



Cassia tora Linn. – A Pharmacological Review

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ABSTRACT: *Cassia tora* Linn. is one of the widely used plants in ethnic and traditional systems of medicine. A popular species in the genus *Cassia*, its therapeutic effects on ocular system, integumentary system, hepato pancreatic disorders, gastric system have been documented since centuries and demonstrated through pharmacological experiments. The efficacy of the seeds and leaves may be attributed to presence of anthraquinones glycosides phenolic glycosides, sennosides and flavonoids. *Cassia tora* need to evaluated for its unexplored health benefits through new scientific investigations in tackling emerging diseases and life style disorders.

KEY WORDS: *Cassia tora*, Pharmacology, antifungal, antimicrobial, hepatoprotective

INTRODUCTION

Cassia tora Linn. belongs to family – Leguminosae and grows as annual shrub all over the tropical areas. It is widely distributed in the low lying coastal areas, river banks, waste lands and moist places in India, Bangladesh, Pakistan and west China (1). The leaves and seeds of *Cassia tora* are widely used in Ayurveda and folklore medicine and is known as chakramarda in Sanskrit, Charota in Hindi, chakunda in Oriya and Bengali, Chinnakasinda in telugu, Chagache in Kannada and Takara in Malayalam. The leaves are used traditionally in skin disorders such as eczema and fungal infections (2). In Korea the hot extract of seed are employed in liver disorders (3). Chakramarda taila is widely used in Ayurveda system of medicine to treat skin disorders (Kushtaghna), itching disorders (Kandughna) and fungal infestations (Dadrughna) (4). In Chinese medicine, the seeds are used as antiasthenic, diuretic, antihypertensive and ocular disorders (5).

These activities have been documented pharmacologically through various studies and its extracts have found to possess significant activities on different organ systems of body.

Safety/ toxicity studies:

The ethanol extract of *Cassia tora* seeds was found to be safe up to dose of 2000mg/kg body weight upon 13 weeks consecutive oral administration in Sprague Dawley rats (6). Methanol extract of *Cassia tora* leaves were found to be safe up to 2000 mg per kg in rats during acute oral toxicity study (7).

Acute oral toxicity study of ethanol extract of leaves of *Cassia tora* in Swiss albino mice showed that the extract was safe up to 2000 mg/kg upon single exposure (8).

Hepatoprotective activity

The ethanol extracts supplemented at 0.25% and 0.5% in diet significantly reduced the elevation of aspartase amino transaminase, alanine aminotransaminase and Glutathione peroxidase enzymes in D –Galactoseamine induced liver injury in an experimental trial conducted in male Sprague Dawley rats (9).

The administration of ethanol extract of *Cassia tora* leaves for 21 days exhibited significant hepatoprotective activity in rats by reducing the SGOT, SGPT and Lactate dehydrogenase and significant elevation of antioxidant enzymes such as Superoxide dismutase, glutathione peroxidase, Glutathione S transferase and catalase as compared to the Control group when challenged periodically in an experimental model of Carbon tetrachloride induced hepatic damage(10). The methanolic extract of *Cassia tora* leaves was evaluated for hepatoprotective activity in rats against carbon tetrachloride induced hepatic injury and the test drug showed significant protection at dose of 400mg/kg body weight (11).



Hypolipidemic activity

Administration of ethanol extract of seeds of *Cassia tora* at dose of 100 mg/ kg body weight orally for 5 days to rats with triton induced experimental hyperlipidemia resulted in normalized lipid levels with decreased triglyceride levels, The blood chemistry of the rats also revealed increase in serum HDL levels (12). In a rat model of high fat diet induced hyperlipidemia, the ethanol extract of seeds of *Cassia tora* at dose of 500 mg per kg body weight for 15 days showed reversal of lipidemic status with significant reductions in blood levels of total cholesterol, phospholipids and triglycerides (13).

Skin disorders/ Antifungal activity

The ethanolic extract of *Cassia tora* leaves at dose of 400 mg per kg body weight showed significant antipsoriatic activity in male Wistar rats in Ultraviolet B ray photo dermatitis model by reduction in relative epidermal thickness and microscopically the absence of Munro's microabscess, elongation of rete ridges and capillary loop dilation (8).

