

PURGATIVE AND ANTI-INFLAMMATORY ACTIVITIES OF CASSIA DIDYMODOTRYA, FRESEN

N. Mahadevan, B.G. Upendra, T. Subburaju, K.Elango and B. Suresh

Department of Pharmacognosy, J.S.S College of Pharmacy, Ooty-643 001. The Nilgiris, Tamilnadu.

Received: 30.6.2002

Accepted: 12.7.2002

ABSTRACT: *Aqueous and ethanol extracts of cassia didymobotrya were investigated for purgative and anti-inflammatory activities in albino mice and rats, respectively at a dose of 100 mg/kg body weight. Anti-inflammatory activity was screened by 1% carageenan induced paw edema method and purgative activity was screened by the method described by Akah et al, Both the extracts exhibited significant purgative and anti-inflammatory activities, which are comparable to standard drugs, Senna (20mg/kg) and indomethacin (20mg/kg). Ethanol extract showed higher purgative and anti-inflammatory than aqueous extract. The percentage of protection of aqueous, ethanol extracts and indomethacin were found to be 35.29,37.25 and 43.13.*

INTRODUCTION:

Cassia didymobotrya belonging to family Fabaceae is abundant in the Nilgiris district of Tamil nadu. The leaves of Cassia didymobotrya are used in various countries, namely Rwanda, Tanzania, East Africa and Kenya for variety of disease ailments such as treating malaria¹ gastrointestinal problems², pneumonia³ and also as a purgative⁴. α -amyrin, β -amyrin, arachidonic acid, chrysophanic acid, kaempferol, lauric acid, myristic acid, myristoleic acid, oleic acid, palmitic acid, rhein, glycoside, β -sitosterol stearic acid⁵, 1,4-anthroquinone chrysophanic acid, daucosterol, physcion, knipholone and several anthroquinone derivatives are reported from the plant⁶.

PLANT MATERIAL AND EXTRACTION

The plant cassia didymobotrya was collected from the Nilgiris district of Tamilnadu and identified from the a Botanical survey of India, coimbatore. The leaves were cleaned, shade dried and powdered. Powdered leaves

(200gms) of cassia didymobotrya was extracted with ethanol in an soxhlet apparatus for 2 days. The powdered material (200gms) was also extracted with distilled water by maceration. Both the extracts were concentrated to dryness under reduced pressure and stored in a desiccator.

SCREENING PURGATIVE ACTIVITY

Purgative activity was carried out by according to method described by Akah et al⁷. Mice of either sex weighing between 20-30 gm were divided into four groups of six mice each. At the time of test, food is removed two hours before treatment and the mice were isolated in cages with wire mesh grid floors over blotting paper. The doses of the standard (senna 20 mg/kg body weight), aqueous and ethanol extract (100mg/kg/ body weight) saline water were administered to each group. Food was replaced in the cages six hours after beginning the test and the blotting paper was changed at intervals during ensuing 24

hours. The total number of wet faeces was noted. The purgative effects of aqueous and ethanol extracts of cassia didymobotrya are recorded in Table 1.

SCREENING ANTI-INFLAMMATORY ACTIVITY

Anti-inflammatory activity of aqueous and ethanol extract of Cassia didymobotrya were carried out by 1% carageenan induced paw edema in albino rats⁸. The animals were divided into four groups each consisting of six animals. The animals of group I and II received aqueous and ethanol extracts respectively at a dose of 100mg/kg body weight as a fine suspension in 0.3% w/v carboxy methyl cellulose. Groups III and IV served as positive control and solvent control by administering indomethacin (20mg/kg) and saline water (1ml/kg) respectively. All the treatments were made orally. After 30 minutes of drug administration 1% w/v solution of carageenan in normal saline was injected at a dose of 0.1 ml to the lateral malleolus of subplantar region of the right hind paw of the rat. To the left paw, a same dose of normal saline was injected as a control. The volume of displacement of mercury by the inflamed paw was measured in Plethysmograph, at 0 minutes, 30 minutes, 60 minutes, 120 minutes and 240 minutes. The percentage of protection was calculated at 4th hour by using following formula.

