



Investigation of anti-inflammatory activity of flowers of cassia fistula Linn

Sonam Kukloria*, Vinita patidar *, Dr. Souravh bais,

GRY Institute of Pharmacy Borawan, Khargone, M.P.

Charak Institute Of Pharmacy Mandleswar, M.P.

Sage University Indore

Abstract : Cassia fistula linn is known as golden shower has therapeutic in healthcare since ancient time .research finding over the last two decades have confirmed the therapeutics consequence of cassia fistula in health management via modulation biological activities due to the rich source of antioxidants. Several finding based on the animals model have conformed the pharmacology safety and efficacy and have opened a new window for human health management .this review reveals additional information about cassia fistula in the health management via in vitro and vivo study which will be beneficial towards disease control.

Key words: Cassia fistula, anti-inflammatory activity, Flowers

Introduction: Cassia fistula linn known as the golden rain tree ,canafistula and other names ,is a flowering plant in family casealpiniaceae. Cassia fistula is found to possess following medicinal uses: antipyretic ,analgesic, antifungal ,antiviral activity .The study of Indian medicinal plant revealed that cassia fistula Linn was traditionally used for its anti inflammatory effect.

Collection and preparation of extract of: The whole plant cassia fistula linn were collected from sitaram nursery Indore M.P. And was identified by Dr. S.k. Mahajan department of botany p.g. College khargone india. The coarsely powdered flowers (250 gm) of powdered of cassia fistula were packed in soxhlet apparatus and maceration separately and extracted with solvent ethanol and aqueous. The extracts were filtered while hot and the solvents were removed by distillation and the last traces of solvent being removed under reduced pressure. The ethanolic and aqueous extracts were stored in refrigerator for further experimental work.

Acute Toxicity Studies: All the animals survived without any symptom or toxicity during the observations up to 24 hrs. Based on the above observation, LD₅₀ of the compound was confirmed to be greater than 200mg/kg for the test compound.

Material and Methods:

Animal care and handling: This was done as per the guidelines set by the Indian National Science Academy New Delhi India. Albino mice (25-30g) of either sex were used in the entire study. They were housed in standard polypropylene cages and kept under controlled room temperature ($24\pm 2^{\circ}\text{C}$; relative humidity 60-70%) in a 12 h light – dark cycle. The animals were fed with standard laboratory diet and water ad libitum. Food was withdrawing 12 h before and during the experimental hours. The experimental protocol was approved by Intuitional Animal Ethics Committee.

The hind-paw oedema induced by sub plantar injection of, control group treated (I) 0.1ml Carrageenan (1% w/v), (II) ibuprofen (standard) 40mg/kg, (III), (IV) 150-200mg/kg of water extract, (V), (VI) 150-200mg/kg ethanolic extract, was evaluated according to the method described by, 0.1ml of 1% w/v carrageenan was injected into the sub plantar tissue of left hind paw of each rat. Swelling of carrageenan injected foot was measured at 0, 1, 2, 3 h using Plethysmometer (UGO Basile, Italy). Animals were treated with test extract 1 hour before the carrageenan injection. Measurement was carried out immediately before and 3 hrs following carrageenan injection. Percent inhibition of test drugs was calculated in comparison with vehicle control (100%).

Statically analysis:

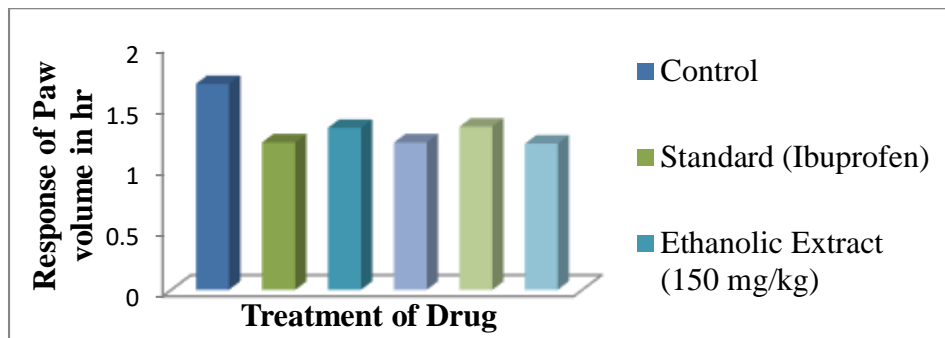
Statistical Analysis Value are expressed in mean \pm SEM .Result were analysed by one way analysis of (ANOVA) followed by Dunnett's test for multiple comparisons" instead of "for multiple comparisons verses control group was done by Dunnett's test. P value.

