



ORIGINAL RESEARCH ARTICLE

Antibacterial Activity of *Cassia tora* Leaves

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ABSTRACT

Ethanollic and Aqueous extracts from the leaves of *Cassia tora* were investigated for their antibacterial activity. Their concentrations 0.15mg, 0.31mg ethanolic and aqueous extracts respectively were studied in activity, which involved the determination of inhibition zone in mm. Both the extracts exhibited significant antibacterial activity. Ciprofloxacin used as standard reference. The antibacterial activity of ethanolic and aqueous extracts of *Cassia tora* has therefore been demonstrated for the first time.

Key Words: Antibacterial Activity, *Cassia tora*, Ethanolic extract

INTRODUCTION

Cassia tora (Leguminosae) is a wild crop and grows in most parts of India as a weed. According to Ayurveda the leaves and seeds are acrid,^[1] laxative, antiperiodic, anthelmintic, ophthalmic, liver tonic, cardiogenic and expectorant. The leaves and seeds are useful in leprosy, ringworm, flatulence, colic, dyspepsia, constipation, cough, bronchitis, cardiac disorders.^[2] Chemical component of *Cassia tora* are anthraquinones, chrysophanol, emodin, obtusifolin, obtusin, chryso-obtusin, aurantio-obtusin, and their glycosides. Naphthopyrones, rubrofusarin, norrubrofusarin, rubrofusarin, entiobioside. Toralactone, torachryson. Roots contains 1, 3,5-trihydroxy-6-7-dimethoxy-2-methylanthroquinone and beta-sitosterol. While Seeds contains Naphtho-alpha-pyrone-toralactone, chrysophanol, physcion, emodin, rubrofusarin, cchrysophonic acid-9-anthrone.

Emodin, tricontan-1-0l, stigmasterol, Beta-sitosterol-beta-D-glucoside, freindlen, palmitic, stearic, succinic and d-tartaric acids uridine, quercitrin and isoquercitrin are isolated from leaves.^[3-4] Antibacterial, anti-platelet aggregation, hepatoprotective, cAMP-phosphodiesterase inhibitory activity antifungal, antiyeast, anti-inflammatory and antiestrogenic, Hypolipidemic, anti-mutagenic and antioxidant activities has been evaluated.^[5-7]

Literature survey revealed that the plant extract has yet not been screened for its traditional claim of antibacterial activity. Therefore the objective of this work was to explore the antibacterial properties of *Cassia tora* leaves.

MATERIALS AND METHODS

Cassia tora leaves were collected from local area of Mandsaur. The taxonomical identification of plant was done by Dr. S. Mishra, senior scientist Government of Arts and Science college

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Mandsaur. The voucher specimen (MIP/C/VSN-CT-14) was submitted in department of pharmacognosy at Mandsaur institute of pharmacy, Mandsaur.

Dried leaves at room temperature and 10gm powdered leaves were successively defatted with petroleum ether (40-60⁰). Defatted residue was extracted with ethanol. Aqueous extract of this plant was prepared separately by boiling plant material with 200ml of water for 45 min. the obtained extract was evaporated on water bath to give dried residues. Percentage yield of various extracts was found to be 3.00% (ethanol), 10.3% (aqueous extract). Both the extracts were evaluated for preliminary phytochemical screening. The extracts showed the presence of cardiac glycosides, flavonoids and saponins, alkaloids. Aqueous extract showed fats, carbohydrates, saponins, less quantity of cardiac glycosides, flavonoids.^[8-9]

ANTIMICROBIAL ACTIVITY

Ethanollic and aqueous extracts from the leaves of *Cassia tora* were investigated for their antibacterial activity against *Pseudomonas aeruginosa*, *Lactobacillus*, *Salmonella typhi*, *P.vulgaris*, *Bacillus subtilis*, *Staphylococcus aureus*, *Streptococcus pneumoniae*, *E. coli*, *Enterobacter* bacterias.

The filter paper disc method^[10-12] was performed using Nutrient broth media. These agar media were inoculated with 0.5 mL of the 24 h liquid cultures containing 10⁷ microorganisms / ml. Filter paper discs (3 mm diameter) saturated with solutions of each compound (concentrations 100µg/ml in DMSO) was placed on the indicated agar mediums. The incubation time was 24 h at 37 ± 2°C. Standard discs of ciprofloxacin of 5µg/ml were used. Zone of inhibition was observed by zone reader scale. The tests were repeated to confirm the findings and the average of the readings was taken into consideration.

RESULT & DISCUSSION

Preliminary phytochemical screening of alcoholic extract revealed the presence of Anthraquinone glycosides, Phenolic compounds; Saponin glycoside and while aqueous extract showed presence of glycosides and Phenolic compounds, Saponin glycoside.

Antimicrobial activity of Ethanollic extract (0.15mg) and Aqueous extract(0.31mg) against various bacteria but maximum activity is shown by Aqueous Extract against *Staphylococcus aureus*, *Lactobacillus* and show moderate activity against *Pseudomonas aeruginosa*, *P.vulgaris* and *Enterobacter* and show less activity against *Bacillus subtilis* and *Escheria coli* But aqueous extract did not show any activity against *Salmonella typhi*. While ethanollic extract show less activity as compared to aqueous extract but show maximum activity against *Staphylococcus aureus* and *Lactobacillus* as comparative to standard shown in **table no.1**

Table no. 1: Antimicrobial activity Data of *cassia tora* leaf.

Sr. No	Name of Bacteria	Zone of Inhibition (mm)		
		Ethanollic Extract (0.15mg)	Aqueous Extract (0.31mg)	Std (2m g)
1.	<i>P. aeruginosa</i>	10.5	11	18
2.	<i>Lactobacillus</i>	11	13	16
3.	<i>S. typhi</i>	-	4	24
4.	<i>P.vulgaris</i>	10	12	15
5.	<i>B. subtilis</i>	8.5	10	20
6.	<i>S. aureus</i>	11	15	22
7.	<i>S. pneumonia</i>	7	8	14
8.	<i>E. coli</i>	8	9	15
9.	<i>Enterobacter</i>	9	11	16

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