

# Evaluation of Wound Healing Property of *Cassia Tora*

Sameena Akhter<sup>1</sup>, N. Ganesh<sup>2</sup>, Alibha Rawat<sup>3</sup>, Gresh Chander<sup>4</sup>, Ravi Sukumaran<sup>5</sup>

<sup>1,3,4,5</sup>Department of Research, Jawaharlal Nehru Cancer Hospital & Research Centre, Idgah Hills, Bhopal, India

<sup>2</sup>Department of Research, Jawaharlal Nehru Cancer Hospital & Research Centre, Idgah Hills, Bhopal (Corresponding Author)

**Abstract:** **Aim:** This research work aims to study the wound healing property of methanolic extract of *Cassia tora* seeds on albino mice. **Method:** The research was carried out in selected Swiss albino mice that were treated with seeds extracted from *Cassia tora* extract and compared with standard drug Povidine iodine. **Result:** The result showed very good wound healing property of *Cassia tora* when compared with the standard drug Povidine iodine. **Conclusion:** It is concluded that *Cassia tora* has significant wound healing activity.

**Keywords:** Albino mice, *Cassia tora*, wound healing property

## 1. Introduction

The plant *Cassia tora* is an annual foetid herb with moderate size belonging to the family Fabacaceae. It is mainly found in the State of Uttar Pradesh and Madhya Pradesh in India. The plant has many medicinal properties. *Cassia tora* is used as a coffee substitute. It is very useful in treating skin diseases like ringworm, itching or body scratch and psoriasis. Its fresh leaves are used externally to treat eczema and dermatomycosis. Decoction of fruit of *Cassia tora* is used in the treatment of fever. *Cassia tora* act as a nerve tonic as a liver stimulant and hard tonic (Lajuruset *al.*, 1994). It is a powerful germicide, mucilaginous and laxative.

A review of literature (Janghelet *al.*, 2012) revealed that the wound healing property of methanolic extract of *Cassia tora* are studied by excision and incision. Wound models on albino mice exhibited significant wound healing activity.

## 2. Material and Method

### Animals

Swiss albino mice weighing about 20-30 gm with no prior drug treatment were obtained from the animal house, Dept of Research, Jawaharlal Nehru Cancer Hospital and Research Centre, Bhopal. Experimental animals were housed in separate cages and fed with standard diet and water *ad libitum* throughout the study. Ethical approval was obtained from Institutional Ethical Board Committee and the registration number is CPCSEA/a/500/2001.

### Grouping of Animals

3-4 months mice were used for experiment, 12 mice were used for experiments which were divided into 3 groups. Each group contains 4 animals:

- 1) Normal standard group – 4 animals (NST)
- 2) Treated group- 4 animals (TT)
- 3) Normal group- 4 animals (NC)

### Plant material:

Seeds of *Cassia tora* were collected from the herbal garden of Jawaharlal Nehru Cancer Hospital & Research Centre, Bhopal.

### Extraction:

25 g of *C. Torawas* dissolved in 300 ml methanol for 72 hours. Further subjected to maceration, soaked seeds were macerated and defatting was done using 200 ml petroleum ether. Finally, 3.10 gm of crude extracts were extracted and tested for wound healing activity.

### Methodology:

The wound was created by excision method. For this, first of all hair was removed from the anterior and posterior sites of mice using hair removal Anne French (made in India) Geoffrey Manners and an area of 1x1 cm was measured with stencils and this area was marked with a marker. The anterior and posterior marked area was anesthetized using a local anaesthesia Xylocaine. After 2 minutes of applying Xylocaine, the marked area of the skin was excised with the help of surgical blade no. 18 and toothed forceps. The skin was removed creating the wound of 1x1 cm. The treatment was given on every alternate date:

- 1) Drug (Povidine Iodine) 0.5 mg was applied in group NST every alternate days.
- 2) Drug ((seed extract) 0.5 mg was applied in group TT every alternate days.
- 3) No drug was given to group NC.

