

A STUDY OF ANTI-INFLAMMATORY ACTIVITY OF PLANT "TRIANTHEMA PORTULACAISTRUM" IN CHRONIC MODELS OF INFLAMMATION

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ABSTRACT: BACKGROUND: Trianthema portulacaistrum is being used in Ayurveda since centuries for its medicinal values, hence this study was done to know if it has got anti-inflammatory activity in chronic models of inflammation, **MATERIALS AND METHODS:** Wistar albino rats were treated with whole plant ethanolic extract of trianthema portulacaistrum 100mg \kg orally with 2% gum acacia, as suspending agent and indomethacin 20mg\kg as standard. And the effects were observed in chronic model of inflammation namely, rexin pellet induced granuloma model, **RESULT:** This study demonstrated that trianthema portulacaistrum reduced significantly the dry weight of granuloma that was formed after rexin pellet implantation, **CONCLUSION:** Trianthema portulacaistrum has got significant anti-inflammatory activity in chronic models of inflammation.

KEYWORDS: Trianthema portulacaistrum, rexin pellet, chronic inflammation, indomethacin.

INTRODUCTION: Trianthema portulacaistrum commonly known as Bishakhpara is being used in Ayurveda since ages for its medicinal values.⁽¹⁾ It is a commonly eaten vegetable in most parts of India since it is grown all over India This plant contains a number of nutrients which are needed by the body. It contains protein, fiber, vitamins and minerals like phosphorus, potassium and iron.⁽²⁾ Its leaves are useful in treating edema and dropsy, its roots are used as cathartics, it is also useful in treating helminthic infestation,^(3,4) Hence we took up this study to know if it has anti-inflammatory activity in chronic models of inflammation.

MATERIALS AND METHODS: Whole plant extract of trianthema portulacaistrum in dose of 100mg\kg indomethacin,⁽⁵⁾ 20mg\kg and gum acacia 2% as a suspending agent were used for the study.

Preparation of the Plant Extract: The whole plant was collected and kept for drying. The dried whole plant was finely powdered and subjected to extraction process with the help of a Soxhlet extraction apparatus with ethanol being used as a solvent.

Wistar albino rats of either sex of average weight 120 to 200gms which were inbred in central animal house were used for the study. The study was done after getting the clearance of institutional animal ethical committee.

The rats were divided into three groups of six each, one for the test drug another for the standard drug i.e., indomethacin and the other group acted as control.

Rexin Pellet Induced Granuloma Test: Here the rexin pellets weighing 40gms each were prepared and sterilised with 70% ethanol. The animals were subjected to ether anesthesia and small linear incisions were made in each axilla and groin with aseptic precautions. One rexin pellets was implanted subcutaneously in each of these areas in each rat.

ORIGINAL ARTICLE

The animals were maintained for a period of 4 days, sacrificed on the fifth day and the implanted rexin pellets infiltrated with granuloma were removed, cleared of extraneous tissue and dried in a hot air oven to constant weight. The dry weight of granuloma formed was determined by noting the difference in dry weights of rexin pellets recorded before and after implantation in respective groups.

The drugs were given one hour before implantation, and subsequently once daily for four consecutive days.

The percent of inhibition of granuloma, i.e., the percent of anti-inflammatory activity was calculated using the formula; $100\{1 - \frac{W_t}{W_c}\}$

Where W_t is mean dry weight of granuloma in drug treated group and W_c is the mean dry weight of granuloma in control group.

Statistical Analysis: all the data were tabled as mean and standard error of mean, the data were analysed using the student's t test.

RESULTS: In our study it was demonstrated that there was significant reduction in amount granuloma formation with trianthea portulacastrum which was comparable to that of indomethacin. The p value being less than 0.05.

DISCUSSION: Chronic inflammation can occur due to persistent infections, prolonged exposure to non-degradable materials or autoimmune diseases. The steps involved in this are infiltration by mononuclear cells, proliferation of fibroblasts and increased connective tissue formation, leading onto granuloma formation, the mediators involved are histamine, serotonin prostaglandins leukotrienes etc.⁽⁶⁾

The anti-inflammatory activity of trianthea portulacastrum as shown in our study can be attributed to the fact that this plant contains flavinoids.⁽⁷⁾ and flavinoids possess significant anti-inflammatory properties because of their ability to inhibit the enzymes cyclooxygenase and lipoxygenase which inturn inhibit synthesis of prostaglandins and leukotrienes.⁽⁸⁾ These are the main mediators of inflammation.

CONCLUSION: This study shows that trianthea portulacastrum has got significant anti-inflammatory activity in chronic types of inflammations. Further studies in human controls are needed.

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ORIGINAL ARTICLE

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GROUP	MEAN DRY GRANULOMA WEIGHT (mg) \pm SE	PERCENT INHIBITION
CONTROL	20.25 \pm 0.98	-
INDOMETHACIN (STANDARD)	12.88 \pm 1.05	36.40%*
TRIANTHEMA PORTULACASTRUM (TEST)	13.58 \pm 0.94	32.94%*

TABLE 1. RESULTS FOR REXIN PELLETT INDUCED GRANULOMA MODEL IN ALBINO RATS

*indicates significant p value i.e., $p < 0.05$.

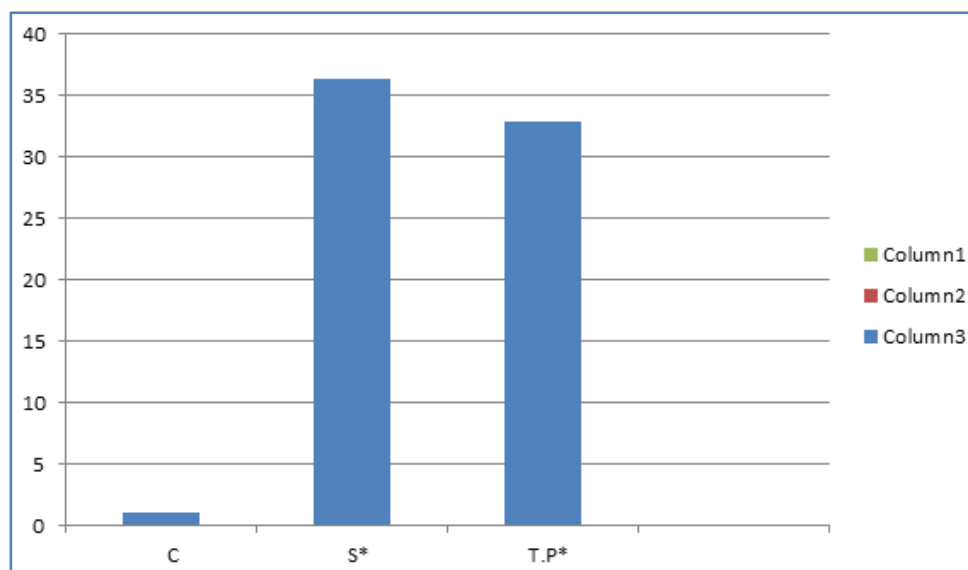


FIG. 1: BAR DIAGRAM SHOWING THE ANTIINFLAMMATORY ACTIVITY OF DRUGS IN REXIN PELLETT INDUCED GRANULOMA MODEL

C- control, S – Standard (indomethacin), T.P (Trianthea portulacastrum).

*indicates significant p value of $p < 0.05$.

ORIGINAL ARTICLE

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