November - December 2017; 6(7):*2874-2880*

International Journal of Research and Development in Pharmacy & Life Science
An International open access peer reviewed journal
ISSN (P): 2393-932X, ISSN (E): 2278-0238
Journal homepage:http://ijrdpl.com

Original Article

In-vitro evaluation of Anti-bacterial and Anti-fungal activity of different Explant extracts of *Thespesia populnea* L.

Narendar Vankudothu [1], R. Chandrashekhar [2], N. Lakshmi Bhavani [2], Sudhakar Chekuri[1] and S.Y. Anwar*[1]

[1]Department of Genetics, University College of Science, Osmania University, Hyderabad-500007, India
[2] Pharmacognosy and Plant Molecular Genetics Lab, Department of Botany, University College of Science, Osmania University, Saifabad, Hyderabad - -500004, India

Keywords:*Thespesia populnia* L, anti-bacterial, anti-fungal, gram positive, gram negative, inhibition

Article Information:

Received: September 01,2017;
Revised: October17, 2017;
Accepted: November10, 2017

Available online on:
15.12.2017@http://ijrdpl.com

http://dx.doi.org/10.21276/IJRDPL.2278-0238.2017.6(7).2874-2880

ABSTRACT: Antibacterial and antifungal activity of leaf, bark, flower and seed extracts of *Thespesia populnea L.*was investigated. The antibacterial activity and antifungal activity was tested against both gram-positive and gram-negative bacterial organisms. Among the four kinds of explant extracts like leaf, bark, flower and seed; methanolic leaf extract exhibited broad spectrum zone of inhibition due to the more phytochemical constituents are retained in methanolic leaf explant extract of *Thespesia populnea*. Results inferred that gram-negative bacteria showed significant zone of inhibition activity than gram positive bacteria. All the explant extracts showed maximum activity against the fungal organisms in the order of *Colletetrichum falcetum, Aspergillus niger* and *Mucar piritorus* respectively. Zone of Inhibition was increased with increase in concentration of explants leaf, bark, flower and seed extracts of *Thespesia populnea L.*

⇑ Corresponding author at:
S.Y. Anwar, Department of Genetics, University College of Science, Osmania University, Hyderabad - 500007, Telangana, India
E-mail:yousuf_anwar@yahoo.com

INTRODUCTION

Globally plant extract based drugs play a foremost role in health care needs of humans. Medicinal plants and their compounds possess natural chemicals which are bioactive for treating different types deadly diseases [12]. Plants synthesize various secondary metabolites including terpenoids, flavonoids, alkaloids tannins, iso flavanoids, to cope with abiotic stresses and they are medically active [8]. *Thespesia populnea* commonly known as 'Portia tree' or 'Indian tulip tree' of family Malvaceae is a small to medium sized tree with a pantropical distribution, normally this plant found along the coastal stretches. The tree grows to a height of 20 m. Its leaves are simple and heart-shaped, with a distinct tip. This plant Flowers are bisexual, solitary or in cymes, yellow and showy. Fruits are globose brown capsules. The tree yields valuable pink to dark red close-grained wood and an oil from their seeds [7].

The leaves are applied locally for their anti-inflammatory and antioxidant effects in swollen joints [11]. The phytochemical study of bark reveals the presence of gossypol, acacetin, tannin, quercetin, colouring matter, flavonoids etc. and the leaf extract indicates the presence of β-sitosterol and lupenone, [6]. Gossypol was found to be the major component of *T. populnea* responsible for antifertility and anti-inflammatory effects in rats as well as in human beings. The flowers contained gossypetin and kaempferol, kaemperol-7-glucoside. The fruit kernels were reported to contain β- sitosterol, ceryl alcohol and a yellow pigment, thespesin [4]. The plant is traditionally and medicinally claimed to possess useful medicinal properties [1] and [3] such as, anti-inflammatory, antifertility antioxidant, purgative and hepatoprotective [10] activities and its bark, leaves and flowers and seeds are useful in cutaneous infections such as psoriasis, guinea worm, eczema, scabies, ring worms, [2] anti-inflammatory for poultice as a folk medicine etc.

uture threat of public health is of antimicrobial and antifungal resistance due to severe exploitation of synthetic antibiotics. The synergism assay conducted on bacteria using well-known antibiotics such as ampicillin, oxytetracycline, chloramphenicol and fungal using well known antibiotics such as penicillin, ketazole majority of the bacteria showed resistance to the employed antibiotics [5].

