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Antimicrobial Screening of Some Folklore Medicinal Plants of Traditional Use

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Abstract: *The present study aims to explore antimicrobial potential of folklore medicinal plants growing in and around KODADagainst certain human pathogens. Human pathogens include gram positive bacteria, gram negative bacteria and fungi.*
In principle the process involved in the antimicrobial screening is similar to that of the isolation of antibiotic and /or isolation of enzyme from microorganisms. The isolation of antibiotics includes the isolation and characterization of microorganisms, culturing of organisms in suitable media, its antagonistic activity band finally the characterization of the antibiotic. The isolation of antibiotic or the enzyme is not possible in two months' time. Therefore, we took up the research "ANTIMICROBIAL SCREENING OF SOME FOLKLORE MEDICINAL PLANTS OF TRADITIONAL USE GROWING IN AND AROUND KODAD".

Keywords: *Folklore Medicinal plants, Microorganisms, MIC, Catalase Coagulase, Antimicrobial activity, carbohydrates, Proteins, whole plant, Root,Flower.*

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I. Introduction

Microorganisms are among man's best friends and worst enemies. Exploration of microorganisms for useful purpose is known since 6000 B.C.History reveals many applications of microbial processes in production of desirable materials. The harnessing of the activities of microorganisms represent one of the most fascinating aspects of mans scientific and technological development. From the standpoint of industrial microbiology, microorganisms can be considered chemical factoriesin miniature. They have the potential to produce novel and new therapeutic agents and to convert relatively inexpensive raw materials into end products of value of human use, thus becoming attractive forcommercialexploration. Two dramatic explosions that industrial microbiology experienced during this century are the discovery ofantibiotics and development of recombinant DNA technology.

Scientific advancements in the field of industrial microbiology over the past few decades have led to the development of fermentative processes for producing a wide variety of products like antibiotics, vitamins, hormones, enzymes, amino acids, organic acids, solvents, dyes and polymers.

The reasons for considering microorganisms as valuable agents in industrial process are three fold:

(i) Very high-speed of metabolic processes occurring in microorganisms compared to the relatively slow metabolic processes in higher organisms.
(ii) The variety in their biochemical activities.
(iii) Their adaptability to environment of widely different chemical compositions.

The antibiotic researches which include screening programs and characterization of the active principle is the most successful areas of the natural product research.To discover the new antibiotics, It will be necessary tocontinue the use ofconventional screening programs,although they result diminishing yields and are expensive. A multitude of research laboratories in USA, UK, Japan, Russia and a host of other countries are intensively engaged I isolation of newer antibiotics from actinomycetes.

The modern era of mass screening and target based screens may result new uses for already known compounds.

Screening programs in search of new antibiotics generally have the following steps in their protocol.

(i) Isolation and cultivation of organisms.
(ii) Development of suitable assay method for antibiotic principle.
(iii) Chemical characterization and identification of antibiotic principle.

Whatever the objectives of a screening program, the following are the basic stages in any isolation procedure at which choices must be made.

(i) Selection of macro or micro environment

Pretreatment of samples:

(ii) Selection Of isolation media
(iii)
(iv) Selection Of incubation Conditions and period

(v) Selection Of Colonies for Further Study:

The Selection of colonies for further study is the final step in the isolation procedure and it is the most frustrating and time-consuming. Clearly the selection of colonies is dependent on the aims of the study.
This is accomplished by growing the antagonistic actinomycete in liquid cultures which are incubated on shaking machines orin fermenters of various volumes. Antibiotic principlesare then extracted and identification and identification and characterization were carried out. The antibiotic research, particularly production extraction and characterization of antibiotics is a multidisciplinary research involving knowledge sharing between microbiologist and chemists.

II. Introduction To The Plants

1. AGERATUM CONYZOIDES

Family: Compositae

Distribution: Throughout India and all hot countries.

The leaves applied to wounds, acts as a styptic and heal them quickly. The juice of the rots are said to possess antilithic properties. The plant is applied externally in agne, the juice is said to be a god remedy for prolapsesani.In Ceylon, and the leaves are commonly used for wounds and sores. In Indochina, the rots and leaves are considered antidysentric.