## 3. Observation and Result

There was noticeable homogeneity in wound contraction observed for animals in experiment group (TT) compared to control group (NST, NC) as given in **Table No 1 and Graph No. 1**, the mean value of wound contraction of anterior site of control and experiment group was taken as 5<sup>th</sup>, 10<sup>th</sup>, 15<sup>th</sup> and 20<sup>th</sup> day. Wound re-epithelization has been observed by both physical and mechanical measurement by Vernier Calliper (Fisher Scientific). The mean value of wound contraction for NC group was 0.87455 at 5<sup>th</sup> day, 0.2305 at 15<sup>th</sup> day and 0.1520 at 20<sup>th</sup> day. Mean value of treated group was found to be 0.56 at 5<sup>th</sup> day, 0.055 at 15<sup>th</sup> day and 0 at 20<sup>th</sup> day. The Figures below show the better healing at 15<sup>th</sup> day with *Cassia tora* when compared to standard drug Povidine Iodine.

**4. Discussion and Conclusion**

Wound repair can easily be understood by non-invasive method for measurement like physical observation and mechanical measurement, however, wound density, collagenase, activity etc. Can be added to make more scientific validation for the present work; however, this piece of work is performed only in 25 days; however, molecular dimension cannot be studied.

The present study is a comparative study between the wound repair mechanism by standard drug (Povidine iodine) and test drug (*Cassia tora*). It was observed that the wound is repaired significantly in the test and standard group when compared with the normal control without any treatment. It was also noticeable that the wound is repaired significantly ( $p < 0.0001$ ) when test group alone compared with standard

drug and control. The present study has been separated by Janghel V. *et. al.*, (2012), however, the value in moderately significant ( $p < 0.01$ ) this may be due to the sample origin of different ecotype.

According to the **Table No 1** it was found that control (without any treatment) has shown poor re-epithelization. However, treated mice has shown total repair at 20<sup>th</sup> day. Thus *Cassia tora* has shown great potential in wound healing activity.

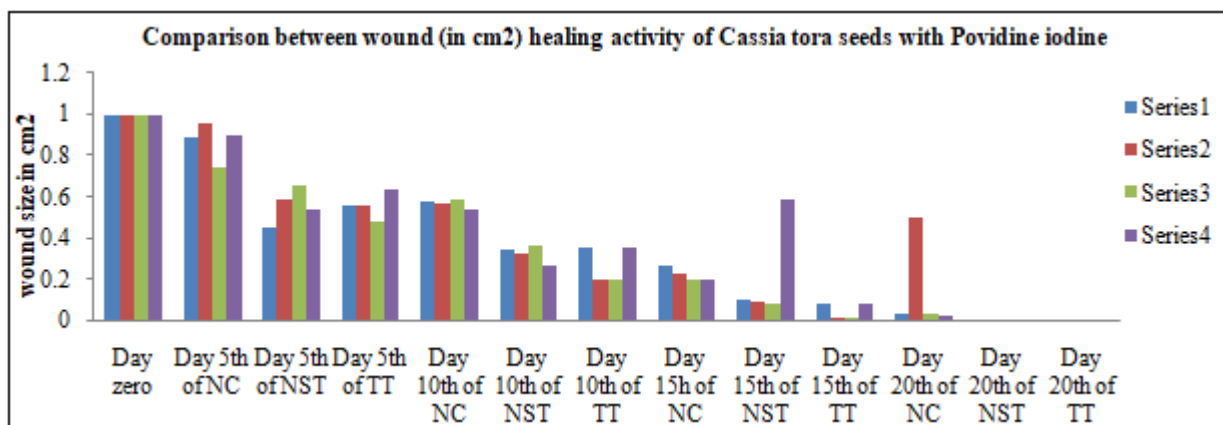
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**Table 1:** Comparison between wound (in cm<sup>2</sup>) healing activity of Cassiatora seeds with Povidine iodine