Result:

Carragenan induced paw in mice: The results obtained from the carrageenan-induced inflammation model, indicated that Ethanol and Aqueous extract showed significant ($p<0.05$) anti-inflammatory activity as compared to saline. The carrageenan induced edema inhibition after the treatment with the phlogistic agent. The % decrease in paw volume at 3 h from 52.30 (h) ibuprofen to 50.29 and 66.45 (h) in ethanol extract at a dose of 150 and 200mg/kg. and 52.32 (h) and 68.49 (h) in aqueous extract at a dose of 150 and 200mg/kg. Results obtained are presented in table

Treatment (mg/kg)	Mean increase in paw volume (ml)				% Decrease in paw volume at 3 h
	0 h	1h	2h	3h	
Control	0.92 \pm 0.01	1.50 \pm 0.007	1.86 \pm 0.004	2.48 \pm 0.007	-
Ibuprofen	0.89 \pm 0.008	1.08 \pm 0.01*	1.28 \pm 0.002**	1.62 \pm 0.001*	52.30
EE(150mg/kg)	0.94 \pm 0.037	1.20 \pm 0.035**	1.49 \pm 0.32**	1.70 \pm 0.049**	50.29
EE(200mg/kg)	0.92 \pm 0.046	1.18 \pm 0.061**	1.30 \pm 0.037**	1.44 \pm 0.035**	66.45
AE(150mg/kg)	0.93 \pm 0.035	1.26 \pm 0.037**	1.48 \pm 0.30**	1.69 \pm 0.047**	52.32
AE(200mg/kg)	0.91 \pm 0.045	1.20 \pm 0.063**	1.28 \pm 0.035**	1.44 \pm 0.035**	68.49

N=6, treatment, mg/kg, data were analyzed using ANOVA and expressed as Mean \pm SEM followed by Dunnett's and differences between means were regarded significant at *[P<0.05], **P<0.01 Saline, EE-Ethanollic extract.



Discussion:-The present investigations of *Cassia fistula* flowers extracts were studied against experimentally anti-inflammatory activity studies. In preliminary phytochemical screening Ethanolic and Aqueous extract showed positive results. Ethanolic extract showed presence of Carbohydrates, Alkaloids, Glycosides, Phenol & Tannins, Protenins and Steroid. Aqueous extract showed presence of Carbohydrates, Alkaloids, Saponins, Glycosides, Phenol & Tannins. Ethanolic and Aqueous *Cassia fistula* extract (CF) was studied for acute oral toxicity as per revised OECD guidelines number 425. *Cassia fistula* was devoid of any toxicity up 2000 mg/kg in albino mice and rat by oral route. Hence for further studies doses of mice in the 150 to 200 mg/kg and rat in the 200 to 250 mg/kg of *Cassia fistula* was used.

In Carrageenan induced inflammation significant mean increased in paw volume was also observed in animals treated with standard (Ibuprofen) drug. The numbers of entries were significantly increased in animals treated with ethanol and aqueous extract and standard drug Saline when compared to control animal.

Conclusion: In conclusion the ethanolic extracts and aqueous extracts flowers of *Cassia fistula* anti-inflammatory activity at both the dose level which is comparable with the standard. The ethanol extract of *Cassia fistula* (200mg/kg), markedly increased the percentage of average mean increased in paw volume and weight in cotton pellet by the animals. The anti-inflammatory effect of both the doses (150-200 mg/kg in mice and 200-250 mg/kg in rat) showed significant activity and being that (200 mg/kg) showed higher activity.

Reference:

1. The Plant List: A Working List of All Plant Species Retrieved June 19, 2014.
2. Murali, KS (1993) Differential reproductive success in *Cassia fistula* in different habitats-A case of pollinator limitations In: Current Science (Bangalore), 65(3), 270-272.
3. Luximon-Ramma A, Bahorun T, Soobrattee MA, Aruoma OI, Antioxidant Activities of phenolic, proanthocyanidin and flavonoid components in extracts of *Cassia fistula*, J Agric Food Chem. 2002, 50(18): 5042-7.
4. Vashishtha Vishal*, Sharma Ganesh N., Gaur Mukesh, Bairwa Ranjan, A review on some plants having anti-inflammatory activity, The Journal of Phytopharmacology, 2014; 3(3): 214-221.

5. Abdul Hafeez, Dr. Upendra Jain, Pinky Sajwan, Sirish Srivastava, Amit Thakur, Evaluation of carrageenan induced anti-inflammatory activity of ethanolic extract of bark of *Ficus virens* Linn. In swiss albino mice, The Journal of Phytopharmacology, 2013; 2(3): 39-43.
6. Deepa Murugesan and Renuka Deviponnuswamy, Potential anti-inflammatory medicinal plants, International Journal of Pharmacy and Pharmaceutical Sciences, 2014; 6(4): 43-49.
7. Khandelwal K. R., Practical Pharmacognosy Techniques and Experiments, Published by Nirali Prakashan, 2007, 149-156.