Large pharmaceutical companies and industries are hesitant to develop novel antibiotic drugs due to the emerging of antibiotic resistant microbes [9].

The present study carried out by antibacterial activity of Leaf, Bark, Flower and Seedextracts of *Thespesia populnia* L. against the tested organisms using agar disc diffusion method while Anti-fungal activity of Leaf, Bark, Flower and Seed extracts of *Thespesia populnia* L.against the tested organisms using agar disc diffusion method. Bacterial strains used were Gram-Negative bacteria were *E. coli, Pseudomonas aeruginosa, Salmonella typhi,* and *Klebsiella pneumonia,* while Gram-positive *Streptococci pyogenes, Staphylococci* and *Bacillus cereus* for studies.

Fungal cultures were (*Aspergillus flavus, Aspergillus Niger, Fusarium oxiforum, Colletotrichum falcetum, Rizopus stolanifere* and *Mucar piritorus*) using different organic solvents like Methanol (Polar Solvent), Chloroform (Non-Polar) and Aqueous solvent.

MATERIALS AND METHODS

***Collections and processing of plant parts*:** Fresh leaf, bark, seed and flower parts of the *Thespesia populnea* plant were collected during June 2013 from Juhu beach (Coastal area of Arabian Sea), Mumbai, Maharashtra state, India.

***Plant authentication*:** Plant materials were authenticated by Dr.Prathibha Devi, Former Head, Department of Botany, Osmania University College of science, Osmania University, Hyderabad, Telangana state, India and a voucher specimen is 069.

***Preparation of plant extracts*:** The healthy and disease free *Thespesia populnea L.* Leaf material was washed thoroughly in tap water, shade dried in open air. The powder of each explant obtained by grinding them mechanically. About 10 gm of dried powder of each explant were soaked in 100 ml of solvent like aqueous, methanol, chloroform, pet ether, acetone, ethyl acetate in conical flasks and then subjected to agitation on a rotary magnetic stirrer for about 72 hours.

After three days the leaf extract was subjected to filtration, filtered with No-42 what man filter paper. Concentrated extract was preserved in sterilized air tight labelled bottle and preserved in refrigerator at 4˚c until required for further use.

***Media preparation*:** Bacterial Media (Nutrient Agar Media) 13g of Nutrient media (Hi–Media) was mixed with distilled water and then sterilized in a1utoclave at 15 lb pressure for 15 minutes. The sterilized media were poured in to petri dishes. The solidified plates were pored with 5 mm diameter cork pore. The plates with wells were used for antibacterial studies.

Table 1: Composition of Nutrient agar

Nutrient Agar	
Peptic digest of animal tissue	5.000
Sodium chloride	5.000
Beef extract	1.500
Yeast extract	1.500
Agar	15.000
Final pH (at 25°C)	7.4±0.2

Fungal Media(PDA) 200g of potato slices were boiled with distilled water. The potato infusion was used as water solute of media preparation. 29g of dextrose was mixed with potato infusion. 20g of agar was added as a solidifying agent. This constituent ware mixed and autoclaved. The solidified plates were pored with 6mm diameter cork borer.

