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Anti-Inflammatory Response of *Cuscuta Reflexa*

KEYWORDS: Wound healing, Herbal medicine, Weeds, Anti-inflammation

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ABSTRACT *The aim of this in vitro study was to investigate the wound healing properties of 0.5 mg concentration of 50% of methanol extract of Cuscuta reflexa which contains the active compound flavonoids and compared their anti-inflammatory effect with betadine, a commercial synthetic drug. The rate of wound healing and re-epithelization of the methanolic extract of this weed was found better than betadine. The mean value of wound contraction of both anterior and posterior site of control and experiment group was taken at 5th, 10th, 15th and 20th day.*

INTRODUCTION

FDA (**Food and Drug Administration,** 1997) has been regulatory biological product used for regulatory approaches to the review of new technologies such as cellular wound dressing (**Alvarez OM et. al. 1982**). For centuries, millions have used various parts of plants, such as; leaves, roots, stem, etc. for medicinal purpose (**Bentely R et. al. 1980**), many of them were as a tonic, treatment of ailment like fever, infections and other complaints and some are used as an antiseptic.

Only in recent year's scientist in the western countries started believing that plants could be used with tremendous benefits. Herbal treatment stimulates cell migration, which heals skin wound in diabetic mice. Healing tissue contains endothelial cells, myofibroblast (**Borris RP,**1996). This will help in the formation of new blood vessels, reduce actinomycin filaments to have wound contraction and in organization of scar formation including initiation of collagenase activity, which help in collagen and other connective tissue formation (**Duke JA,**1985). But usually it was found that in cancer patients cure to the progression of disease or during surgical intervention the wound is not repaired fast and due to the long illness the patient is immobilized leading to the formation of non-healing wound due to bed sore (**Fransworth NA et. al. 1985**). The cost of antibiotic is very high because of which many of patients cannot afford it.

Flavonoids of *Cuscuta reflexa* also have anti-inflammatory responses (**Beliz TC,** 1988).

MATERIAL AND METHODS

The plant *Cuscuta reflexa* was collected from the central region of India (Forest near Lower Lake, Bhopal, Madhya Pradesh). It was dried and then kept in contact with 50% methanol for 72 hours with regular agitation. Defatting of extract was done by petroleum ether. The defatted filtrate thus obtained was concentrated and dried at 60°C in oven till the dried form was obtained. The dried form of extract was powdered and prepared different concentration (25%, 50%, 75% and 100%) by sterile water and then finally used as anti-inflammatory medicine.

Animals used for this experiment (Male *Swiss Albino* mice of age group 3- 4 months) were provided by cancer hospital after approval of ethical committee. 12 mice were used for experiment, which were divided into three groups, according to the treatment given. Each group contains four animals (Shown in Table 1).

TABLE – 1
Group of *Swiss albino*

Code no.	Group of animals	No. of animals
CRC	Control group	4
CRB	Betadine treatment	4
CRT	0.5 mg treatment	4

Determination of wound healing screening

The wound was created using excision method. For this, first of all hair were removed from the anterior and posterior sides of mice using hair remover Anne French (Made in India) Geoffrey Manners and an area of 1 x 1cm was measured with stencils and this area was marked with a marker. The anterior and posterior marked area was anesthetized using a local anesthesia –xylocain. After 2 min. of applying xylocain the marked area of skin was excised with the help of surgical blade no. 18 and toothed forceps. The skin was removed creating the wound of 1 x 1 cm.

Measurement

The wound was measured with the help of vernier caliper. It has two jaws. The object whose length is to be determined was placed between the two jaws such as the length to be measured lies along the main scale. The jaws were made to grip the object in such a way that neither it press the object too hard nor leave any gap. And in this position the measurement of length and breadth was taken and area was calculated.

Treatment

The treatment was given in every alternate day;

Betadine in group CRB was applied in every alternate days

Drug (crude extract) – 0.5 mg in group CRT was applied in both anterior and posterior region of *Swiss albino* by alternative days.

No drug was given to group CRC.

Statistical analysis

The P – value was calculated from ANOVA XLSTAT software.

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RESULT AND DISCUSSION

There was noticeable homogeneity in wound contraction observed for animals in experiment group compared to control group. The mean value of wound contraction of both anterior and posterior site of control and experiment group was taken at 5th,10th, 15th, and 20th day. The results showed a significant increase in wound contraction from 0 day to 20th day when compared between experiment group, standard drug (betadine) group and control group. They were very statistically significant p <0.003.

