex, weight weighting between 160-200gm were used for evaluation of wound healing activity. The animals were divided into two groups.

Group I: Control ×8

Group II: Plant Extract ×8

The animals were anaesthetized by giving ketamine hydrochloride at a dose of 120mg/kg intravenously and hairs were removed from the dorsal thoracic region of the rats. A circular wound of approximately 5 sq cm area was made and animal were kept as such individually in separate cage. Group I received ointment I.P. and Group II were treated with ointment containing extract every day topically for a period of 16 days respectively. The areas of the wound were measured by tracing the wound on to a graph paper. The area of the wound contraction was measured in different treated and control group on 1<sup>st</sup>, 4<sup>th</sup>, 8<sup>th</sup>, 12<sup>th</sup> and 16<sup>th</sup> day.

## Statistical analysis

Result obtained was statistically analyzed using student's t-test.

## RESULTS AND DISCUSSION

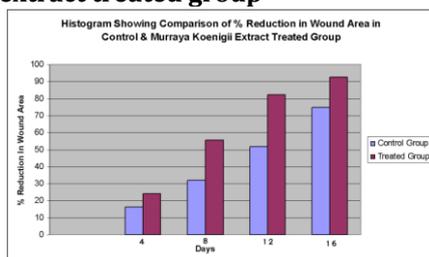
In the present study the rate of wound contraction by excision wound model was studied. The area of wound healing in sq. cm is given in Table 1 and percentage reduction in the area of the wound is given in the Figure 1.

**Table 1. Area of wound healing in sq. cm**

Group	Percent wound contraction on post wounding day				
	1 <sup>st</sup>	4 <sup>th</sup>	8 <sup>th</sup>	12 <sup>th</sup>	16 <sup>th</sup>
Control	0	16.33±1.71	31.88±3.37	51.94±3.75	74.89±7.61
Aqueous Extract	0	24.06±3.06†	55.70±4.04	82.05±3.37**	92.76±0.93**

Value expressed in mean ± SEM, n=8, † not significant (P>0.005), \* significant (P>0.01), \*\* significant (P>0.001).

**Figure 1. Histogram showing comparison of % Reduction in wound area in Control & *Murraya Koenigii* extract treated group**



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The percentage of wound contraction includes by recording the changes in wound area at fixed intervals of time, Viz. 1<sup>st</sup>, 4<sup>th</sup>, 8<sup>th</sup>, 12<sup>th</sup>, and 16<sup>th</sup> day after treated with aqueous extract. However, on 16<sup>th</sup> post wounding day, Group I animal showed 74.89% of healing, which may be due to self immunity of animal whereas the extract treated group (Group I) showed 92.76% healing. When obtained result compared with control, the activity of the extract was found to be highly significant (P<0.001).

## CONCLUSION

In the present research extract of *Murraya koenigii* showed marked reduction in wound area in comparison to control group when examined for wound healing activity by topical application in albino rat. Promising results appeared from 4<sup>th</sup> day onwards in a 16 days study using excision wound model on rats. The result obtained indicates that aqueous extract of *Murraya koenigii* accelerates the wound healing process by decreasing the surface area of the wound.

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