The plant is a house-hold medicine in Madagascan and La RENNION. As fermentation the leaves and stems are prescribed as a bath to patients with ecchymoses. A poultice of the leaves is applied on boils, it is said to prevent tetanus if applied to a wound.

A cold decoction of the rots is used as a lotion in purulent opthalamia. The juice of the leaves used as a lotion for the eyes. The plant is used for fever. An infusion is given in Brazil as a stimulant tonic in diarrhea and flatulent colic.

ASYSATICA GANGETICUM

Family: Acanthaceae

Actions: The plant is sweet, cold, tonic, stomachic, astringent, cures asthma and bronchitis. The flowers cure fevers.
The plant is used in decoction to promote perspiration in febile conditions. The expressed juice is given in pites.
The seeds are employed as an alexopharmic and anthelminic and as a constituent of masalas for horses. The whole plant is given as a remedy for spasm of the bladder and strangury; the flowers are administered for conjunctivitis,theroots given for dropsy.
The plant is considered to poses strong diaphoretic properties. By itself has no antiperiodic property, but when combined with a small dose of quinine, it appears to help the action of the later in Malarial fevers

III. Methodology

Plant Materials:

The following Materials:
The following plants were selected for screening their antimicrobial activity in the literature survey.

1. Agaretum conyzoides - Whole plant

2. Asysatica gangeticum - Flowers

IDENTIFICATION OF THE PLANT MATERIALS:

All plant materials were identified and authenticated by Dr. M. Venkaiah, Andhra University.
Collection of the Plant Materials:
The Plan materials were collected in Kodad.
Drying of the plant materials
Powdering of the plant Materials
Extraction of the plant Materials
Concentrations of the Extracts
The alcoholic extracts were concentrated under reduced pressure by using vacuum pump at a temperature not exceeding 50ºc.
Percent yield of the extract residues:

1 Agaretum conyzoides - Whole plant - 8%

2 Asysatica gangeticum - Flowers - 7%

Preparation of the Extract Solutions for Antimicrobial Screening:

The dried extract residues were dissolved in alcohol to getthecorresponding conditions.
Fractionation of the Alcoholic residue was fractionated with organic with organic solvents of increasing polarity i.e. hexane, chloroform, ethyl acetate and methanol. The fractionation was done to identify exactly where the antimicrobial activity lies.

CHROMATOGRAPHY OF THE INDIVIDUALFRACTIONS:
Microorganism's used:
a. Escherichia coli (2574)
b. Proteus vulgaris (2027)
c. Bacillus subtilis (2547)
d. Bacillus pumilis (2327
e. Staphylococcus aureus (2079)
f. Streptococcus faecalis (2103)
g. Saccharomyces cereviseae (30440
h. Aspergilus niger (1024)

These cultures were produced from Department of Microbiology, Aurora College Degree and PG Hyderabad. They obtained the organisms from NCIB, and number in parenthesis indicates culture code.
Glassware used: Petri dishes4 inch diameter, boiling tubes, conical flosks and pipettes.
Sterilization of Glassware:
The glassware were thoroughly washed with soap water followed by distilled water and then with alcohol. The glassware wrapped with aluminum foil and kept in an autoclave at 121ºC at 15psi for 20minutes.After wards they are dried in hot air oven at160ºc for one hour.
Preparation of The media:
For bacteria Nutrient Agar and for fungi Potato Dextrose Agar media of HI media Laboratories Limited, Mumbai, India was used.

Preparation of pure cultures:
The nutrient Agar plates were arranged and labeled the mass control, undiluted, 10-,^{1}10-^{2},10-^{3},till 10^{-7} .The duplicates were made for each dilution The isolated colonies were picked up with the sterile inoculation needle as before. After sufficient growth was observed, the cultures were wet mounted and observed under microscope.

