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ANTIBACTERIAL ACTIVITY OF CASSIA OCCIDENTALIS L. LEAF AND SEED EXTACTS

Pharmacy

KEYWORDS: Cassia occidentalis L., anti bacterial activity, solvent extracts

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ABSTRACT

The development of antibiotic resistance in harmful bacteria has led to the screening of plants for their antimicrobial activity. In the present work an attempt has been made to find out the antimicrobial activity of Cassia occidentalis L. (Caesalpiniaceae). The various solvent extracts of leaves and seeds of the plant were screened for anti bacterial activity. The anti bacterial activity was done by agar well diffusion method.

INTRODUCTION

Infectious diseases are a major cause of death in many countries[1]. Resistance to antimicrobial agents is emerging in a wide variety of pathogens, this has necessitated a search for new anti microbial compounds. There are several reports on antibacterial activity of different plant extracts [2-4]. Cassia occidentalis leaf extracts exhibited antimalarial[5],anticarcinogenic[6], antidiabetic[7], antimicrobial[8-9], antiinflammatory[10], analgesic& antipyretic[11] and hepatoprotective activity[12].

Cassia occidentalis L.

Taxanomic classification:

Kingdom- Plantae
Class- Magnoliopsida
Order- Fabales
Family- Fabaceae
Genus- Senna
Species- S. occidentalis.

Synonyms: Cassia caroliniana, C. falcata L., C. macradenia, C. obliquifolia, C. planisiliqua, senna occidentalis.

Vernacular name:

English- Coffee senna
Hindi- Kasaundi, Bari Kasaundi
Telugu- Kasinda
Sanskrit- Kasamarda
Tamil- ThagaraiTarun.

MATERIALS AND METHOD

Description:

C. occidentalis is a small tree, somewhat branched, smooth, semi-woody, fetid herb or shrub, 0.8–1.5 m tall, taproot, hard, stout, with a few lateral roots on mid section. This plant species varies from a semi-woody annual herb in warm temperate areas to a woody annual shrub or sometimes a short-lived perennial shrub in frost free areas [13–14]. The fruit is a dry, dehiscent, transversely partitioned, faintly recurved, laterally compressed, sickle shaped legume (pod), 7–12 cm long, 8–10 mm wide, seeds are oval shaped, 3.5-4.5 mm wide, flattened, pale-dark brown, slightly shiny with rounded tip[15].

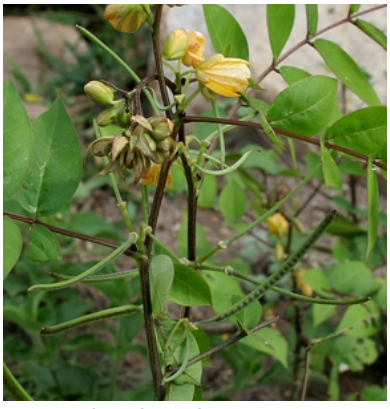

Figure 1: Cassia occidentalis L. Plant.

Distribution:

Cassia occidentalis L. is found in tropical countries[16]. In India it is as perennial plant in south India, but as annual plant in North and North-west India[17].

Plant material:

Cassia occidentalis L. plants were collected from the region of Nizamabad, Telangana, India, in the month of October. The plant was authenticated by Dr. Vidya vardini, Head of department, Department of Botany, Telangana University.

Preparation of extracts:

Leaves extract- Cassia occidentalis L. leaves were washed in water, shade dried, broken into coarse powder, grinded to fine powder using mechanical grinder and stored in air tight containers at room temperature till further use. Each solvent extract of sample was prepared by soaking 100 g of dried fine powdered samples in 200 ml of respective solvent(Ethyl ether, Acetone, carbon tetrachloride) separately for 4 days at room temperature with occasional shaking. The extracts were filtered using Whatman filter paper and then concentrated. The residual extracts were were stored in refrigerator.

Seeds extract-

The pods of the plant were shade dried until the seeds lose moisture. The seeds were collected and ground to fine powder. The powder was first defatted with petroleum ether, then each 100g of dried fine powder extracted with Ethyl ether, Acetone and carbon tetrachloride separately for 4 days with occasional shaking.

Anti bacterial Activity Test by Agar well Diffusion Method:

In this study, one gram positive*(Bacillus subtilis)* and two gram negative bacteria *(Escherichia coli, Pseudomonas aeruginosa)* were tested. The Anti antimicrobial assay was performed by agar well diffusion method[18,19]. The sterilized nutrient agar *(HiMedia)* was inoculated with 200 µl of the bacterial inoculum and poured into the sterilized Petri plates. Three wells of 6 mm diameter were made on sterilized nutrient agar with a sterile borer. The prepared concentration of 100 mg/ml of each solvent extracts were transferred into the wells. The plates were incubated overnight at 37 °C. Anti bacterial agent Gentamicin(10 µg) used as a positive control and DMSO solvent as negative control. The diameter of clear zone of inhibition was measured.

RESULTS AND DISCUSSION

he antibacterial activity of plant extracts is shown in Table 1. Among all tested plant extracts ethyl ether and carbon tetrachloride fractions were found to be most effective. The solvent extracts were found to be more effective on gram positive bacteria as compared with gram negative bacteria.

CONCLUSION

The present study reveals the antibacterial property of leaf and seed extracts of cassia occidentalis L. This study paves the pathway for further research to identify the active chemical constituents responsible for the antibacterial activity.

Table.1 Antibacterial activity of leaves and seeds extracts of Cassia

occidentalis L. zone of inhibition in mm diameter.

Extract		*Bacillus subtilis*	*Escherichia coli*	*Pseudomonas aeruginosa*
Leaves	**Ethyl ether**	13	11	9
	Acetone	9	-	-
	Carbon tetrachloride	12	12	7
Seeds	**Ethyl ether**	19	9	8
	Acetone	11	-	-
	Carbon tetrachloride	15	-	9
Gentamicin (10µg as +ve ctrl)		40	38	38
DMSO(-ve ctrl)		-	-	-

Each solvent extract concentration at 100 mg/ml DMSO
(-) Value indicates no activity.

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