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Antimicrobial studies of leaves and flowers extract of Cassia fistula linn.

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ABSTRACT

The *Cassia Fistula* Linn. Plant (family:*Leguminosae*; sub-family: *caesalpiniaceae*) a very common Indian plant known for its medicinal properties with safe and without any side effect. The plant is used in folk medicines for tumor of the abdomen,glands,liver and throat cancer.It also helps in curing leprosy,skin diseases, and syphilis.Ayurvedic medicines recognized for its carminative and laxative property.The plant native to tropical Asia is also known as Indian Laburnum,yellow flower.The research aims to analyse the antibacterial, antifungal property of the plant. Performed the preliminary phytochemical studies the constituents like tannins, flavonoids, and glycosides were found out. The antibacterial activity with the total ethanolic extract of leaf and flower of *Cassia Fistula* Linn.were tested against four pathogenic bacteria and two fungi by using the standard well plate method. To studies is conducted by using organisms like Gram negative (*E.coli, pseudomonas Aeruginosa*) Gram positive (*StaphyloccousAureus, Bacillus Subtills*) and fungi (*Candida Albicans, Aspergilus Niger*) were used. The antimicrobial studies were conducted using different concentration of the total ethanolic extract of *Cassia Fistula* Linn. which shows good antibacterial and moderate antifungal activity.

Keywords: *Cassia Fistula* Linn., Antibacterial, Antifungal, Total ethanolic extract, Antimicrobial.

INTRODUCTION

Cassia Fistula Linn. (Caesalpiniaceae) has great therapeutic effect implication in Indian system of medicine and exerts an antipyretic, analgesic, anti-inflammatory, antimicrobial and hypoglycemic effects [1]. Also Considerable effects of C*assia fistula* Linn. against some microbes have been observed. With respect to these properties, this plant is used as broad-spectrum antimicrobial agent for treatment of some infectious diseases [2].

Objective

The antibacterial and antifungal activities of total ethanolic extract of *Cassia fistula* Linn. were tested against four pathogenic bacteria and two fungi respectively. The study aims to provide a detailed explanation about the antimicrobial activity of *Cassia fistula* Linn.

EXPERIMENTAL METHODS

Antimicrobial studies

In vitro antibacterial and antifungal screening were performed with total alcoholic extract of *Cassia fistula* Linn. against pathogenic bacteria and pathogenic fungi by the standard well plate method. Nutrient agar medium were used for determining antibacterial activity whereas potato dextrose agar medium (PDA) were selected for antifungal screening. Standard ofloxacin and fluconazol were also used for comparison in antibacterial and antifungal testes respectively.

The crude extract were dissolved in sufficient amount the solvents to obtain 25 mg/ml, 75 mg/ml, 125mg/ml of dilutions. Alcohol were used as control in the experiment. The antimicrobial activities were determined by measuring the diameter of the inhibitory zones in mm using a zone reader. The diameter of the zones of inhibition by the samples were then compared with the diameter of the zone of inhibition produced by standard antibiotic solutions used [3].

RESULT AND DISCUSSION

Antimicrobial studies

Table: 1 Antibacterial studies of leaf extract of *CASSIA FISTULA* Linn.

ORGANISM	STANDARD (mm)	CONTROL (mm)	LEAF EXTRACT		
			25mg/ml (mm)	75mg/ml (mm)	125mg/ml (mm)
Gram postive					
• SA	25.33 ±0.25	10.26 ±0.34	12.3 ±0.21	14.4 ±0.22	15.4 ±0.26
• BS	25.43 ±0.32	10.23 ±0.33	09.55 ±0.36	10.52 ±0.26	11.11 ±0.34
Gram negative					
• EC	28.12 ±0.31	10.32 ±0.34	10.21 ±0.29	12.12 ±0.24	15.25 ±0.21
• PA	24.25 ±0.22	12.31 ±0.23	17.33 ±0.33	18.12 ±0.30	19.23 ±0.38

Values are expressed as mean ± SEM of triplicate observations, p value<0.05

Table: 2 antibacterial studies of flower extract *CASSIA FISTULA* Linn.

