JOURNAL FOR INNOVATIVE DEVELOPMENT IN PHARMACEUTICAL AND TECHNICAL SCIENCE

Volume-2,Issue-5 (May-2019)
ISSN (O) :- 2581-6934

ANTI BACTERIAL ACTIVITY OF CURRY LEAVES AND EVALUTION OF PHYTOCHEMICAL CONSTITUENT

Ms. ALHAT VIDYA N [1] , Ms. DALVI APEKSHA M [2] , Ms. NILAKH SAYALI P [3] ,

Ms.Andhale Komal K[4] , Ms. BORADE AKSHADA S.[5]

[12345] Vishal Institute of pharmaceutical Education and Research Ale,Tal-junnar, Dist-pune (411412) Maharastra

Abstract :- Curry leaves is green leafy vegetable native to india. Curry leaves are natural flavoring agent with health benefits. They contain several medicinal properties include antimicrobial , anti-diabetic, antioxidant, anti-inflammatory , anti-carcinogenic, insecticidal ,fungicidal, lipolytic , diurectic , purgative, anti-dysenteric and with hepato-properties. The aim of this study to investigate antibacterial effect of curry leaves and physiochemical properties of curry leaves.

Curry leaves samples were obtained from india. The leaves were dried at room temperature then mechanical grinding to make curry leaves powder. This powder was used to prepare the ethanol and methanol extracts to test the antibacterial activity on gram positive and gram negative bacteria; disc diffusion method. The organism uniformly over on agar surface and exposed to a continuous concentration gradient of antibiotics diffusing from a paper disk. A Bacterium sensitive to the antibiotic is inhibited from growing in a circular zone around the paper disk. the lower the MIC of the organism , the larger the diameter of the zone. A comparison of the zone size with that produced in the parallel test with a control strain gives a measure of the MIC .

The curry leaves extract shows antibacterial activity inhibit against Bacillus subtillis, Bacillus coagulans ,Bacillus megatorium , Pseudomonus cepacia , Staphylococcus aureus, Escherichia coli etc . The clear zone inhibition in bacterial sample produced by curry leaf extract were comparable with antibiotics. Curry leaves extracts have demonstrated antibacterial effects particularly on E.coli and staphylococcus as compared to antibiotics. Curry leaves effective for prevention of bacterial infections and considered as an alternative to antibticio.

KEYWORDS : Murraya koenigii , bacteria , antimicrobial effects, Phytochemical constituent.

Introduction

Murray koenigii is an aromatic more or less deciduous shrub or a small tree upto 6m in height and 15-40cm in diameter.It commonly called as 'curry leaf plant' it locally known as 'karivepaku' belongs to family Rutaceae. {1}

It is tree growing throughout india upto an altitude of 1500m.It grows in Asian Countries.It is found almost in india subcontient.Thin smooth grey or brown bark and dense shady crown.leaves are bipinnately compound,15-30cm long each bearing 11-25leaflet alternate on rachis, 2.5-3.5cm long ovate lanceolate with an oblique base. Margins irregularly create,petioles 2-3mm long. {2}

They contain several medicinal properties such as anti-diabetic, antioxidant, antimicrobial, anti-fungal, anti-inflammatory, anti-carcinogenic and hepatoprotective properties. The plant contain various pharmacologyical activity on heart, cholestrol reducing property, antioxidant, antidiarrheal activity phagocytic activity. {3]

They contain various phytochemical constituent like alkaloid , glycoside , vitamins, proteins alkaloid , carbohydrate. (4)

The antibacterial screening the strain of various bacteria the organism incubate in nutrient agar. The plates are then maintain at room temperature for 2hr and allowed

for diffusion of the solution. The plates are then incubated at 25^{0}c for one week then zone inhibition is measured.[5]

Methodology

Preparationof plant extraction :

The collection leaves of m. koenigii were kept for slow drying in an oven for 48 hours at temp. of 60^{0}C.After drying,the leaves were powdered using a mechanical grinder and collected and stored in a cool and dry place .for extraction, cold extraction procedure 1g of powder plant material add 10 cm³ of methanol, ethanol, and n-hexane. these solvent were chosen for particular for extraction purposes. They were then placed for extraction in rotatary shaker for 27 hours at 35 rpm. After extraction the mixture were filtered through whatman filter paper. Filters were kept in a water bath at 80^{0}C for complete evaporation to dry pure extract.[6]

Preparation of culture :

Bacterial strains were used, namely-pseudomonas aeruginosa. The bacterial cultures were grown on Luria Bertani broth slant for 24 hours at 37^{0}C. [7]

Antimicrobial assay :

The disk diffusion is sensitivity test the organisms grow well overnight at 35-37^{0}C for most of the common pathogenic aerobic bacteria.20ml Meuller Hinton agar medium plates inverted and dry in 37^{0}C Incubated for 30 min. An overnight culture of bacteria was spread over agar plate using sterile glass spreader. Inoculated plates were inverted and incubated at 37^{0}C for further 30 min. 10µl of test extract placed on 6mm blank antimicrobial susceptibility discs. The impregnated disc were then placed onto inoculated surface of the agar plate. The agar plate incubated overnight at 37^{0}C and zone of bacterial inhibition were recorded using vernier calipers.[2,7]

Chemical and Reagent Details:

Methanol: THERMOSIL FINE CHEM INDUSTRIES. charholi (khurd),Tal- Khed, Dist- Pune.

