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Research Article

WOUND HEALING ACTIVITY OF THE HYDRO-ALCOHOLIC EXTRACT OF *DATURA STRAMONIUM* LEAVES IN WISTAR ALBINO RATS

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ABSTRACT

Datura Stramonium has been known for many potential uses. Leaves of datura are used in herbal medicine especially in case of Ayurveda for asthma and bonesetting. Roasted leaves is applied over the area of relieve pain. Leaves and leaves are used in antiasthmatic, antispasmodic, hypnotic & narcotic. The hydro-alcoholic extract of *Datura Stramonium* leaves were investigated for wound healing potential in rats. *Datura Stramonium* leaves were dried, crushed in coarse powder hydro-alcoholic extract was obtained and turned to 10% ointment form. In the course of this study, 18 male wistar albino rats weighing approximately 150- 180g were used in this research. Group 1 as control group, Group 2 as reference control were treated topically with Povidone-Iodine Ointment USP, Group3 as test control were treated with 10% *Datura Stramonium* ointment. Wound healing was monitored on days 4, 8, 12, 16 and histopathological evaluation was carried out on the samples. Leaf extract of *Datura Stramonium* promotes wound healing via bactericidal activity.

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INTRODUCTION:

Wounds are in escapable events of life, which can be arises due to chemical, physical or microbial infections. Our knowledge about wound healing mechanism is still incomplete. Some valuable information has been obtained by comparing results from animal experiments with clinical observation. *Datura Stramonium* is a popular tropical shrub and most commonly found in India. Datura is most commonly used in asthma, reduce fever, protect the heart, eliminate pain, increase fertility, boost hair health etc. Datura is a genus of nine species of poisonous vespertine flowering plants belonging to the family solanaceae^{1, 2, 3}.

MATERIALS AND METHODS:

Plant material

Leaves of *Datura Stramonium* were obtained from medicinal garden of Modern Institute of Pharmaceutical Sciences, Indore and were identified at Department of Botany Holkar Science College,

Indore. A voucher specimen was submitted in our MIPS, Indore for further reference.

Preparation of extract

Datura Stramonium fresh leaves of this plant were cut and wash with distilled water and dried in oven 50⁰ C for 5-7 days until fully dried. The dried leaves were grind and 50g of blended leaves powder was extracted by soxhlet extraction by hydroalcoholic solution (70:30). The obtained extract was then formulated in the form of 10% ointment. 1g of the leaf extract was mixed with 100 g of formula known as the ointment base whose standard constituents are: white bees wax (2g), hard paraffin wax (3g), propylene glycol (5g), cetostearyl alcohol (5g), and white soft paraffin (85g).

Experimental animals

During this experiment 18 wistar rats of either sex were issued from animal house of Modern Institute of Pharmaceutical Sciences, Indore. Wistar rats (150-180g) were divided into three groups of six rats. The animals were housed in standard environmental condition, 12 hrs. Light/dark cycle for two weeks. During the course of the experiment the rats were administered a standard pellet diet and water *ad-libitum*^{4,5}.

Anaesthesia

Using 1 ml syringe, a calculated dose per body of Thiopental sodium were administered subcutaneously via the ventral part of abdomen of the each rats. The

process of anesthetizing the rats was done whenever the wounds were to be measured and dressed as well.

Excisional wound model

The dorsolateral aspect of the thoracic wall was shaved and thereafter cleaned with methylated spirit. A 2 cm by 2 cm wound was created on the dorsolateral aspect of the thoracic wall under aseptic condition; achieving prior sedation with parenteral.

Treatments

After making the surgical wounds, all rats were randomly divided in three different groups.

Group I: Control

Group II: Povidone-Iodine Ointment USP

Group III: *Datura Stramonium* ointment (10%)

On day four, eight, twelve, and sixteen four animals were randomly selected for observation of percentage of healing of wound on the rats.

$$\frac{\text{Wound size at day zero(0)} - \text{Wound size on the given day}}{\text{Wound size on day zero (0)}} \times 100$$

Table 1: Effect of Hydroalcoholic extract ointment of Leaves of *Datura stramonium* % wound closure of excision wounds

Group	Treatment	4 th Day	8 th Day	12 th Day	16 th Day	Period of epithelization in days
Group I	Control (Simple ointment base B.P.)	15.8±0.6	27.2±1.0	48.2±1.8	68.5±2.6	26
Group II	Povidone-Iodine Ointment USP	35.2±0.1	76.8±0.1	89.8±0.5	97.1±0.4	18
Group III	Hydroalcoholic extract (10%)	34.4±1.0	76.8±1.2	84.3±2.3	92.5±2.1	19*

RESULTS AND DISCUSSION:

The effect of hydro alcoholic leaf extract ointment on excision wound model, the wound healing contracting ability in different contraction was significantly greater than that of control. The 10 % w/w extract ointment treated groups showed significantly wound healing from fourth day onwards, which was comparable to that of the standard drug, Povidone-Iodine Ointment USP treated groups of animals. The wound closure time was lesser, as well as the percentage of wound contraction was much more with the 10% w/w extract ointment

treatment group. The result of present study revealed that hydro-alcoholic extract of *Datura Stramonium* leaf have significant wound healing activity in excision wound model.

CONCLUSION:

In this study, the effect of *Datura Stramonium* leaves was screened for excision wound healing activity on adult male wistar rats. This research has therefore showed that *Datura Stramonium* has agents to promote wound healing activity.

REFERENCES:

1. Das S, Kumar P, Basu SP, Phytoconstituents and therapeutic potentials of *Datura stramonium* linn. Journal of Drug Delivery and Therapeutics, 2012; 2(3):4-7. doi:10.22270/jddt.v2i3.141
2. Nayak BS, Ramdeen R, Adogwa A, Ramsuhag A, Marshall JR, Wound-healing potential of an ethanol extract of *Carica papaya* (Caricaceae) leaves, Int Wound J, 2012; 9:650-655.
3. Patil S, Ghodke DS, Magdum CS, Evaluation of healing activity of marketed formulations on excision wounds models in Albino rats, Int J PharmTech Res, 2009; 1:500-501.
4. Chitra P, Sajithal G B, Chanrakaran G, Influence of *Aloe Vera* on collagen turnover in healing of dermal wounds in rats, IJEB, 1998; 36:896-901.
5. Pandey M, Worlikar P S, Comparison of wound healing activity of Jethimadh with Triphala in rats, IJHAS, 2012; 1:59-63.