IDENTIFICATIONOF SELECTED ORGANISMS

E.coli:

E.coli are predominant of theflora of the large intestine of humanbeings.These are gram negative nonspore forming Bacilli.

I. Cultural characteristics:

Nutrient Agar Media	**Maconkey Agar Medium**
Colonies are large, thick, white, moist smooth and opaque	Colonies are large, thick and are in bright pink.

II.Physiological and Biochemical properties:

S.no.	Reaction	Response	Result
1	Methyl Red Test	Red color	positive
2	Voges-Poskauer	Red pigment	positive
3	Indole	Cherry colored band	Negative
4	Citrate Utilisation	No Reaction	Negative
5	Urease test	No Reaction	positive
6	H2S Production	Gas bubbles	positive
7	β –galactose	Yellow color	positive
8	Lactose Utilisation	Production of Gas	positive
9	Growth temperature	10-47ºc	
10	Annitol, xylose fermentation	Production of acid	positive

CARBONSORCE UTILISATION PATTERN:

S.NO.	Carbon Source	Utilisation
1	Glucose,Lactose,Manitol,Sucrose,Dulcitol,salicin andxylose.	positive
2	Adonitol and Inositol	negative

IV. GROWTH IN THE PRESENCE OF VARIOUS NITROGENSOURCES:

S.NO.	NITROGEN SOURCE	Growth Response
1	Lysine,ornithine, Urease and Gelatin	positive
2	Arginine	Negative

V.RESISTANCETO VARIOUS ANTIBOTICS:

S.NO	ANTIBIOTIC	GROWTHRESPONSE	RESULT
1	Penicillin	+	Resistant
2	Streptomycin	-	Sensitive
3	FURADANTION	-	Sensitive

The above biochemical tests confirm that the organism is E.Coli.

PROTEUS VULGARICUS:

These are gram negative rods and concave. These colonies shoe thin film on agar medium.

1. CULTURAL CHARACTERISTICS:

Nutrient agar medium: colonies are large, concave,smooth and gives appearance of concentric rings due to peritrichate flagella.

II. Physiological and biochemical properties:

S.NO	Reaction	Response	Result
1	Urease Test	Bright Pink Color	+
2	Phenyl pyruvic Acid	Phenyl alanine to phenyl pyruvic acid	+
3	Methyl Red	Red color	+
4	Voges- Proskauer	No reaction	-
5	Citrate Utilization	Color changes from green to blue.	+
6	Growth Temperature	10-47ºc	
7	Glucose Utilization	Evolution of gas	+
8	Gelatin liquefaction	Formation of ammonia	+

IV. CARBON SOURCE UTILISATION

S.NO	CARBON SOURCE	UTILIZATION
1	Glucose, Mannitol, Sucrose, Salicin, Inositol and xylose	+
2	Lactose	-

IV. GROWTH IN THE PRESENCE OFVARIOUS NITROGEN SOURCES.

S.NO	NITROGEN SOURCE	GROWTHRESPONSE
1	Ornithine, and Gelatin	+
2	Arginine and lysine	-

RESISTANCE TO VARIOUS NTIBIOTICS

S NO	ANTIBIOTIC	GROWTHRESPONSE	RESULT
1	Sulphonamide	+	Resistant
2	Penicillin	+	Resistant
3	Aureomycin	+	Resistant
4	Streptomycin	-	Resistant
5	Kanamycin	-	Sensitive
6	Neomycin	-	Sensitive
7	Tetracycline	-	Sensitive

The observed cultural characteristics and biochemical tests predicts that the organism is Proteus vulgaricus.

BACILLUS SUBTILIS
These are gram positive rod shaped bacteria forming heat resistant spores.
CULTURAL CHARACTERISTICS:
Nutrient Agar Medium: Colonies are irregularly round, raised, dull ,opaque and greyish white.