Table2: Composition of Potato Dextrose Agar

Potato Dextrose Agar	
Potatoes, infusion	200.000
Dextrose	20.000
Agar	15.000
Final pH (at 25°C)	5.6±0.2

Bacterial Strains The bacterial and fungal pathogenic strains were obtained from the Microbial Type Culture Collection (MTCC), Institute of Microbial Technology, Chandigarh, India. Bacterial strains used were Gram-Negative bacteria were *E.coli, Pseudomonas aeruginosa, Salmonella typhi,* and *Klebsiella pneumonia.* While Gram-positive *Streptococci pyogenes, Staphylococci* and *Bacillus cereus* for studies. Fungal Strains Fungal strains were *Aspergillus flavus, Aspergillus Niger, Fusarium oxiforum, Colletotrichum falcetum, Rizopus stolanifere* and *Mucar piritorus.*

***Anti-bacterial activity of the plant extract*:** Aqueous, Methanol (Polar Solvent) and Chloroform (Non-Polar) extracts obtained from the leaf, bark, flower and seeds of *Thespesia populnea L.* were studied for its antibacterial activity using agar well and filter paper disc diffusion methods at four different concentrations i.e.,25µl, 50µl,75µl, 100µl were tested against different bacterial pathogens such as *E.coli, Pseudomonas aeruginosa, and Salmonella typhi.* While Gram-positive *Streptococci pyogenes, Staphylococci* and *Bacillus cereus* for their antimicrobial activity. It was demonstrated by well diffusion assay.

***Antifungal activity of the plant extract*:** The aqueous, methanolic and chloroform of different explants extracts of 25µl, 50µl,75µl, 100µl were tested against different fungal pathogens such as *Aspergillus flavus, Aspergillus nige*r, *Rhizopus stolanifere, Mucor piritortis,* for their antifungal activity. It was demonstrated by well diffusion assay.

RESULTS

Anti-bacterial activity:

Table 1: Anti-bacterial activity of Seed Extracts of TP

Extracts	Concentrations(µl)	Zone of inhibition (mm)					
		E.coli	*S.pyogenes*	*S.typhi*	*B.cereus*	*P.aeruginosa*	*S.species*
Methanol	25	2.1	2.6	5	3.4	3.6	2.4
	50	2.3	2.8	5.5	3.6	4.8	2.3
	75	2.2	3.2	5.8	3.8	4.9	2.9
	100	3.8	4.0	6.2	4.1	6.4	3.7
Chloroform	25	1.8	1.1	1.9	1.2	1.8	1.5
	50	1	1.9	2.1	1.9	1.2	1.8
	75	1.8	2.3	2.7	2.3	2.9	2.2
	100	2.5	2.8	3.1	3.3	3.7	2.8
Aqueous	25	1	1	1.8	1.2	1.8	1
	50	1.3	1	2.2	1.9	2.2	1
	75	1.9	1.3	2.6	2.3	2.6	1.3
	100	2.0	1.8	2.9	2.9	3	1.7
Streptomycin(Standard)	10(g/ml)	9.5	10.6	10.9	12.8	11.5	10.7

Table: 2 Anti-bacterial activities of Bark Extracts of TP

Extracts	Concentrations(µl)	Zone of inhibition (mm)					
		E.coli	*S. pyogenes*	*S. typhi*	*B. cereus*	*P. aeruginosa*	*S. species*
Methanol	25	2.5	2.6	5	3.4	3.8	2.5
	50	2.3	2.3	6.1	3.6	4.8	2.3
	75	2.2	1.1	6.7	3.9	4.9	2.2
	100	2.8	1.6	8	4.1	6.4	2.8
Chloroform	25	1.8	2.1	1.9	1.2	1.8	1.8
	50	1.8	2.3	2.1	1.9	2.2	1.8
	75	2.2	3.3	2.7	2.3	2.6	2.2
	100	2.9	3.2	2.9	2.9	2.9	2.9
Aqueous	25	2.1	1.2	1.8	1.2	1.8	2.1
	50	2.3	1.9	2.2	1.9	2.2	2.3
	75	3.3	2.3	2.6	2.3	2.6	3.3
	100	3.2	2.9	2.9	2.9	2.9	3.2
Streptomycin(Standard)	10(g/ml)	9.2	10.1	11.9	12.8	10.5	10.7

