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ANTI-INFLAMMATORY ACTIVITY OF DODONAEA VISCOSE

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ABSTRACT: *Dodonaea viscose, Linn is a widely grown plant of Nilgiris district of Tamil and is commonly used by the tribals of Nilgiris as a traditional medicine for done fracture and joint sprains. Since it is generally believed tat fractures are accompanied by either some degree of injury or inflammations, it was felt desirable to carry our anti inflammatory activity of Dodonaea viscose. Anti-inflammatory activity of the plant was carried out by carrageenin induced paw edema method in Wister albino rats.*

INTRODUCTION

Dodonaea viscose, Linn is a small tree belonging to the family sapindaceae. It is Widely used by the tribal of Nilgiris as a traditional medicine for bonefracture and other inflammation conditions[-1]. As per the tribals information the leaves of *Dodonaea viscose* is to be made into a paste it ground nut oil and applied at the site of fracture. The application of leaves paste on the fractured area will set right quickly the bone fracture as per their folk claim[-2.] The present investigation was carried out on the leaves of *Dodonaea viscose.*

MATERIALS AND METHODS

Collection of Planat Material

The leaves of *Dodonaea viscose,* Lin were collected from Ketty village, Ooty, of tail Nadu during the month of June. The leaves were cleaned and left for shade drying. When the leaves got thoroughly dried, these were powdered and the powder was passed through sieve no 60. and stored in a airtight container.

Extraction [3,4]

The 2 kgs of shade dried powder material was extracted directly wit methanol by cold maceration a room temperature for 10 days in 3 liters round bottom flasks. After extraction, the methanolic extract was filered through whatmann filter paper to remove impurities, if present. The methanolic extract was concentrated by vaccum distillation to reduce the volume to $1/10^{th}$. The concentrated extract was transferred to a 500 ml beaker to evaporate the remaining solvent on a water bath. The methanolic extract was cooled and placed in a desicator.

150 gms of the died methanolic extract was suspended in 500 ml of distilled water (mother liquor). The mother liquor was taken in a one liter separating funnel and defatted with petroleum ether (60-80^{o}C) by fractionation. After defatting the mother liquor, it was fractionated into chloroform, Ethyl acetate and n-butanol soluble fraction. The fractionated extracts were concentrated ad dried. The colour and consistency of these exracts re recorded in table no.1. The dried methanolic extract and its fractionated extracts were packed in airtight container and used for further studies.

Table No.1

The colour and consistency of methanolic extract and its fractions (leaves)

Sl.No	Solvent extracts	Colour	Consistency
1	Methanolic extracts	Brownish green	Viscous
2	Petroleum ether (60-80^{o}) fraction	Green	Viscous mass
3	Chloroform fraction	Green	Resinuous mass
4	Ethyl acetate fraction	Brownish green	Sticky mass
5	n-butanol fraction	Reddish brown	Sticky mass

Qualitative Phytochemical Analysis [-5,6,7]

The methanolic and its fractionated extracts were subjected to qualitative analytical tests for detection of various plant constituents viz., Alkaloids, steroids, carbohydrates, fixed oils and fats, Tannin-Phenolic compounds etc.

The drug powder on shaking with water gave frothing which was constant for more than 15 minutes. It indicates that the leaves ma contain saponins.

The various qualitative tests indicates the presence of steroids, Flavonoids, saponins, Triterpenoids, carbohydrates and tannin-phenolic compounds.

Screening for Anti-inflammatory activity by carrageenin induced paw edema method in rats [-8]

The anti-inflammatory activity of Methanolic extract and its fractions vi., chloroform, Ethyl acetate and n- butanol fractions were carried out by 1% carrageenin induced paw edema in wister albino rats. The animals (175-250 gms) were divided into 6 groups each consisting of 6 animals.

The animals of group I-IV received a methanolic extract and its fractions chlorogormm, ethyl acetate and n-butanol respectively at a dose of 200 mg/kg as a fine suspension in 0.5% w/v carboxymethyl cellulose. Group V and VI served as positive control and solvent control by administering Ibuprofen (100 mg/kg) and 0.5% w/v carboxy methyl cellulose (1ml/kg) respectively. All the treatments were made by orally.

After 30 mins. Of drug administration 1 %w/v solution of carageenin in normal saline was injected at a dose of 0.1 ml to the lateral mallelous of subplanter region of the right hindpaw of the rat. To the left paw a same dose of normal saline was injected.

The volume of displacement by the infammed paw were measured by the help of mercury plethysmorgraph. In all the cases the volume of displacement was measured at 0 min, 30 min, 60 min, 120 min, 180 min and 240 min. The data is tabulated in Table No 2.

Table 2
The Anti-inflammatory Activity of Dodonaea viscose, Linn by
- Carrageenin induced Paw Edema Method

Groups	Extracts	Dose in Mg/Kg	Average Volume of Mercury Displacement in ML ± SEM						Percentage protection at 3rd hour
			0 min	30 min	60 min	120 min	180 min	240 min	
I	Methanolic extract	200	4.725 ± 0.288	5.875 ± 0.098	6.625 ± 0.339	6.5 ± 0.515	6.125*** ± 0.279	5.875***± 0.473	50
II	Chloroform fraction	200	4.5 ± 0.544	4.937 ± 0.375	5.875 * ± 0.326	6.375 ± 0.604	6.25*** ± 0.408	5.375*** ± 0.395	46.15
III	Ethyl acetate fraction	200	4.5 ± 0.288	5.125 ± 0.314	5.5 ** ± 0.427	6.375 ± 0.568	6.5 * ± 1.07	7.25 ± 0.76	38.46
IV	n-Butanol fraction	200	4.5 ± 0.25	4.625 * ± 0.59	4.75* ± 0.641	6.0 ± 0.625	6.875*** ± 0.36	7.375 ± 0.489	26.92
V	Ibuprofen	100	4.75 ± 0.25	5.15 ** ± 0.314	5.5 ** ± 0.375	5.625* ± 0.568	5.625*** ± 0.76	4.75*** ± 0.494	73.07
VI	Solvent control 0.5% w/v cmc	1 ml/kg	5.5 ± 0.408	6.0 ± 0.408	6.625 ± 0.478	6.875 ± 0.853	8.75 ± 0.5	8.925 ± 0.75	-

*p<0.05 **p<0.02 ***p<0.001

The percentage protection was calculated at 3rd hr using the following formula

Percentage inhibition of edema = $\frac{C-T}{C} \times 100$

Where,

C= Mean edema of control group.

T= Mean edema of treated group.

The results were analysed statistically by using students "t" test.

RESULTS AND DISCUSSION

Qualitative chemical tests showed the presence of steroids, carbohydrates, tannins, flavonoids, carbohydrates, tannins, flavonoids, triterpenoids and saponins, Methanolic extract and chloroform fraction showed significant anti inflammatory activity at 180 minutes. However, the activity shown by others groups was found to be less. The peak and significant anti inflammatory activity (P, 0.0001) of methanolic extract and chloroform fraction was observed at 180 minutes after the carrageenin administration. The percentage protection of methanolic extract, chloroform fraction and Ibuprofen were 50, 46, 15 and 73.07 respectively. The anti inflammatory activity was observed from 60 minutes onwards after the carrageenin administration.

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