II. PHYSIOLOGICAL AND BIOCHEMICAL PROPERTIES:

S.NO	REACTION	RESPONSE	RESULT
1	Catalase test	Oxygen produced	+
2	Vogas -Proskauer test	Red Pigment	+
3	Glucose Utilization	Acid formation	+
4	Casein Hydrolysis	Hydrolyzed zone	+
5	Starch Hydrolysis	Hydrolyzed zone	+
6	Gelatin Hydrolysis	Hydrolyzed zone	+
7	Citrate Utilization	Green to blue	+
8	Gas produced from Glucose	No Reaction	-
9	Nitrate Reduction	Red color	+
10	Indole Production	Deep Red color	+
11	Growth Temperature	5-65^{o}c	
12	Heat resistance	140^{o}c about3hrs.	
13	Chemical tolerance	pH 5-7	
14	NaCl tolerance	2-10%	

V. Carbon Source utilization Pattern

s.no	Carbon source	utilization
1	D-Glucose, D-Mannitol, D-Arabinose and D- xylose	+

VI. Growth in the presence of various nitrogen sources:

S.NO	Nitrogen source	Growth Response
1	Tyrosine and Phenyl alanine	- ve

RESISTANCE TO VARIOUS NTIBIOTICS:

S NO	ANTIBIOTIC	GROWTHRESPONSE	RESULT
1	Sulphonamide	+	Resistant
2	Penicillin	+	Resistant
3	Streptomycin	+	Resistant
4	Erythromycin	+	Resistant
5	Chloramphenicol	+	Resistant
6	Tetracycline	+	Resistant

The observed cultural characteristics and biochemical tests predicts that the organism is *Bacillus subtilis.*

BACILLUS PUMILUS:
These are gram positive rod shaped bacteria forming heat resistant spores.

CULTURAL CHARACTERISTICS:
Nutrient Agar Medium: Colonies are irregularly round, raised, dull ,opaque and greyish white.

II. PHYSIOLOGICAL AND BIOCHEMICAL PROPERTIES:

S.NO	REACTION	RESPONSE	RESULT
1	Catalase test	Oxygen produced	+
2	Vogas -Proskauer test	Red Pigment	+
3	Glucose Utilization	Acid formation	+
4	Casein Hydrolysis	Hydrolyzed zone	+
5	Starch Hydrolysis	No Reaction	-
6	Gelatin Hydrolysis	Hydrolyzed zone	+
7	Citrate Utilization	Green to blue	+
8	Gas produced from Glucose	No Reaction	-
9	Nitrate Reduction	No Reaction	-
10	Indole Production	Deep Red color	+
11	Growth Temperature	5-65^{o}c	
12	Heat resistance	140^{o}c about3hrs.	
13	Chemical tolerance	pH 5-7	
14	NaCl tolerance	2-10%	

III. Carbon Source utilization Pattern

s.no	Carbon source	utilization
1	D-Glucose, D-Mannitol, D-Arabinose and D- xylose	+

IV. Growth in the presence of various nitrogen sources:

S.NO	Nitrogen source	Growth Response
1	Tyrosine and Phenyl alanine	- ve

RESISTANCE TO VARIOUS ANTIBIOTICS

S NO	ANTIBIOTIC	GROWTHRESPONSE	RESULT
1	Sulphonamide	+	Resistant
2	Penicillin	+	Resistant
3	Streptomycin	+	Resistant
4	Erythromycin	+	Resistant
5	Chloramphenicol	+	Resistant
6	Tetracycline	+	Resistant

The observed cultural characteristics and biochemical tests predicts that the organism is *Bacillus pumulus.*

STAPHYLOCOCUS AUREUS:
These are gram positive and appear in bunches.

CULTURAL CHARACTERISTICS:

Nutrient Agar Medium: Colonies are circular, large, convex, smooth, shiny, opaque and easily emulsified and produces golden yellow pigment round, raised, dull, opaque and greyish white.