Table: 3 Anti-bacterial activities of Flower Extracts of TP

Extracts	Concentrations(µl)	Zone of inhibition (mm)					
		E.coli	*S.pyogenes*	*S.typhi*	*B.cereus*	*P.aeruginosa*	*S.species*
Methanol	25	3.1	2.8	5	3.4	3.8	4.0
	50	4.7	3.8	6.	3.6	4.8	5.2
	75	5.9	4.9	6.5	3.9	4.9	5.8
	100	6	5.4	7	4.1	6.2	6.1
Chloroform	25	2.4	2.5	2	3.1	1.4	2.4
	50	3.0	3	2.2	3.2	2.4	2.6
	75	3.2	4.1	3.9	3.5	2.9	3.2
	100	3.9	6.1	5	3.6	3.2	3.9
Aqueous	25	2.3	2.1	2.4	1.2	1.8	1.8
	50	2.7	2.3	2.6	1.9	2.2	1.8
	75	2.9	3.3	3.2	2.3	2.6	2.2

	100	3.2	3.2	3.9	2.9	2.9	2.8
Streptomycin(Standard)	10(g/ml)	9.1	10.6	10	11.8	11.2	10.7

Table: 4 Anti-bacterial activities of Leaf Extracts of TP

Extracts	Concentrations(µl)	Zone of inhibition (mm)					
		E.coli	*S.pyogenes*	*S. typhi*	*B. cereus*	*P. aeruginosa*	*S. species*
Methanol	25	5.1	3.8	5	3.4	3.8	4.5
	50	5.7	4.8	6.1	3.6	4.8	5.3
	75	5.9	4.9	6.7	3.9	4.9	5.8
	100	6.2	6.4	8	4.1	6.4	6.2
Chloroform	25	2.4	2.5	2	3.1	1.4	2.4
	50	3.0	3	2.2	3.1	2.6	2.6
	75	3.2	4.1	3.9	3.5	2.9	3.2
	100	3.9	6	5	3.6	3.1	3.9
Aqueous	25	2.3	2.1	2.4	1.2	1.8	1.8
	50	2.7	2.3	2.6	1.9	2.2	1.8
	75	2.9	3.3	3.2	2.3	2.6	2.2
	100	3.2	3.2	3.9	2.9	2.9	2.9
Streptomycin(Standard)	10(g/ml)	9.9	11.9	10.9	11.8	10.9	9.7

Antifungal activity:

Table: 5 Antifungal activity of Seed extracts of TP

Extracts of bark	Concentrations (µl)	Zone of inhibition (mm)					
		A. flavus	*A. niger*	*F. oxysporum*	*C. falcetum*	*R. stolanifere*	*M. piritortis*
Methanol	25	2.5	3.8	2.6	5.3	3.4	3.8
	50	2.3	4.8	2.3	6.1	3.6	4.8
	75	2.2	4.9	2.3	6.7	3.9	4.9
	100	2.8	6.4	2.4	6.9	4.1	6.4
Chloroform	25	1.8	1.2	2.1	1.9	1.2	1.8
	50	1.8	1.9	2.3	2.1	1.9	2.2
	75	2.2	2.1	3.3	2.7	2.3	2.6
	100	2.9	2.7	3.2	2.9	2.9	2.9
Aqueous	25	2.1	1.9	1.2	1.8	1.2	1.8
	50	2.3	2.1	1.9	2.2	1.9	2.2
	75	3.3	2.7	2.3	2.6	2.3	2.6
	100	3.2	2.9	2.9	2.9	2.6	2.8
Ketoconazole (Standard)	10 g/ml	5.5	4.9	4	4	4.6	4.9

