



SCREENING OF CASSIA OCCIDENTALIS L. LEAF AND SEED EXTRACTS FOR ANTITUBERCULAR ACTIVITY.

Pharmacy

**Rentapathri
Lavanya**

Department of Pharmacy, Government Polytechnic for women, Nizamabad, Telangana, India.

ABSTRACT

In the present work an attempt has been made to find out the in vitro antitubercular activity of *Cassia occidentalis* L. (Caesalpiniaceae). *Cassia occidentalis* L. leaf and seed extracts were screened against *Mycobacterium tuberculosis* H37Ra and *Mycobacterium bovis* strains using Microplate Alamar Blue Assay. The present study revealed that Chloroform and Hexane solvent extracts of *Cassia occidentalis* L. leaf and seed were inactive against *Mycobacterium tuberculosis* H37Ra and *Mycobacterium bovis* strains at a concentration of 100µg/ml.

KEYWORDS

Cassia occidentalis L., antitubercular activity, solvent extracts

INTRODUCTION

Tuberculosis is an infectious disease, caused by several species of mycobacteria. The important human pathogens of this class are *Mycobacterium tuberculosis* and *Mycobacterium bovis*.

Tuberculosis (TB) is a major global health problem. Globally in 2014, there were an estimated 9.6 million incident cases of TB: 5.4 million among men, 3.2 million among women and 1.0 million among children¹. Tuberculosis spreads from person to person through the air. When people with lung TB cough, sneeze or spit, they propel the TB germs into the air. A person needs to inhale only a few of these germs to become infected.

The development of multidrug resistance in mycobacteria has further complicated the disease. Thus there is a continuous need for the development of new efficient antimycobacterial agents to replace those currently in use. Medicinal plants offer a great hope to fulfill these needs and have been used for curing various diseases including tuberculosis^{2,4}.

Cassia occidentalis leaf extract exhibited antimalarial⁵, anticarcinogenic⁶, antidiabetic⁷, antimicrobial^{8,9}, antiinflammatory¹⁰, analgesic¹¹ and antipyretic¹¹ and hepatoprotective activity¹².

Cassia occidentalis L.

Taxonomic 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- Thagarai Tarun.

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 areas¹³⁻¹⁴. 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 tip¹⁵.



Figure 1: *Cassia occidentalis* L. Plant.

Distribution:

Cassia occidentalis L. is found in tropical countries¹⁶. In India it is a perennial plant in south India, but as annual plant in North and North-west India¹⁷.

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 (Chloroform and Hexane) 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 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 Chloroform and Hexane separately for 4 days with occasional shaking. The extracts were filtered using Whatman filter paper and then concentrated. The residual extracts were stored in refrigerator till further use.

Anti tubercular Activity screening:

The activity of all solvent extracts against the *Mycobacterium tuberculosis* H37Ra and *Mycobacterium bovis* strains were tested using the microplate Alamar Blue assay^{18,19}.

RESULTS AND DISCUSSION

The antitubercular activity of plant extracts is shown in Table 1. All the solvent extracts were found to be inactive at 100µg/ml and at lesser concentrations

CONCLUSION

The present study revealed that the chloroform and hexane solvent extracts of *Cassia occidentalis* L. leaf and seed were inactive against the aforesaid mycobacteria at 100µg/ml concentration.

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Table.1 Antitubercular activity of leaf and seed extracts of *Cassia occidentalis* L. against *Mycobacterium tuberculosis* H37 Ra and *M. Bovis* (BCG).

Extract/ Concentration	100µg/ml	50µg/ml	25µg/ml	12.5µg/ml	6.25µg/ml	3.125µg/ml
Leaf	Chloroform	-	-	-	-	-
	Hexane	-	-	-	-	-
Seed	Chloroform	-	-	-	-	-
	Hexane	-	-	-	-	-

(-) Value indicates no activity.

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