ISSN 0976 – 3333

Available Online at www.ijpba.info.

International Journal of Pharmaceutical & Biological Archives 2011; 2(4):1111-1113

ORIGINAL RESEARCH ARTICLE

Wound Healing Activity of *Ficus racemosa* Linn Fruit Extract

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Received 08 May 2011; Revised 26 Jun 2011; Accepted 12 Jul 2011

ABSTRACT

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

Keywords: Wound healing, excision wound model, *Ficus racemosa* Linn fruit.

INTRODUCTION

Medicinal plants are important for pharmacological research and drug development, not only when plant constituents are used directly as therapeutic agents, but also as starting materials for the synthesis of drug or as models for pharmacologically active compounds. A wound which is disrupted state of tissue caused by physical, chemical, microbial or immunological insult ultimately heals either by regeneration or fibroplasias[1].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[2]. A number of plants such as Aegle marmelos,Aloe vera, Anogeissus latifolia , Aristolochia bracteolate have been scientifically studied for wound healing potential in Incision, Excision and Dead space models. The Indian plant *Ficus racemosa* Linn belong to family Moraceae, The species is native of India and found everywhere in India[4]. It commonly occurs in foothills of Himalaya, Assam, Sikkim, Kerala, Tamil Nadu, Andhra Pradesh, Maharastra[4]. The fruits of *F. racemosa* contain Glycoside, Phenolics and tannins. Leaves, bark, heartwood contains glauanol acctate characterized as 13α , 14β 17β, 20 αH-lanosa-8.22 diene- 3β-acetate[6]. Stems bark contain leucoanthrocyanin, tannin, leucocyanidin -3-o-β-D-glycopyranoside & leucopelaronidin -3-o-α-L-rhamnopyranoside, ceryl behenate, lupeol & alpha-amyrin acetate (Ram P Rastogi., 1960-1969). The leaf has been found to show antioxidant activity[7], hypoglycemic activity[8], antibacterial activity[3], anti- dysentery[9] and also act as a hepetoprotective[5].In the present investigation the wound healing effect of fruit extract were investigated on albino rats using excision wound model.

MATERIALS AND METHODS

Plant Material

The plant materials used in this study were collected from the botanical garden of NBRI and identified and authenticated taxonomically by Dr.Sayyada khatoon (Taxonomist) by comparison with the herbarium and voucher specimen was lodged in the departmental herbarium of

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National Botanical Research Institute Lucknow, India.Specimen No. DPS/10/PS/175.

Preparation of 50% Ethanolic Extract of *Ficus racemosa*

The freshly collected *Ficus racemosa* fruits (5kg) of were chopped into small pieces, dried in shade/tray drier under controlled conditions and powdered coarsely. The powdered material were defatted with pet-ether twice and then extracted thrice with 50% (v/v) ethanol by cold maceration for three days. The extract was separated by filtration and concentrated on rotavapour (Buchi, USA) and then dried in lyophilizer (Labconco, USA) to get a dry residue. Under reduced pressure to obtain 81.0 g of solid residue (yield 8.1 % 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. 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 1st, 4th 8th, 12th and 16th day.

Statistical analysis result obtained was statistically analyzed using student's t-test.

RESULTS AND DISCUSSION

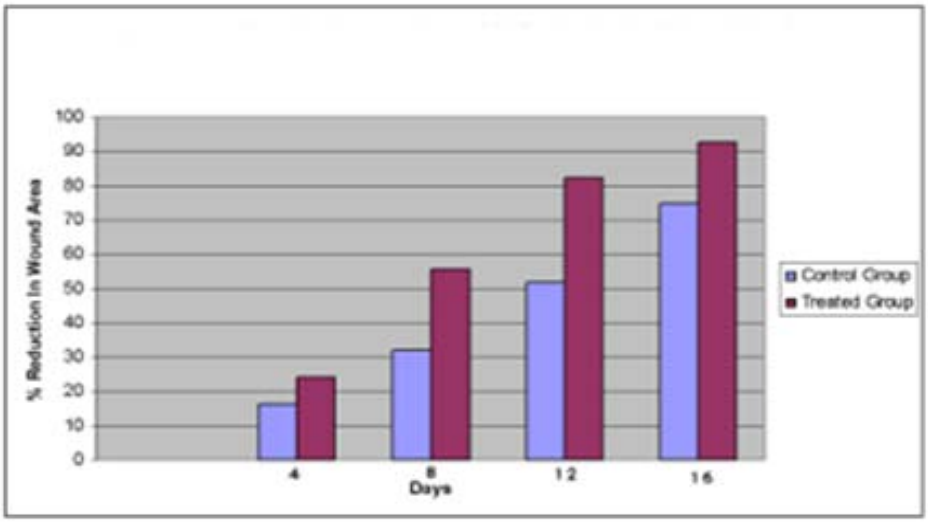
In the present study the rate of wound contraction by excision wound model was studied. The area of wound healing in sq. cm is given in (**Table 1**) and percentage reduction in the area of the wound is given in the (**Fig 1**).

Table 1. Area of wound healing in sq. cm

Group	Percent wound contraction on post wounding day				
	1st	**4th**	**8th**	**12th**	**16th**
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).

Fig 1. Histogram showing comparison of % Reduction in wound area in Control *Ficus racemosa* extract treated group



The percentage of wound contraction includes by recording the changes in wound area at fixed intervals of time, Viz. 1st, 4th, 8th, 12th, and 16th day after treated with aqueous extract. However, on 16th 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 *Ficus racemosa* 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 4th day onwards in a 16 days study using excision wound model on rats. The result obtained indicates that ethanolic extract of *Ficus racemosa* accelerates the wound healing process by decreasing the surface area of the wound.

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