Table: 6 Antifungal activity of Bark extracts of TP

Extracts of bark	Concentrations (µl)	Zone of inhibition (mm)					
		A. flavus	*A. niger*	*F. oxysporum*	*C. falcetum*	*R. stolanifere*	*M. piritortis*
Methanol	25	2.5	3.8	2.6	5.3	3.4	3.8
	50	2.3	4.8	2.3	6.1	3.6	4.8
	75	2.2	4.9	2.2	6.7	3.9	4.9
	100	2.8	6.4	2.5	6.8	4.1	6.4
Chloroform	25	2.4	1.4	1.2	2	1.2	1.4
	50	2.6	2.6	1.2	2.2	1.6	2.6
	75	3.2	2.9	1.9	3.9	2	2.9
	100	3.9	3.1	6	5	3.6	3.1
Aqueous	25	1.8	1.2	2.1	1.9	1.2	1.8
	50	1.8	1.9	2.3	2.1	1.9	2.2
	75	2.2	2.1	3.3	2.7	2.3	2.6

	100	2.9	2.7	3.2	2.9	2.9	2.9
Ketoconazole (Standard)	10 g/ml	3	2.6	2.9	3.1	2.6	2.9

Table 7: Anti-fungal activity of flower extracts of TP

Extracts Flower	Concentrations (µl)	Zone of inhibition (mm)					
		A. flavus	*A. niger*	*F. oxysporum*	*C. falcetum*	*R. stolanifere*	*M. piritortis*
Methanol	25	2.5	3.8	2.6	5.7	3.4	3.8
	50	2.3	4.8	2.3	6.1	3.6	4.8
	75	2.2	4.9	2.3	6.7	3.9	4.9
	100	2.8	6.4	3	8	4.1	6.4
Chloroform	25	2.4	1.4	1.2	2	1.2	1.4
	50	2.6	2.6	1.2	2.2	1.6	2.6
	75	3.2	2.9	1.9	3.9	2	2.9
	100	3.9	3.1	6	5	3.6	3.1
Aqueous	25	1.8	1.2	2.1	1.9	1.2	1.8
	50	1.8	1.9	2.3	2.1	1.9	2.2
	75	2.2	2.1	3.3	2.7	2.3	2.6
	100	2.9	2.7	3.2	2.9	2.7	2.9
Ketoconazole (Standard)	10 (mg/ml)	3	2.6	2.9	3.1	2.6	2.8

Table 8: Anti-fungal activity of Leaf Extracts of TP

Extracts Leaf	Concentrations (µl)	Zone of Inhibition (mm)					
		A. flavus	*A. niger*	*F. oxysporum*	*C. falcetum*	*R. stolanifere*	*M. piritortis*
Methanol	25	4.5	3.5	3.8	5	3.4	3.8
	50	5.3	3.9	4.8	6.1	3.6	4.8
	75	5.8	4.8	4.9	6.7	3.9	4.9
	100	6.2	6.9	6.4	8	4.1	6.4
Chloroform	25	2.4	2.3	2.5	2	3.1	1.4
	50	2.6	3.1	3	2.2	3.1	2.6
	75	3.2	3.6	4.1	3.9	3.5	2.9
	100	3.9	4.2	6	5	3.6	3.1
Aqueous	25	1.8	2	2.1	2.4	1.2	1.8
	50	1.8	2.9	2.3	2.6	1.9	2.2
	75	2.2	3.1	3.3	3.2	2.3	2.6
	100	2.9	3.7	3.2	3.9	2.9	2.9
ketoconazole (Standard)	10 (mg/ml)	3.5	3.9	3	3.1	2.6	2.9

DISCUSSION

Anti-bacterial activity of *Thespesia populnea* L seed extracts summarized in Table 1 in Methanolic seed extracts, the highest antibacterial activity was observed against *Pseudomonas aeruginosa* (6.4 mm) followed by Salmonella typhi (6.2 mm) and Streptococci pyogenes (4.1 mm). The lowest activity levels were observed against *E. coli* (3.8 mm each). Chloroform seed extracts of *Thespesia populnea* L. shown the highest antimicrobial activity was observed against *Pseudomonas aeruginosa* (3.7 mm) followed by *Bacillus cereus* (3.3 mm) and the lowest activity levels were observed against E. coli (2.5 mm).