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

REFERENCES

1. Gessier, M.C., Mysuya De, Nkunya M.H.H., M. and Tanenr, M., J. Ethnopharmacol, 48(3),1995,131-144.
2. Johns, T., Faubert G.M., Kokwaro, J.O., Mahunnah Ria and Kimnani, E.K., J. Ethnopharmacol, 46(1), 1995, 17-23.

Where C=Mean edema of control group

T= Mean edema of treated group

The results of anti-inflammatory effect were recorded in table 2.

The results were analysed by using students 't' test and level of significance was set at p<0.001.

RESULTS

Ethanol and aqueous extracts showed significant purgative and anti-inflammatory activities. The results of purgative activity of Cassia didymobotrya revealed that both extracts exhibited significant purgative activity comparable to senna. But the ethanol extract showed higher activity than aqueous extract.

Both the extracts showed significant anti-inflammatory activity at 4th hours, which is comparable to indomethacin. It was found that there was no reduction in edema in aqueous extract treated group at 1st hour, but ethanol extract showed reduction of edema at 1st, 2nd, and 4th hour. The percentage of protection of aqueous extract, ethanol extract and indomethacin were found to be 35.29, 37.25 and 43.13 respectively calculated at 4th hour.

ACKNOWLEDGEMENT

The authors are thankful to his Holiness Jagadguru Sri Shivarathri Deshikendra Mahaswamigalavaru of Sri Suttur matt for providing facilities for research work.

3. Boily, Y. and Van Puyvelde, L., J. Ethnopharmacol, 16.1, 1986, 1-13.
4. Mugeru, G.M., Bull Epizoot Dis Afr, 18,1970,389-403.
5. El Sayyad S.M. and Sayed, H.M., Bull Pharm Sci Assiut Univ 8(1), 1985, 12-27.
6. Alemayehu, G., Hailu, A., and Abegaz, B.M., Phytochemistry, 42(5), 1996, 1423-1425.
7. Akah, P.A., Oli, A.N., Enwereen, N.M. and Gamaniel, K, Preliminary studies on the purgative effects of Carica papaya root extract, Fitoterapia, 68, 1997, 327-331.
8. Sheth, U.K. Dadkar, N.K. and Usha G. Kamat selected Topics in Experimental pharmacology, The Kothari Book Depot. Bombay 1972, 190.

TABLE -1 : PURGATIVE EFFECT OF AQUEOUS AND ETHANOL EXTRACTS OF CASSIA DIDYMOBOTRYA FRESEN

Drug	Dose	Mean Number of wet feces
Solvent control	1ml/kg	22.50 ± 1.11
Aqueous extract	100mg/kg	37.50 ± 1.19*
Ethanol extract	100mg/kg	41.75 ± 3.60*
Senna	5mg/kg	47.52 ± 1.80*

* indicates P<0.001

TABLE – 2 ANTI-INFLAMMATORY ACTIVITY OF CASSIA DIDYMOBOTRYA BY CARAGEENAN INDUCED PAW-EDEMA METHOD

SL. NO	Extract/Drug	Dose (mg/kg)	Average volume of mercury displacement in ml ± SEM					Percentage protection at 4 th hour
			0 min	30 min	60 min	120 min	240 min	
1.	Aqueous extract	100	2.0 ± 0.21	2.7 ± 0.22	3.2 ± 0.21	3.4 ± 0.21*	3.3 ± 0.22*	35.29
2.	Ethanol extract	100	1.9 ± 0.30	1.9 ± 0.47	2.6 ± 0.33*	3.0 ± 0.3*	3.2 ± 0.33*	37.25
3.	Positive control (Indomethacin)	2.	1.6 ± 0.33	2.3 ± 0.38	2.9 ± 0.38	2.9 ± 0.47*	2.9 ± 0.47*	43.13
4.	Solvent control	1ml/kg	1.6 ± 0.41	2.4 ± 0.25	3.7 ± 0.28	4.7 ± 0.28	5.1 ± 0.22	-----

Species Used: Wistar albino rats
Average Weight: 150-200g

No. of animals in each group:6

Route of Administration: Oral
Edema Produced: 1%w/v carageenan in normal saline

*indicates P< 0.001