Ethanol : Commercial Alcohols, Brampton , Ontario L6T 3Y4 .

Nutrient Agar : Himedia Laboratories Pvt. Ltd., Dindori , Nashik, India.

PHYTOCHEMICAL TEST:

Chemical test for organic constituents:

Test for carbohydrates:

Molisch's test

To 2-3 ml aqueous extract , add few drops of alpha-naphthol solution in alcohol , shake and add conc.H_2 SO_4 from sides of the test tube. violet ring is formed at the junction of two liquids.

Test for proteins :

Biuret test :

To 3ml test solution add 4% NaOH and few drops of 1% $CuSO_4$ solution. Violet colour appears.

Test for Glycoside :

Determine free sugar content of the extract. Hydrolysed the extract with mineral acid and again determine the total sugar content of the hydrolised presence of glycoside in the extract.

Test for Alkaloid:

Evaporate the aqueous, alcoholic, and chloroform extracts separately. To residue, add dilute HCL shake well and filter. With filterate, perform test.

Test for vitamins:

Test for vitamin A:

Dissolve a quantity equivalent to 10-15 units in 1ml chloroform and add 5ml of antimony trichloride solution , a transient blue colour is produced.[4,8]

Result and Discussion :

The extract of curry leaves were subjected for phytochemical analysis and antibacterial activity and result were investigated. The phytochemical screening of crude extract of leaf presence of alkaloid , carbohydrate , glycoside , protein and vitamins.

The results of antibacterial screening by Disk Diffusion Method if indicate high antibacterial activity.

The leaf extract showed the antibacterial activity against all the organism except the Lactobacillus which exhibited the greater microbial activity.

The standard antibiotics was effective against all organism and showed a zone of inhibition 22-25mm.

The result of the investigation showed that the leaf extract of murraya koenigii have good antibacterial activity due to presence of alkaloid, carbohydrate and glycoside .

ISSN:-2581-6934|www.jidps.com

Sr.no.	Name of phyto constituent	observation
1.	Alkaloid	++
2.	Glycoside	--
3.	Carbohydrate	++
4.	Amino acid	--
5.	Vitamins	++
6.	Proteins	++

Conclusion:

The plant Murray koenigii was collected from native to India and Southest Asian region. Dry the leaves of Murray konini mechanical grinding to maceration process by using ethanol solvent. Then photochemical investigation was done.

The work states the presence of alkaloid , carbohydrate , glycoside and protein in the extract of murrayer koenigii which were responsible for its antimicrobial activity . These extract exhibit the maximum zone of inhibition against bacteria. It is interesting to observe the result of high antibacterial effect.

This study gives the way for further attention and research to identify the active compound responsible for plant biological activity. further research needs the phytochemical could be useful to treat other diseases.

Acknowledgement:

The author are thankful acknowledge to Dr.Dhobale S.M..Head of the Pharmaceutics Department Vishal Institute of Pharmaceutical Education and Research ,Ale,Pune. For constant motivation and Encouragement. We would like to thank our Principle Dr.Jadhav S.L. for providing us suitable environment.

References:

1.Mhaskar KS , Blatter E , Caius JF. Kirtikar and Basu's Illustrated Indian Medicinal Plants XI.3rd Edn. Indian Medical Science Series # 86-96.Delhi, India,2000,I.

2. Dr.S.S.Khadabadi,Dr.S.L.Deore, Dr.B.A.Baviskar , Experimental pharmacognosy and phytochemistry,by Nirali prakashan,page no.621.

3.Bhandari PR. Curry leaf (Murraya koenigii) or cure leaf: Review of its curative properties. J. Med.Nutr.Nutraceut,2012; 1: 92-97.

4. pharmacognosy practical experimental technique , Nirali Publication by Dr. Khandelwal and Dr. Vrunda Sethi page no – 25.1-25.6.

5. Dr. Pulok K. Mukherjee quality control herbal drugs, business horizons publication, Fourth edition,2010,Page no.601-605

6.Collee J.G. Miles R.S. Watt B. Tests for identification of bacteria. In : Collee J. G., Fraser A.G., Marmion B.P., Simmons A. (editors): Mackie and McCartney Practical Medical Microbiology, 14th edition. Churchill Livingstone, New York, 1996; 131-49.

7. Mohar Singh Argal, Sanjay Kumar, Hotam Singh Choudhary ,Ravindra MThakka Santosh K Verma, Chandrabham Seniya. The efficacy of Murraya Koenigii leaf extract on some bacterial and fungal strain by disk diffusion method. J.Chem. Pharm. Res.,2011;3{5}:697-704.

8. Biren Shah, A.K.Seth, textbook of pharmacognosy and phytochemistry,by Elsevier,second edition,2014,page no.367.

9. Prajapati ND , Purohit SS, Sharma AK, Kumar TA. Book of Medicinal plants, 1st edition India: Agrobias India , 2003.

10. Muthumani P,Venkatraman S, Ramseshu KV, Meera R, Devi P, Kameswari B et al. Pharmacological studies of anticancer, anti-inflamatory activities of Murray Koeniggi (Linn) Spreng in experimental animals. J Pharm sci and Res. 2009; 1(3):137-141.