The P-values are mentioned in table 2 and 3 and graphical presentation showed in figure 1 and 2.

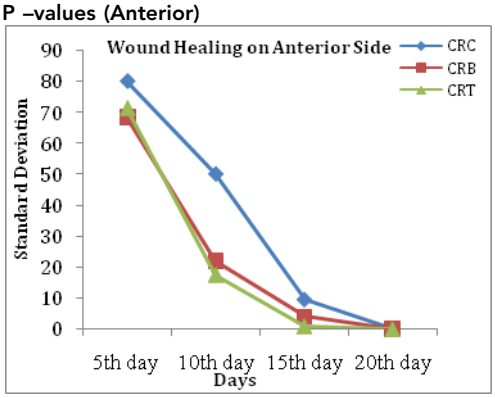
TABLE – 2
P –values (Anterior)

Group	CRC vs CRB	CRC vs CRT	CRB vs CRT
5th day	0.0073*	0.0145*	0.5004
10th day	0.0001***	0.00001***	0.1177
15th day	0.0102*	0.0004***	0.0155*
20th day	0	0	0

TABLE – 3
P –values (Posterior)

Group	CRC vs CRB	CRC vs CRT	CRB vs CRT
5th day	0.0085*	0.06129	0.0173*
10th day	0.0004***	0.0016**	0.01075*
15th day	0.0535*	0.064*	0.6349
20th day	0	0	0

GRAPH – 1
P –values (Anterior)



GRAPH – 2
P –values (Posterior)

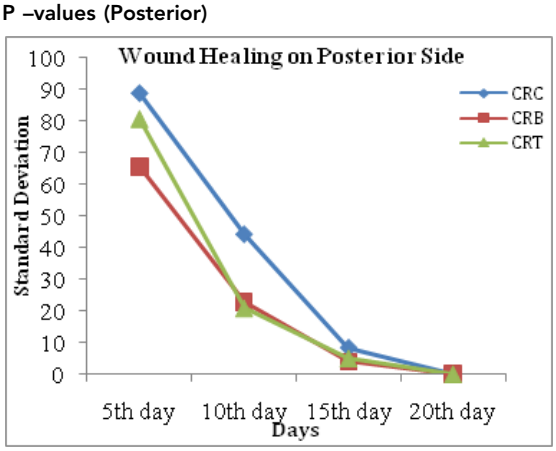


FIGURE - 1
Wound healing shown on 5thday

FIGURE - 2
Wound healing shown on 10thday

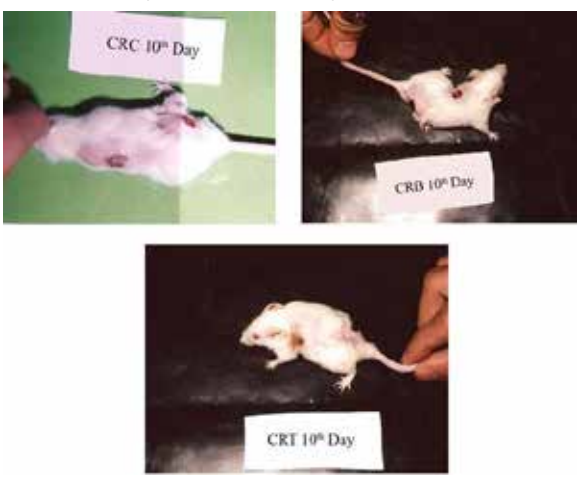


FIGURE – 3
Wound healing shown on 15thday

CONCLUSIONS

In our experiment, we have taken 50% of methanol extract of *Cuscuta reflexa* and compared its wound healing properties with betadine. The rate of wound healing and re-epithelization of the methanolic extract of the stem was found to be more effective than betadine. Betadine is the most commonly used drug for the treatment of wound and contain povidine iodine as the chemical compo-

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nent, but the methanolic extract contain many flavonoids, which might have shown a higher wound contraction as compared to betadine. The wound and the inflammation process produces free radicals, which can slow down the healing process as well as affect other normal cells. The active flavonoids presents in the stem extract may prevent the free radical formation, by their free radical scavenging activity, which may promote re-epithelization, leading to faster wound healing.

So it may be a good alternative as broad spectrum wound healing and anti-inflammatory drug.

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