ORGANISM	STANDARD (mm)	CONTROL (mm)	FLOWER EXTRACT		
			25mg/ml (mm)	75mg/ml (mm)	125mg/ml (mm)
Gram positive					
• SA	25 ±0.24	10 ±0.32	10 ±0.35	13 ±0.44	14 ±0.54
• BS	28 ±0.22	11 ±0.12	10 ±0.31	12 ±0.23	13±0.13
Gram negative					
• EC	24 ±0.41	12 ±0.36	17 ±0.54	14 ±0.16	15 ±0.19
• PA	25 ±0.28	10 ±0.29	10 ±0.23	11 ±0.47	12 ±0.55

Values are expressed as mean ± SEM of triplicate observations, p value <0.05

SA- *Staphyloccous aureus*, EC- *Escherichia coli*
PA-*Pseudomonas aeurginosa*, BS- *Bascillus subtils*

Table: 3 Antifungal studies of leaf extract of *CASSIA FISTULA* Linn.

ORGANISM	STANDARD (mm)	CONTROL (mm)	LEAF EXTRACT		
			25mg/ml (mm)	75mg/ml (mm)	125mg/ml (mm)
FUNGUS					
• AN	18 ±0.42	11 ±0.46	12 ±0.23	13 ±0.44	11 ±0.23
• CA	28 ±0.41	11 ±0.44	15 ±0.51	16 ±0.23	11 ±0.22

Values are expressed as mean ± SEM of triplicate observations, p value <0.05

Table: 4 Antifungal studies of flower extract of *CASSIA FISTULA* Linn.

ORGANISM	STANDARD (mm)	CONTROL (mm)	LEAF EXTRACT		
			25mg/ml (mm)	75mg/ml (mm)	125mg/ml (mm)
FUNGUS					
• AN	18 ±0.23	11 ±0.25	10 ±0.23	11 ±0.21	12 ±0.23
• CA	28 ±0.12	11 ±0.30	12 ±0.26	12 ±0.24	10 ±0.34

Values are expressed as mean ± SEM of triplicate observations, p value<0.05
AN-*Asperguillius niger*, CA- *Candida albicans*

Fig: 1 *Bacillus subtills*

Fig: 2 Staphylococcus auresus

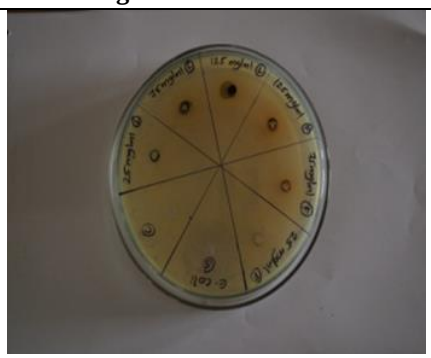

Fig: 3 *E. coli*

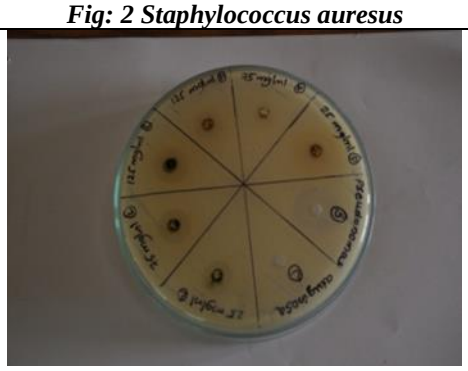

Fig: 3 *E. coli*

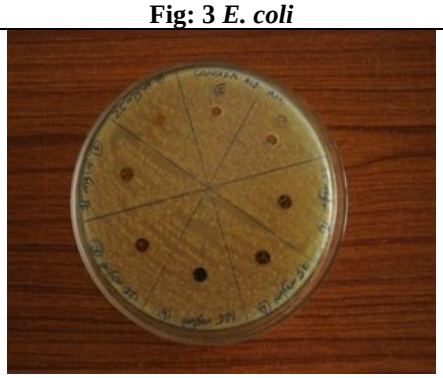

Fig: 5 *Candida albicans*

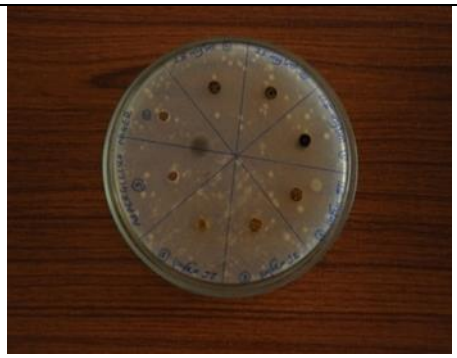

Fig:6 *Aspergilli nigerus*

CONCLUSION

The antimicrobial studies shows good antibacterial and moderate antifungal activity, *Cassia fistula* Linn. It can be used as both antibacterial and antifungal agents.

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