Aqueous seed extracts of *Thespesia populnea* L. shown the highest antimicrobial activity was observed against *Pseudomonas, aeruginosa* (3.0 mm each). Salmonella typhi and Bacillus cereus (2.9 mm) followed by *E. coli* (2.0 mm) and the lowest activity levels were observed against Streptococci species (1.7 mm). Anti-bacterial activity of *Thespesia populnea* L bark extracts summarized in Table 2.

In Methanolic bark extracts, The highest antibacterial activity was observed against S.typhi (8 mm) followed by P. aeruginosa (6.4 mm) and B.cereus (4.1 mm). The lowest activity levels were observed against S.pyogenes (1.6 mm). Chloroform bark extracts of *Thespesia populnea* L. shown the highest antimicrobial activity was observed against S.pyogenes (3.2 mm) and same activity levels were observed against in remaining organisms (2.9 mm). Aqueous bark extracts of *Thespesia populnea* L. shown the highest antimicrobial activity was observed against Escherichia coli and Streptococci species (3.2 mm) and same activity levels were observed against in remaining organisams (2.9 mm).Anti-bacterial activity of

Thespesia populnea L flower extracts summarized in Table 3. In Methanolic flower extracts, the highest antibacterial activity was observed against *Salmonella typhi*(7 mm)followed by *Pseudomonas aeruginosa* (6.2mm) *Staphylococci species*. (6.1 mm). The lowest activity levels were observed against B.cereus (4.1mm). Chloroform flower extracts of *Thespesia populnea* L. shown the highest antimicrobial activity was observed against *Streptococci pyogenes* (6.1mm) followed by Salmonella typhi (5.0 mm).

The lowest activity levels were observed against Pseudomonas, aeruginosa (3.2 mm). Aqueous flower extracts of *Thespesia populnea* L. shown the highest antimicrobial activity was observed against S.typhi (3.9 mm) followed by *E. coli* and *S. pyogenes* (3.2 mm). The lowest activity levels were observed against *S.species*. (2.8 mm). Anti-bacterial activity of *Thespesia populnea* L. leaf extracts summarized in Table 4 and. In Methanolic leaf extracts, the highest antibacterial activity was observed against Salmonella typhi (8.0 mm) followed by Pseudomonas aeruginosa and S.pyogens (6.4 mm) followed by E. coli and S.species (6.2 mm). The lowest activity levels were observed against B.cereus (4.1 mm). Chloroform leaf extracts of *Thespesia populnea* L. shown the highest antimicrobial activity was observed against Streptococci pyogenes (6.0 mm) and *Salmonella typhi* (5.0 mm) and the lowest activity levels were observed against Pseudomonas aeruginosa (3.1 mm). Aqueous leaf extracts of *Thespesia populnea* L. shown the highest antimicrobial activity was observed against *Salmonella typhi* (3.9) followed by *E. coli* and S pyogenes (3.2 mm) and the lowest activity levels were observed against *P. aeruginosa*, *B. cereus* and *S. species* (2.9 mm).

Anti-fungal activity of *Thespesia populnea* L seed extracts summarized in Table 5 In Methanolic seed extracts, the highest anti-fungal activity was observed against *Colletotrichum falcetum*(6.9 mm) followed by *Aspergillus niger* (6.4 mm) and the lowest activity levels were observed against *F. oxiforum* (2.4 mm). The chloroform seed extracts of *Thespesia populnea* L zone of inhibition showing highest activity against *Fusarium oxiforum* (3.2 mm) followed by *C. falcetum, R. stolanifere, M. piritorus, A. flavus* (2.9 mm) and the lowest activity levels were observed against A. Niger (2.7 mm). The aqueous seed extracts of *Thespesia populnea* L shown zone of inhibition showing highest activity against A. flavus (3.2 mm) followed by *A. Niger, F. oxiforum, C. falcetum* (2.9 mm) and the lowest activity levels were observed against *R. stolanifere* (2.6mm).

