

Wound healing property of ethanolic extract of leaves of *Juglans nigra*

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(Accepted :June, 2007)

SUMMARY

Ethanolic extract of leaves of *Juglans nigra* was evaluated for its wound healing activity in ether anaesthetized Wistar rats at dose 1400 mg/kg using incision, excision, and dead space wound model. Significant increase in skin breaking strength, granuloma breaking strength, wound contraction, hydroxyl proline content and dry granuloma weight and decreased in epithelization period was observed. Granuloma tissue was subjected to histopathological examination to determine the pattern of lay-down for collagen using Van Gieson and Masson Trichome strains.

Key words : *Juglans nigra*, Ethanolic extract, Wound healing activity.

Juglans nigra (L.), family juglanaceae, extends from Greece and Asia Minor, over Lebanon and Persia, probably all along the Hindu-Kush to the Himalayas. The active principle of the whole Walnut tree, as well as of the nuts, is Nucun or Juglon. The kernels contain oil, mucilage, albumin, mineral matter, cellulose and water. The bark and leaves have alterative, laxative, astringent and detergent properties, and are used in the treatment of skin troubles. They are of the highest value for curing scrofulous diseases, herpes, eczema, etc. The bark, dried and powdered, and made into a strong infusion, is a useful purgative. The kernels, when they grow old, are more oily, are used to skin disorders of sinews, gangrenes, and carbuncles. The kernels are also use in the case of falling hair and brain tonics (Duke, 2001; Ramos, *et al.* 1984; McGranahan, 1987; Forde, 1979)

MATERIALS AND METHODS

Plant material

Leaves of *Juglans nigra* were collected from medicinal plant material supplier and identified from K. N. K. Agriculture College, Mandsaur (M.P.).

Phytochemical screening

Preliminary phytochemical screening was done to study the presence of nucun or juglon, oil, mucilage, albumin, mineral matter, cellulose and water (Harborne, 1998).

Preparation of ethanol extract

The shade dried powdered leaves (600g) were exhaustively extracted with 7.5 litre of ethanol (95%) using a soxhlet apparatus and concentrated in vacuo (yield 200g).

Animals

Healthy Wistar albino rats of either sex and of approximately the same age, weighing about 150-250 g were used for the study. They were fed with standard chow diet (Pranav Agro Ind. Limited, Sangli, Maharashtra) and water *ad libitem*. They were housed in polypropylene cages maintained under standard conditions (12/12 hr light/dark cycle; 25°C ± 3°C, 35-60% RH). The experimental protocol was subjected to scrutiny of Institutional Animal Ethical Committee for experimental clearance.

Wound models

The studies were carried out using ether-anaesthetized rats in three different wound models, at dose 1400 mg/kg.

Incision wound

Two paravertebral incisions (6 cm long) were made through the full thickness of the skin on either side of the vertebral column of the rat (Ehrlich and Hunt, 1969). Wounds were closed with interrupted sutures, 1 cm apart. The sutures were removed on the 7th day. Wound breaking strength was measured on 10th post wounding day (Lee, 1968).

Excision wounds

A circular piece of full thickness (approximately 500mm²) was cut off from a predetermined area on the back of the rat (Morten and Malon, 1972). Wounds were traced on 1mm² graph paper on the day of wounding and subsequently on alternate days until healing was complete. Changes in wound area were calculated giving an indication of the rate of wound contraction. Number of

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