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ORIGINAL RESEARCH ARTICLE

Antimicrobial Activity of Methanolic Extracts Of *Cassia tora root*

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ABSTRACT

Overuse of antibiotics has selected new strains of bacterial pathogens that are resistant to the very antibiotics used to combat them. Many plants have been used for centuries by traditional healers and may have antibacterial properties.it used in northern Nigeria in the treatment of ulcers, ring worm and other parasitic skin diseases. In cultures, the leaf extracts of the plant showed anti-bacterial activity. Antiviral activity, particularly against Newcastle disease virus and Vaccinia virus. Ciprofloxacin used as standard reference. Our research aim was to determine whether methanolic extracts obtained from the plant's shoot could inhibit growth of gram-positive bacteria and gram- negative bacteria. The methanolic extracts were obtained using the soxhelet apparatus.

Key Words: Methanolic Extracts, Vaccinia virus, soxhelet apparatus.

INTRODUCTION

Cassia tora Linn (family:Leguminous) is ashrub,extensively used in traditional medicine in tropical and warm substropical countries. The root is used in snakebite. The decoction of the leaves is a laxative.The leaves and the Seeds are used in skin diseases, particularly ringworm and itch. The dried and fresh leaves are used in northern Nigeria in the treatment of ulcers, ring worm and other parasitic skin diseases. In cultures, the leaf extracts of the plant showed anti-bacterial activity. Antiviral activity, particularly against Newcastle disease virus and Vaccinia virus. [1]

Chemical component of *Cassia tora* are anthraquinones, chrysophanol, emodin, obtusifolin, obtusin, chryso-obtusin, aurantio-obtusin, and their glycosides. Naphthopyrones, rubrofusarin, norrubro fusarin, rubrofusaring, entiobioside. Toralactone, torachrysone. Roots contains 1, 3,5-trihydroxy-6-7-dimethoxy-2-methylanth- roquinone and beta-sitosterol.While Seeds contains Naptho-alpha-pyrone-toralactune, chrysophanol, physcion, emodin, rubrofusarin, cchrysophonic acid-9-anthrone. Emodin, tricontan-1-0l, stigmasterol, Beta-sitosteral-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, Hypolimpidemic, anti- mutagenic and antioxidant activities has been evaluated.[2]

In the present study we have evaluated the antimicrobial activity of the extract of *cassia tora*, against *Escherichia coli* (Gram negative), *Bacillus subtilis* (Gram positive). The inhibitory effect of these *cassia tora* was compared with antibiotics (ciprofloxacin) and the results are discussed.

MATERIALS AND METHODS:

Cassia tora root were collected from local area of Mandsaur. The taxonomical identification of plant was done by Dr. Gyanendra Tiwari from K.N.K. College of horticulture Mandsaur (M.P.) The voucher specimen (MIP/D/VSN-CT-26) was submitted in department of pharmacognosy at Mandsaur institute of pharmacy, Mandsaur.

Apparatus: Soxhlet apparatus, Rotary flash evaporator, Vacuum oven, Copper sieve of mesh size of #10.

Extraction of Cassia tora

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The roots were separated and oven dried at 45oC overnight. The plants were grounded into powder form using the grinder. Extraction using Soxhlet apparatus with 50gm powdered root were successively defatted with petroleum ether. Defatted residue was extracted with methanol. Methanol as solvent for 24 hours was performed.[3-5]

The obtained extract was evaporated on water bath to give dried residues. Percentage yield of extracts was found to be 12% (methanol), the extracts was evaluated for preliminary phytochemical screening. The extracts showed the presence of cardiac glycosides, flavonids and saponins, alkaloids. [6]

ANTIMICROBIAL ACTIVITY

Ethanolic and aqueous extracts from the Root of *Cassia tora* were investigated for their antibacterial activity against *Escherichia coli* and *Bacillus subtilis.*

Micro-organisms used

Gram- Positive: Bacillus subtilis.
Gram-Negative: Escherichia coli from B.R. Nahata College of Pharmacy Mandsaur (M.P.) India.

Method

The filter paper disc method was performed using Nutrient broth media. These agar media were inoculated with 0.5 mL of the 24 h liquid cultures containing 10^7 microorganisms/ml. Filter paper discs (6mm 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. [7-9]

RESULT & DISCUSSION:

Plants Cassia tora is well known herbs used ayuverdic traditional medicine for their effectiveness against wide range of diseases including skin infections due to the advantage of the diversity of secondary metabolites responsible for their antibacterial activity.[10-12]

The results of *in vitro* antimicrobial activity of *Cassia tora* are presented in (**Table 2).** The diameter of inhibitory zones recorded includes the size of filter paper discs (6mm in diameter).

The in vitro anti microbial activity of Methanolic extracts of *Cassia tora* on gram-positive and gram-negative bacteria collected from B.R. Nahata college Of Pharmacy Mandsaur (M.P.) India were studied. This result are shown in (**Table2)** the maximum activity was on *B. subtilis*(12 mm) The inhibition zone, especially on ciprofloxacin resistant was 20mm respectively. Activity was observed on E. coli (10mm) among the gram negative bacteria. The anti bacterial activity of the plant on antibiotic resistant strains was especially notable.

Table 1: Weight of extracts from powdered roots of Cassia tora using Methanol as a solvent

Plant Part	Amount of powder Used	Extraction Process	Yield extract (Gm)
Root	50	Hot	6

Table 2: Table 2:Antimicrobial activity of cassia tora extract on various microorganisms by disc plate method.

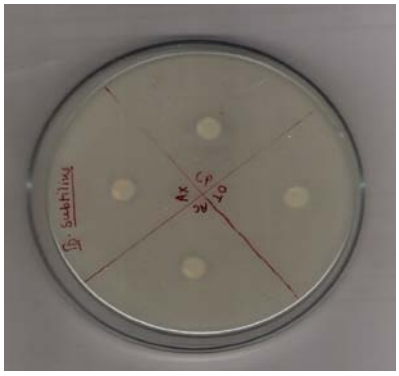
Sr. No.	Pathogenic Bacteria	Diameter of inhibition zone (in mm)	
		Antibiotics*	Extract
1.	*Escherichia coli*	15	10
2.	*Bacillus subtilis*	20	12

[Antibiotics*= ciprofloxacin]

[A]

[B]

Fig. Antibacterial activity of Extract *on Escherichia coli and Bacillus subtilis*



[C]

Fig. Antibacterial activity of Standard antibiotic against *Bacillus subtilis*

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