II. PHYSIOLOGICAL AND BIOCHEMICAL PROPERTIES:

S.NO	REACTION	RESPONSE	RESULT
1	Catalase test	Oxygen produced	+
2	Vogas -Proskauer test	Red Pigment	+
3	Glucose Utilization	Acid formation	+
4	Casein Hydrolysis	Hydrolyzed zone	+
5	Starch Hydrolysis	No Reaction	-

6	Gelatin Hydrolysis	Hydrolyzed zone	+
7	Citrate Utilization	Green to blue	+
8	Gas produced from Glucose	Red color	+
9	Nitrate Reduction	Red color	+
10	Indole Production	No Reaction	-
11	Growth Temperature	5-65^{o}c	
12	Heat resistance	140^{o}c about3hrs.	
13	Chemical tolerance	pH 5-7	
14	NaCl tolerance	2-10%	

III. Carbon Source utilization Pattern

s.no	Carbon source	utilization
1	D-Fucose, D-Arabinose,D-cellobiose, D-Rafinosoe, D-Arabinose and D- xylose,	-ve
2.	Sucrose, Maltose, Salicin,D-Mannitol,D-Mannose,D-Trehalose,α-Lactose and D-Galactose	+ve

IV. Growth in the presence of various nitrogen sources:

S.NO	Nitrogen source	Growth Response
1	Ammonia	-ve
2	Arginine	+ve

RESISTANCE TO VARIOUS ANTIBIOTICS

S NO	ANTIBIOTIC	GROWTHRESPONSE	RESULT
1	Neomycin	_	Sensitive
2	Benzyl Penicillin	-	Sensitive
3	Kanamycin	-	Sensitive
4	Erythromycin	-	Sensitive
5	Methicillin	+	Resistant
6	Tetracycline	-	Sensitive
7	Penicillin-G	+	Resistant
8	Gentamycin	+	Resistant

The observed cultural characteristics and biochemical tests predicts that the organism is *STAPHYLOCOCUS AUREUS.*

***STREPTOCOCUS FAECALIS*:**
These are gram positive and arranged in chains or pairs

CULTURAL CHARACTERISTICS:
Nutrient Agar Medium: Colonies are circular, semitransparent and low convexdiscs.

II. PHYSIOLOGICAL AND BIOCHEMICAL PROPERTIES:

S.NO	REACTION	RESPONSE	RESULT
1	Catalase test	No Reaction	-ve
2	Coagulase test	Clumping of organism	+ve
3	Gas from mannitol	Evolution of Gas Bubles	+
4	Growth Temperature	22-44^{o}c	
5	Haemolysis	Inhibition Zone	+ve
6	Viability	50^{o}c for30 minutes	
7	NaCl tolerance	5-6.5%	

III. Carbon Source utilization Pattern

s.no	Carbon source	utilization
1	Lactose, Sorbitol, Mannitol	+ve
2.	Arabinose	-ve

IV. Growth in the presence of various nitrogen sources:

S.NO	Nitrogen source	Growth Response
1	Tyrosine	+ve
2	Arginine, Ornithine, Lysine, Glycerol and Gelatin	-ve

RESISTANCE TO VARIOUS ANTIBIOTICS

S NO	ANTIBIOTIC	GROWTHRESPONSE	RESULT
1	Sulphonamide	+	Resistant
2	Penicillin-G	-	Sensitive
3	Streptomycin	+	Resistant
4	Erythromycin	-	Sensitive
5	Chloramphenicol	+	Resistant
6	Tetracycline	-	Sensitive

The observed cultural characteristics and biochemical tests predicts that the organism is *STREPTOCOCUS FAECALIS.*

***ASPERGILLUS NIGER*:**
On Potato Dextrose Agar (PDA) medium the organism showed the following morphology and it confirms the fungal culture is *ASPERGILLUS NIGER.*

Morphology and Cultural characteristics: These are identified by their conidial stage;mycelliaislarge highly branched, multinucleated and large number of condiophores which arise individually on hypae.
The hypae is swollen, chains of conidia arise on the sterigma giving appearance of strings of beads which are black or brown in color.

SACCHROMYCESCEREVISAE:
On Potato Dextrose Agar Medium the following features were observed.
Morphology: Cells are spherical, ovoid or elongate. Asci consist of one to four spherical or oval, smooth or warty spores. The colonies are creamy in color.