The dealcoholised methanol extract of *Cassia tora* leaves at concentrations of 100,200 and 300 micrograms showed significant antifungal activity against *Candida albicans*, *Aspergillus niger* and *Saccharomyces cerevisiae* through turbidity method and spore germination method in vitro (14).The methanolic extract of *Cassia tora* leaves was evaluated for antifungal activity against *Candida albicans* in vitro by cup plate and the test drug significantly inhibited the growth of the fungus at concentration of 10mg/ml. The minimum inhibitory concentration of extract that can inhibit the growth as observed by development of turbidity in broth dilution technique was found to be 2mg/ml (15). Alcoholic extract of Seeds of *Cassia tora* was evaluated for antifungal activity by culture and sensitivity test and the extract at concentration of 1.25, 2.5, 5 10 and 20 microlitre showed dose dependant inhibition of dermatophytes collected from skin samples of patients (16).

Antidiabetic activity

The methanol extract of *Cassia tora* leaves at dose of 1000 mg per kg body weight was found to reduce the elevated blood sugar levels in the alloxan induced experimental diabetes in male albino rats (17).The butanol fraction of *Cassia tora* leaves was evaluated for its effect on postprandial glucose levels in normal rats and diabetic rats (streptozotocin induced experimental diabetes). The test drug at 200 mg/kg body weight significantly reduced the glucose levels at 30 to 80 minutes in normal rats and at 30 minutes in diabetic rats post administration in the maltose loading test as compared to control (18).The antidiabetic activity of ethyl acetate, methanol and aqueous extracts of *Cassia tora* leave were evaluated for antidiabetic activity in Wistar rats rendered experimentally diabetic by alloxan. The extracts showed significant antidiabetic activity at doses 200 and 400mg/kg body weight (19)

Antiulcer activity

The methanol extract of *Cassia tora* seeds at dose of 150 and 200 mg per kg body weight has shown significant reduction in the ulcer index in Wistar rats in Pyloric ligation method and NSAID induced ulcer model (20).The hydroalcoholic extract of *Cassia tora* leaves was found to possess antiulcer activity in Wistar rats in the ethanol induced gastric ulcer model and the test drug at dose of 500 mg/kg body weight produced significant reductions in ulcer score and volume & acidity of gastric juice (21).The methanol extract of *Cassia tora* leaves was evaluated for antiulcer activity in BALB/c mice in an experimental model of ulcerative colitis induced by dextran sulfate sodium and administration of test drug at dose of 400 mg per kg body weight for 14 days was found to relieve the symptoms of diarrhea, bleeding, loss of body weight and restoration of damaged colon tissues (22).

Anthelmintic activity

The methanolic extract and ethylacetate fraction of *Cassia tora* leaves at concentration of 10,25 and 50 mg/ ml of normal saline with 5% DMF was tested for anthelmintic activity against Indian earthworms (*Pheretima posthuma*) and the test drug exhibited significant paralysis and death in concentration dependant manner (23).The anthelmintic activity of Alcoholic and aqueous extract of seeds of *Cassia tora* was evaluated in *Pheretima posthuma* (Indian adult earthworms) and the test drug at concentration of 100mg/ml caused paralysis and death of worms.(24).

Antimicrobial activity

The methanolic and aqueous extracts of *Cassia tora* leaves have shown significant antimicrobial activity against *Pseudomonas aeruginosa*, *Staphylococcus aureus* and *Escherichia coli* by disc diffusion method (25). The antibacterial activity of ethanolic and aqueous extracts of *Cassia tora* leaves were investigated by disc diffusion method. Both extracts showed significant antibacterial



activity against *Pseudomonas aeruginosa*, *Staphylococcus aureus* and *Lactobacillus* and aqueous extract was found to be more effective (26).

CONCLUSION

The review of the literature pertaining to *Cassia tora* Linn provides ample evidence regarding its effects on various systems of the body and also affirms its use in the folklore and traditional system of medicine. *Cassia tora* has remained as a popular plant of Leguminosae family due to its wide use and its application in various ailments need to be popularized so as to reap its medicinal benefits to full extent.

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