

Screening of Anti Inflammatory Potential of Chosen Medicinal Plants Using Swiss Albino Mice

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Abstract: Anti inflammatory efficiency of chosen two plants *Cassia occintalis* and *Lannea coromandelica* were studied by delayed type hyper sensitivity method using mice. The inbred Swiss mice were divided into four groups, each groups have six animals. One group (Group - I) served as control and other groups (Group II - IV) were received antigen along with cyclophosphamide (Standard immunosuppressive drug) and two plant extracts respectively. After treatment, the antigens were injected in the foot pad at 10% doses. The foot pad thicknesses were observed and this thickness is much reduced when the antigen was administered with cyclophosphamide (11.44 to 9.07 %). The plant extracts of *Lannea* and *Cassia* along with antigen showed no thickness or edema, only redness was observed. The present study was confirmed chosen plants have anti-inflammatory potential.

Key words: Antigen, anti-inflammatory, *Casia Occitantis* and *Lannea coromantelica*.

INTRODUCTION

The immunomodulatory agents of plant origin substances enhance the immune responsiveness of an organism against a pathogen, specifically and non- specifically by activating the immune system(Kathiyar, C.K., 1997). Immunomodulatory compounds derived from medicinal plants may be free from toxic effects; it could be safe and free from any undesirable side effect(Laemml, U.K., 1970). The foreign substance and some drugs are affecting the host organism through immunosuppression. The global effect of immuno suppressive drugs on the immune system predisposes patients to the development of infection and cancer(Dantal, J., 1998).

Cassia occidentalis is a medicinal herb used as an antibiotic, fungicide, purgative and in the treatment of skin disorder (Ambasta, 1986). Bonta (1969) reported the chemical composition of the plant has revealed the presence of anthroquinone glycosides. *Lannea coromandelica* belongs to a family Anacardiceae. Earlier works of phytochemical composition of its leaves revealed the presence of flavonoids and tannins have a remarkable anti inflammatory activity (Bonta, 1969). Cyclophosphamide used as an immunosuppressoion agent for the present study. In this study screened the efficiency of anti inflammatory effect of chosen plant using Swiss albino mice.

MATERIALS AND METHODS

Preparation of Immunosuppressive Drug: (Cyclophosphamide):

One percentage w/v of cyclophosphamide was prepared using phosphate buffer saline. 0.5ml of cyclophosphamide was administered orally at 24hrs intervals for 21 days, after administration, the mice were analyzed to find the effect of drug (Group- II).

Preparation of Plant Extract:

Cassia occidentalis and *Lannea coromandelica* leaves were collected in the early morning and dried in a shadow place. The dried leaves were powdered using mixer grinder. 500mg of leaf powder was mixed with 10ml of distilled water (5%) and extracted, the extract filtered, centrifuged at 3000rpm for 10mins and supernatant was collected for analysis. The plant extract (2ml) administrated to the mice at 24hrs interval for 5 days (Group III - IV).

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DTH Assay:

Normal, drug and plant extract administered mice were challenged with 10% SRBC for 5 days under one hind foot pad, the opposite foot pad were treated as a saline (serves as control). Reactions were assessed 24hrs later by measuring the increase in dorsoventral thickness by using screw gauge caliper, and the results were expressed as specific increase in footpad thickness (mm³) mean.

RESULTS AND DISCUSSION

The thickness of the antigen injected footpad was measured; the antigenic response was redness of the skin and inflammatory reaction in test animal (Figure 1-4). The mean value was obtained from the control animal for the further comparison of the effect of cellular antigen, cyclophosphamide and anti-inflammatory plant extraction (Table. 1).

Table 1: DTH responses of normal, drug treated and plant treated animals against SRBC antigen in different time intervals

S.No	Test	Inflammation thickness in (mm ³)		
		Initial booster	Primary booster	Secondary booster
1	Control (Group - I)	46.77	59.37	28.32
2	Cyclophosphamide (Group - II)	16.95	11.44	9.07
3	<i>Cassia occidentalis</i> (Group - III)	Redness	Redness	22.72
4	<i>Lannea coromandelica</i> (Group - IV)	Redness	33.31	23.89

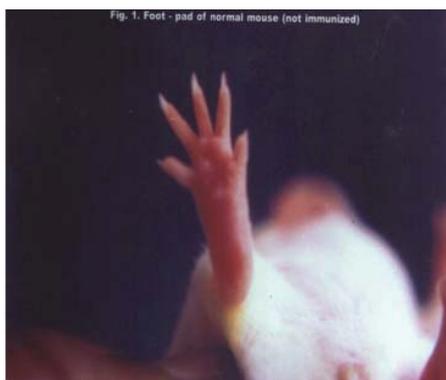


Fig. 1: Foot pad of normal mice (not immunized).



Fig. 2: Foot of immunized mice with 10% SRBC



Fig. 3: Foot of mice immunized with SRBC and *Cassia occidentalis*



Fig. 4: Foot of mice immunized with SRBC and *Lannea coromandelica*

In the mice received with SRBC alone as an antigenic induction the foot-pad thickness increased 59.37% after second booster (109.14mm^3). Where the mice received antigen along with cyclophosphamide, after second and third boosters the thickness was reduced to 11.44% and 9.07 % respectively. In mice received with antigen and *Cassia* plant extract, the thickness was not seen but redness was seen. But after third booster thickness of the footpad reduced drastically due to the effect of anti-inflammatory effect of plant extract, similarly the mice received with antigen along with *Lannea* the thickness of the foot pad was very much reduced than the control.

In this study, the foot pad thickness was observed due to the cellular antigen (SRBC) and this thickness was much reduced when the cellular antigen was administered along with cyclophosphamide. The plant extracts of *Lannea* and *Cassia* when administered along with antigen showed no thickness or edema. Only redness was observed. The reduction in DTH response of cyclophosphamide was reported earlier (Laemmler, U.K., 1970). Inhibition of proliferation in native and activated T cells and reduction of T cell cytotoxicity by methotrexate and cyclophosphamide was caused by direct induction of apoptotic cell death (Strauss, G., 2002).

Mice foot-pad thickness (delayed type hypersensitivity DTH) was studied using SRBC antigen. Cyclophosphamide treated animal showed thickness of the foot pad was brought down; thickness was much reduced in animal treated with antigen and plant extracts. Cyclophosphamide reduces the expression of certain protein; however, specific protein showed elevated expression after the administration of plant extract. Thus the present study confirmed the anti-inflammatory effect of the *Cassia occidentalis* and *Lannea coromandelica*

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