DETERMINATION OF THE ZONES OF INHIBITION:
Cup Plate andAgar Diffusion method was used to determine the zones of inhibition

DETERMINATION OF THE INHIBITORY CONCENTRATIONS:

Minimum inhibitory concentration (MIC) is defined as the lowest concentration of the test solution at which no signs of bacterial or fungal growth were detectable macroscopically. A stock solution was prepared by dissolving 10 mg of test substances in 10ml of sterile polyethylene glycol 600.

Hi-media nutrient agar was used for bacteria and Hi-media potato dextrose agar was used for fungi.
The MIC was calculated six times and the geometric mean was taken. The geometric mean was taken because it will tend to minimize the effects of the usual experimental uncertainty of the data of MICs.

VII. Results

Between Two plant extracts, Gmelinaasiatica showed very god antimicrobial activity of the individual plant extracts was shown below. The results were also in Tabular form.The antimicrobial activity performed for ten times. The Mean Values, Standard Deviation and Standard Error Mean were also calculated. The results of the antimicrobial activity as represented in the diagrams to compare the

Efficaciesof the individual extracts.
The details of the results are as follows.

1.Agaretumconyzoides:

The extract showed on an average the inhibition zones of 18.60 against E.Coli and 17.50 against P.vulgaris. The extract didn't show any activity against gram positive bacteria i.e.,B.subtilis,B.pumilus,S.aureusand S.faecalis and fungi, i.e.,A .niger and S.cereviseae.The minimum inhibitory concentrations against E.coli in Table1and Fig 1.The minimum inhibitory concentration against E.coli is 241.372µg/ml and against P.vulgarisis 286.831µg/ml.The detailed results are shown in Table2.

2 *.Asysatica gangeticum*

The extract showed on an average the inhibition zones of 12.30 against E.Coli and 12.40 against P.vulgaris; 11.30 against B.subtilis,11.50 against B.pumilus,10.70 against S.aureus 10.80 against

S.faecalis;11.10 against and fungi, i.e., A .niger and 11 against S.cereviseae.The detailed results are shown in Table 2 and.The minimum inhibitory concentration against E.coli is 349.702µg/ml and against P.vulgarisis 333.12µg/ml; against S.aureus is 270.66612µg/ml against S.faecalis is 283.093µg/ml; against A.niger is 162.019µg/ml ;against S.cereviseae is 178.324µg/ml .The detailed results are shown in Table2.

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TABLE 1:ANTIMICROBIAL ACTIVITY OFAGERATUM CONYZOIDES WHOLEPLANT

	Inhibition zones in mm												
organism	Trial1	Trial2	Trial 3	Trial4	Trial5	Trial 6	Trial7	Trial 8	Trial9	Trial 10	MEAN	SEM	S.D
1 Gram negative Bacteria													
a.E.Coli	20	26	19	15	18	17	16	20	21	19	18.60	0.653	2.07
b.P.vulgaris	18	16	12	17	19	20	17	18	20	18	17.50	0.734	2.32
II Gram positive Bacteria													
a. B.subtilis	0	0	0	0	0	0	0	0	0	0	0.00	0.000	0.00
b. B.pumilis	0	0	0	0	0	0	0	0	0	0	0.00	0.000	0.00
c.Staph.aureus	0	0	0	0	0	0	0	0	0	0	0.00	0.000	0.00
d.Strep.faecalis	0	0	0	0	0	0	0	0	0	0	0.00	0.000	0.00
III Fungi													
a.Sacchromyces cerevisie	0	0	0	0	0	0	0	0	0	0	0.00	0.000	0.00
b.Aspergilus niger	0	0	0	0	0	0	0	0	0	0	0.00	0.000	0.00

