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Research Article

EVALUATION OF THE WOUND HEALING PROPERTIES OF METHANOLIC BARK EXTRACT OF *SAMADERA INDICA* GAERTNER *IN VIVO*

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ABSTRACT

Objective: The present study was conducted to evaluate the effect of *Samadera indica* bark extracts on experimentally induced excision wounds in Wistar rats.

Methods: The bark samples were collected, allowed to shade dry for a week, then coarsely powdered and were extracted with methanol by the soxhlation process. The extract was used for wound healing experiment using the excision wound model. 18 healthy Wistar albino rats divided into three groups of six rats each with an average body weight of 150–200 g were selected randomly for the study. ANOVA was used to compare the variation in the treatments in the result. The 1st group of animals is left as such for the natural healing process as control, 2nd group of animals was treated with standard ointment betadine, and 3rd group with the test drug methanolic bark ointment formulation. The methanolic extract in simple ointment base as mentioned above and betadine ointment were applied on the wound once a day for 16 days starting from the day of wounding. The percentage of wound closure was observed on 4th, 8th, 12th, and 16th post-wounding day.

Results: As for the group received methanolic bark extract for wound healing, 4th-day wound mean diameter was 208.0±3.521, 8th-day the wound mean diameter was 160.66±7.89, 12th-day wound mean diameter was 87.5±5.8, and 16th-day wound mean diameter was 22.5±5.12. Thus, there was a marked decrease in wound diameter with every point of time the observation made indicating the effect of the extract on progressive healing of wound. Comparing to standard drug betadine the bark extract showed faster healing in terms of diameter of wound which was statistically signified.

Conclusion: From the study, *S. indica* proved its wound healing potential of the plant extract which is due to the bioactive compounds, and thus the study supports local folklore practitioners and tribal people for the use of the plant in different ailments. The extracts of *S. indica* are used in traditional medicines for the treatment of skin diseases, rheumatism, cough, and to kill head lice. The present investigation adds to the existing knowledge in the field of therapeutic medicine and may even become the base for the development of herbal based gel formulations or ointments for treating wounds and thereby continuous usage of synthetic drugs; its associated side effects could be avoided.

Keywords: *Samadera indica*, Wound healing, Albino rats, Methanol extract.

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INTRODUCTION

A medicinal plant is any plant, which in one or more of its organs contains active ingredients which can be used for therapeutic purposes or contain foundational compounds that can be used for the synthesis of useful drugs. Medicinal plants have invariably been a rich source of new drugs and many drugs in use today were either obtained from plants or developed using their chemical structure as templates. Various herbal products have been used in the management and treatment of wounds over the past years [1-5].

Samadera indica Gaertner belongs to the family Simaroubaceae with vernacular names Niepa bark tree (English), Lokhandi (Hindi), Kaduhonge (Kannada), Karinjotta, karigotta(Malayalam), and Guchchakaranjah (Sanskrit). It is available in the coastal belt of Dakshina Kannada and Kasaragod districts mainly used by local folklore practitioners and tribal people for various disease treatments. The leaves and bark of the plant are bitter in taste due to glucoside samaderin, yield terpenoids, and flavonoids used against various disorders and skin diseases. The extracts have got antioxidant and antimicrobial activity [6-8]. *S. indica* is an evergreen tree or shrubs up to 10 m high with stout branches and pale yellow bark. Its propagationis by seeds and flowering and fruiting during April–July.

S. indica is commonly found in backwaters and moist deciduous forests and coastal belts of Maharashtra, Kerala, and Karnataka. It is also distributed in the forests of Africa-Madagascar, Myanmar, Papua New Guinea, and Salmon Islands.

Like, the bark is effectively used for the treatment of fever; skin diseases and management of emmenagogue. A decoction of the leaves relieves cough and extract controls head lice. The seeds extract commonly applied as an emetic and purgative; seed oil is applied externally on rheumatic joints and used as a liniment on bruises. A decoction of the leaves is used to kill termites and an infusion of leaves is used as an insecticide.

The main objective of the present study is to evaluate the wound healing properties of methanolic bark extract of *S. indica*.

MATERIALS AND METHODS

Collection of sample

S. indica plant was identified by Dr. Rama Bhat P., specimens samples were collected, and herbarium was prepared and deposited with No. ALCMB 05/2015. The bark samples were collected from the forests of Kasaragod district, Kerala state, India, during the month of November 2015, allowed to shade dry for a week. It was then kept in a hot air oven at 60°C for 24–48 h until it was dried completely, make it coarsely powdered and stored in a closed container for further use.