Anti-fungal activity of *Thespesia populnea* L. bark extracts summarized in Table 6. In Methanolic bark extracts, the highest anti-fungal activity was observed against *C. falcetum*(6.8 mm) followed by *M.piritorus* and *A. niger* (6.4 mm) and zone showing the lowest activity was observed against in *F. oxiforum* (2.5 mm). The Chloroform bark extracts of *Thespesia populnea* L. zone of inhibition showing the highest activity was observed against *F.oxiforum*(6 mm) followed by *C. falcetum* (5 mm) and zone showing the lowest activity was observed against *A. niger* and *Mucar piritorus* (3.1 mm). The aqueous bark extracts of *Thespesia populnea* L. Zone of inhibition showing the highest activity was observed against *F.oxiforum* (3.2 mm) followed by *C. falcetum, R.stolanifere, M.piritorus* and Aspergillus flavus (2.9 mm) and the zone showing the lowest activity was observed against *A. niger* (2.7 mm). Anti-fungal activity of *Thespesia populnea* L flower extracts summarized in Table 7. In Methanolic flower extracts, the highest anti-fungal activity was observed against *C. falcetum* (8 mm) followed by *A. niger* and *Mucar piritorus* (6.4 mm), the zone showing the lowest activity was observed against *Aspergillus flavus* (2.8 mm). The Chloroform flower extracts of *Thespesia populnea* L. zone of inhibition showing the highest activity was observed *F. oxiforum* (6 mm) followed by C. falcetum (5 mm) and zone showing the lowest activity was observed against A.niger and M. piritorus (3.1 mm).

The aqueous flower extracts of *Thespesia populnea* L. zone of inhibition showing the highest activity was observed against *F. oxiforum* (3.2 mm) followed by *C. falcetum, M. piritorus* and *A. flavus* (2.9 mm) and the zone showing the lowest activity was observed against *Aspergillus niger* and *R.stolanifere* (2.7 mm).*Thespesia populnea* L leaf extracts summarized in Table 8. In Methanolic leaf extracts, the highest anti-fungal activity was observed against *C. falcetum* (8 mm) followed by *A. niger* (6.9 mm), the zone showing the lowest activity was observed against*R. stolanifere* (4.1 mm). The Chloroform leaf extracts of *Thespesia populnea* L. zone of inhibition showing the highest activity was observed *F.oxiforum* (6 mm) followed by C. falcetum (5 mm) and zone showing the lowest activity was observed against *M. piritorus* (3.1 mm). The aqueous leaf extracts of T*hespesia populnea* L. zone of inhibition showing the highest activity was observed *C. falcetum* (3.9 mm) followed by *A. niger* (3.7 mm) and the zone showing the lowest activity was observed against *A. flavus, R. stolanifere* and *M. piritorus* (2.9 mm).

CONCLUSION

Antibacterial activity of Leaf, Bark, Flower and Seed extracts of *Thespesia populnia* L. against the tested organisms using agar disc diffusion method. Among the test organisms used in the study with all extracts Gram negative bacteria shown considerable inhibition effect than positive bacteria especially, Salmonella typhi (Gram Negative) Showed higher zone of inhibition than all other tested organisms. But whereas the methanolic leaf extracts possess more antimicrobial activity when compared to aqueous and Chloroform extracts of all three explants like Flower, Bark and Seed due to phytochemical constituents are more retained in methanolic (Polar Solvent) leaf explants extract. Inhibition zone was increased with increase in concentration of the extract and thus exhibiting concentration. Results of the antifungal activity of Leaf, Bark, Flower and Seed extracts of *Thespesia populnia* L. All the three methanol (Polar), chloroform (Nonpolar) and aqueous solvent extracts of explants (*Thespesia populnia* L) has notable antifungal activity against 6 fungal species. The growth of *Colletetrichum falcetum*(8mm), *Aspergillus niger*(6.9), *Mucar piritorus*(6.4) were found to be decreased with increasing concentration of only Methanol extracts of Leaf when compare to the remaining all the solvent extracts of studied explants. The overall results, showing that methanolic crude extract of TP leaf, showing significant antimicrobial activity than all other used explants for experimental analysis.