SEM = STANDARD EROR MEAN

MEAN = ARTHIMATIC MEAN

S.D. = STANDARDDEVIATION

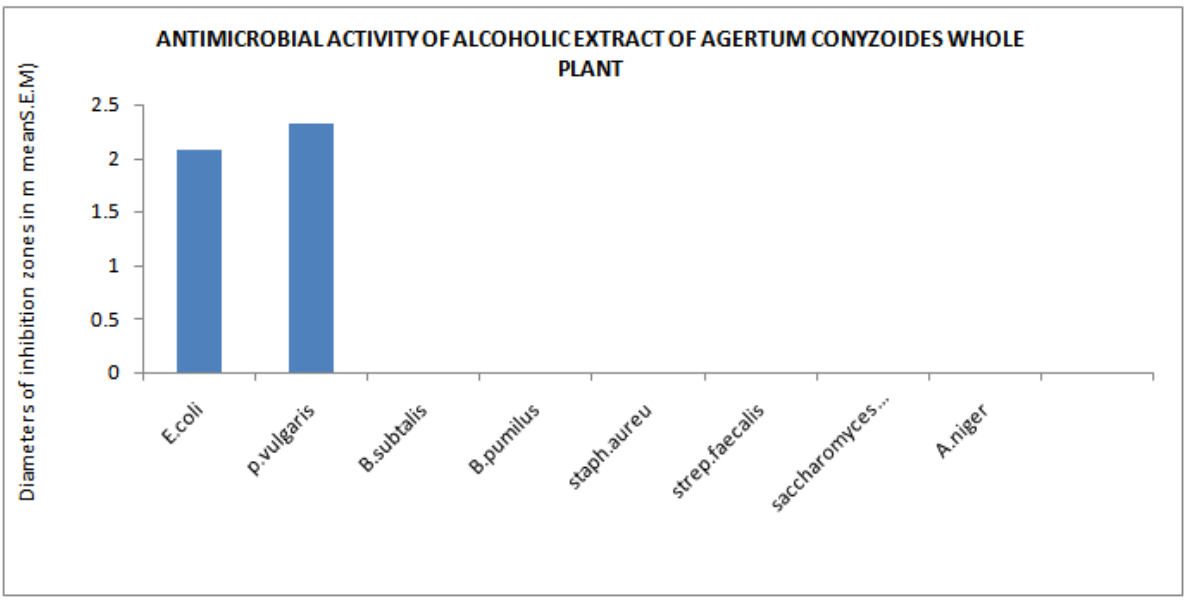

Fig: 1

TABLE 2:ANTIMICROBIAL ACTIVITY OF ASYSATICA GANGETICUM FLOWERS

Inhibition zones in mm

Organism	Trial 1	Trial 2	Trial 3	Trial4	Trial 5	Trial 6	Trial 7	Trial 8	Trial 9	Trial 10	MEAN	SEM	S.D
1 Gram negative Bacteria													
a. E.Coli	15	13	12	10	14	13	11	12	10	14	12.30	0.559	1.767
b. P.vulgaris	14	12	13	11	10	12	13	13	15	14	12.40	0.542	1.713
II Gram positive Bacteria													
a. B.subtilis	11	12	10	11	13	10	13	13	12	10	11.30	0.367	0.00
b. B.pumilis	13	11	12	10	13	12	11	11	13	10	11.50	0.401	0.00
c. Staph.aureus	12	10	11	13	9	10	10	10	11	12	10.70	0.423	0.00
d. Strep.faecalis	10	9	11	12	14	11	11	11	9	11	10.80	0.467	0.00
III Fungi													
a.Sacchromyces cerevisie	10	11	12	10	12	11	10	12	11	12	11.10	0.277	0.876
b.Aspergilus niger	12	10	11	12	10	11	12	11	10	0	11.00	0.258	0.816