Day zero	Day 5 <sup>th</sup> of NC	Day 5 <sup>th</sup> of NST	Day 5 <sup>th</sup> of TT	Day 10 <sup>th</sup> of NC	Day 10 <sup>th</sup> of NST	Day 10 <sup>th</sup> of TT	Day 15 <sup>th</sup> of NC	Day 15 <sup>th</sup> of NST	Day 15 <sup>th</sup> of TT	Day 20 <sup>th</sup> of NC	Day 20 <sup>th</sup> of NST	Day 20 <sup>th</sup> of TT
1	0.8918	0.4556	0.56	0.576	0.348	0.36	0.2756	0.105	0.09	0.034	0	0
1	0.9603	0.5928	0.56	0.575	0.3304	0.2	0.235	0.093	0.02	0.506	0	0
1	0.744	0.656	0.48	0.5913	0.372	0.2	0.2064	0.0899	0.02	0.0361	0	0
1	0.9021	0.5451	0.64	0.546	0.2745	0.36	0.205	0.594	0.09	0.032	0	0

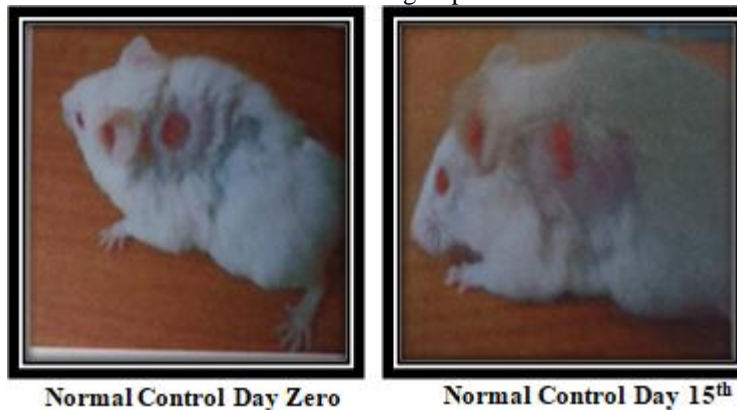
Legends: NC: Normal control, NST: Normal Standard Treated, TT: Seed treated



**Graph 1:** Comparison between wound (in cm<sup>2</sup>) healing activity of Cassiatora seeds with Povidine iodine

Legends: NC: Normal control, NST: Normal Standard Treated, TT: Seed treated

Figures showing wound on Normal Control and Treated groups of *Swissalbino* mice at Day zero and Day 15





Povidine Iodine Day 15



Cassia Tora Day 15

## References

- [1] Bischoff M, Kinzl L, Schmelz A (1999). The complicated wound, *Unfallchirurg*, 102:797-804 (in German).
- [2] Broughton G, Janis JE, Attinger CE (2006). The basic signs of wound healing *PlastReconstrSurg*, 117:128-348.
- [3] Gosain A, DiPietro LA (2004). Aging and wound healing. *World J Surg*, 28:321-326.
- [4] Janghel V, Gupta N, Jain UK (2012). Wound healing activity of leaves of *Cassia tora* Linn. *Der Pharmacia Sinica*, 3:511-515.
- [5] Labler L, Mica L, Harter L., et al., (2006). Influence of VAC therapy on cytokines and growth factors in traumatic wounds. *ZentralblChir*, 131, S62-S67 (in German).
- [6] Lazurus GS, Cooper DM, Knighton DR, et al: Definitions and guidelines for assessment of wounds and evaluation of healing. *Arch dermatol* 1994; **130**:489-493.
- [7] Rivera AE, Spencer JM (2007). Clinical aspects of full thickness wound healing. *ClinDermatol*, 25:39-48.
- [8] Robson MC (1997). Wound infection: a failure of wound healing caused by an imbalance of bacteria. *SurgClin North Am*, **77**:637-650.
- [9] Robson MC, Steed DL, Franz MG (2001). Wound healing: biologic features and approaches to maximize healing trajectories. *CurrProbl Surg*. **38**:72-140.
- [10] Strecker- McGraw, Jones TR, Baer DG (2007). Soft tissue wound and principles of healing. *Emerg Med Clin North Am*, **25**:1-22.