ACKNOWLDGEMENTS

Authors are highly acknowledged to University Grants Commission (UGC) Government of India for funding this project in the form of Research Fellowship for Meritorious Students (RFSMS-FELLOWSHIP).Authors express their sincere thanks to all the fellows who helping in the procurement of plant material and microbial strains from different studied arears in the present work. Authors are highly acknowledged to Central Facilities for Research and Development (CFRD) Osmania University, Hyderabad, for support of instrumentation to complete this work.

REFERENCE

1. Allen, J.A., Cordia subcordata. In: Vozzo, J.A. (ed.) *Tropical Tree Seed Manual USDA Forest Service Agriculture Handbook* 721, Washington, DC., 2002.
2. Chopra, R.N., Nayar, S.N. and Chopra, I.C., Glossary of Indian Medicinal Plants. CSIR, New Delhi, India, 1956.
3. Fosberg F.R. and Sachet M.H., *Thespesia populnea* (L.) Solanderex Correa and *Thespesia populneoides* (Roxburgh) Kosteletsky (Malvaceae), *Smithson Contrib. Bot*., 1972, 7, 1–13.
4. Ghosh, K. and Bhattacharya, T.K., Preliminary study on the anti-implantation activity of compounds from the extracts of seeds of *Thespesia populnea*, *Indian J. of Pharmacol*., 2004, 36, 288–291.
5. Kumar, A. S., Venkateshwaran, K., Vanitha,J., Saravanan, V. S., Ganesh, M., Vasudevan, M., & Sivakumar, T. (2008). Synergistic activity of methanolic extract of *Thespesia populnea* (Malvaceae) flowers with oxytetracycline. *Bangladesh Journal of Pharmacology*, 4(1), 13-16.
6. Parthasarathy R., Ilavarsan R. and Karrunakaran C.M., Antidiabetic activity of *Thespesia populnea* bark and leaf extract against streptozotocin induced diabetic rats, *Int. J. PharmTech Res*.,2009,1,106–109.
7. Pratap Chandran R.1 Manju S.1, Vysakhi M.V.1, Shaji P.K.2, Achuthan Nair G.3 Antibacterial and Antifungal Activities of *Thespesia populnea* Leaf extracts against Human Pathogens *Department of Biotechnology and Research*(2014).
8. Qasim, M., Zainul, A., Yousuf, A. M., Ansari, R., Gul, B., Khan M. A. (2014). Traditional ethno-botanical uses of medicinal plants from coastal areas of Pakistan. *Journal of Coastal Life Medicine*.
9. Senthil-Rajan, D., Rajkumar, M., Srinivasan, R., Kumarappan, C., Arunkumar, K., Senthilkumar, K. L., & Srikanth, M. V. (2013). Investigation on antimicrobial activity of root extracts of *Thespesia populnea* Linn. *Tropical Biomedicine*, 30(4), 570-578.
10. Shirwaikarkumar A., Krishnan A.V. and Sreenivasan K.K., Chemical investigation and antihepatotoxic activity of *Thespesia populnea*, Int. *J. Pharmacog*., 1995, 33, 305-10.
11. Vasudevan M., Gunnam K.K. and Parle M., Antinociceptive and anti-inflammatory effects of *Thespesiapopulnea* bark extract, *J. Ethnopharmacol*., 2007, 109, 264 -270.
12. Vasudevan, M., & Parle, M. (2006). Pharmacological actions of *Thespesia populnea* relevant to Alzheimer's disease. *Phytomedicine*, *13*(9), 677-687.

How to cite this article:
Maiti N, Mitra P, Maiti A, Maity B and Das M. Health, Hygiene and Sanitation Practice of Santalis and Hindus in Rural Sectors of East Medinipur District, West Bengal, India: A Preliminary Survey. *Int. J. Res. Dev. Pharm. L. Sci.* 2017; 6(7):2874-2880.doi: 10.13040/IJRDPL.2278-0238.6(7).2874-2880