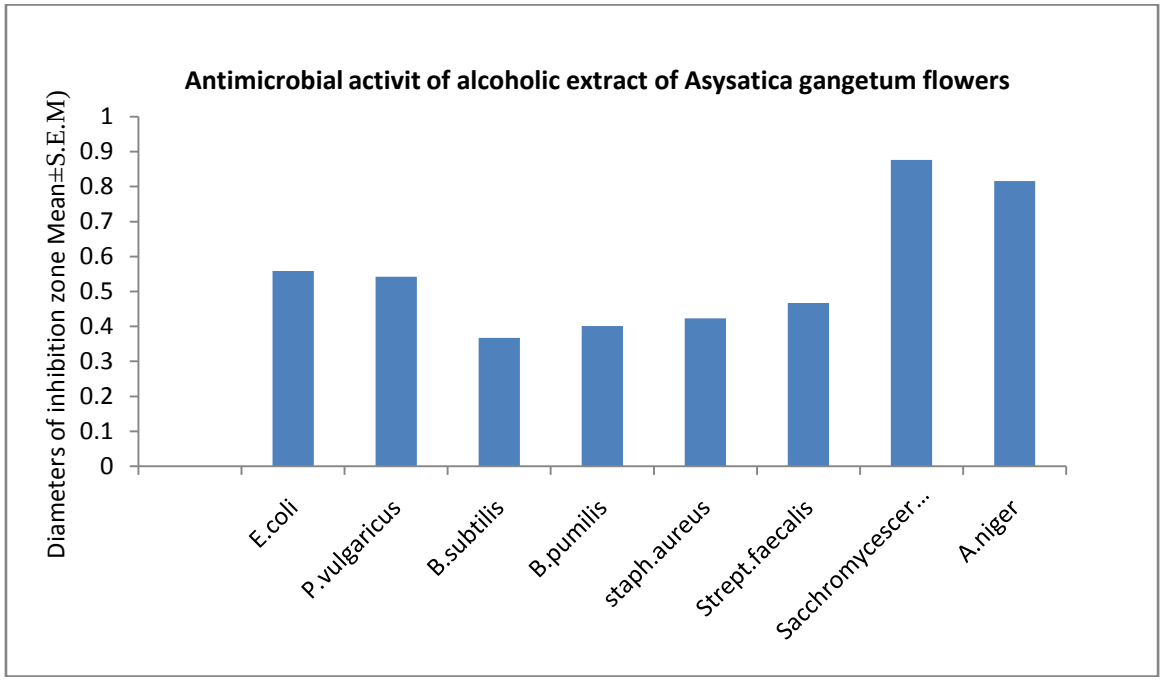

Fig: 2

TABLE 3: MINIMUM INHIBITORY CONCENTRATION (µG/ML) ASYSATICA GANGETICUM FLOWERS

Organism	Trial1	Trial2	*Trial*3	Trial4	Trial5	Trial6	MEAN	SEM	S.D
1 Gram negative Bacteria									
a. E.Coli	350	350	375	350	350	350	349.702333.	14.434	5.894
b. P.vulgaris	325	350	325	325	325	325	128	12.910	5.272
II Gram positive Bacteria									
a. B.subtilis	300	325	300	350	300	350	320.059	22.440	9.163
b. B.pumilis	375	350	350	375	350	350	358.142	12.910	5.272
c. Staph.aureus	275	275	275	250	250	275	270.666	10.206	4.167
d. Strep.faecalis	275	275	300	275	275	275	283.093	11.785	4.812
III Fungi									
a.Sacchromyces cerevisie	150	150	175	175	150	175	162.019	13.693	5.591
b.Aspergilus niger	175	175	200	150	200	175	178.324	17.183	7.016

VIII. Conclusion

Plantsare known to contain innumerable biologically active compounds which possess antimicrobial properties. Medicinal components from plants play an important role in conventional as well as western medicine. Plant derived medicines have been a part of the evolution of human healthcare for thousands of years. We can say for certain that the future discovery of novel therapeutic agents will only come from plants. Our dependence on plants and the knowledge of the use of plants for medicine will increase in the course of time. This increasing medicinal interest highlights the importance of proper conservation of the biodiversity and cultural diversity of the ecosystem in order to safeguard and perpetuate our interdependence of plants as a source of medicine.

From the results it was revealed that these selected three plants possessed antimicrobial activity. The present study will also promote the future investigation of locally active medicinal plants and capture the biological and cultural data of local people.

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