Available online at www.derpharmachemica.com

Scholars Research Library

Der Pharma Chemica, 2013, 5(1):270-272
(http://derpharmachemica.com/archive.html)

ISSN 0975-413X
CODEN (USA): PCHHAX

Evaluation of antimicrobial activities of polar and non polar flavanoids from leaves of *Ocimum tenuiflorum*

Prasanna S Pande

Department of Chemistry, Shankarlal Khandelwal Arts, Science And Commerce College, Akola (M.S.)

ABSTRACT

Polar flavanoids and non polar flavanoids have been isolated from the leaves of Ocimum tenuiflorum by chemical method. The isolated extract was screened for antimicrobial activities against Proteus vulgaris, Staphylococcus aureus, Escherichia coli and Salmonella typhi. The extracts showed good to moderate activity against the pathogens.

Keywords : Ocimum tenuiflorum, Polar flavanoids, non polar flavanoids antimicrobial

---

INTRODUCTION

Tulsi extracts have been extensively used in ayurvedic preparations for treatment of common colds, headaches, inflammation, and fever. Its importance is also mentioned in the Charaka Samhita[1]. *Tulsi* is considered to be an adaptogen,[2] balancing different processes in the body, and helpful for adapting to stress. Tulsi extracts are being used in herbal cosmetics, and is widely used in skin preparations due to its antibacterial activity. Tulsi has high concentration of eugenol[3] and hence may be a COX-2 inhibitor, like many modern painkillers. Study shows it reduces blood glucose levels in type 2 diabetics when combined with hypoglycemic drugs[4]. Literature survey reveals that Tulsi possesses diverse biological activities.

In the present study Polar flavanoids and non polar flavanoids have been isolated from the leaves of Ocimum tenuiflorum by chemical method[5]. The isolated extract was screened for antimicrobial activities against Proteus vulgaris, Staphylococcus aureus, Escherichia coli and Salmonella typhi. The extracts showed good to moderate activity against the pathogens.

MATERIALS AND METHODS

1. Tulsi leaves were collected , dried in shade and preserved in sealed container.
2. Test organism Proteus vulgaris, Staphylococcus aureus, Escherichia coli and Salmonella typhi were obtained from Department of Microbiology, Shankarlal Khandelwal Arts, Science and Commerce college, Akola

Polar flavanoids and non polar flavanoids were isolated by chemical method.

A) Extraction of Polar flavanoids :- 05 g of dried leaves were boiled in 100% methanol for 5 min. The solvent was evaporated in water bath at 40^0C. Then residue was collected and small amount of petroleum ether was added. Green layer of ether was discarded . The process was repeated until the extract with no green layer was obtained. The residue was dried and used for antimicrobial activities test.

B) Extraction of Non Polar flavanoids :- 05 g of dried leaves were taken in soxhlet apparatus and extraction was done by n-hexane. The extract so obtained was collected and evaporated up to dryness and used for antimicrobial activities test.

Antimicrobial screening

1) Nutrient agar: Nutrient Agar was used as the medium for the growth of culture.

Composition of Nutrient Agar.

Sodium chloride	(5 g/lit)
Beef extract	(1.5 g/lit)
Yeast extact	(1.5 g/lit)
Agar powder	(1.5 g/lit)
$_P$H	7.4 $\pm$ 0.2

Medium was prepared by dissolving the ingredients in distilled water followed by sterilization at 121^0C temperature & 15 lbs/inch^2 pressures for 25 min in an autoclave. After autoclaving, medium was allowed to cool to about 50^0C (as solidification starts at 45 ± 2^0C) poured carefully into sterile petridishes and allowed to solidify.

2)Nutrient Broth :

Nutrient Broth was used for determination of minimum inhibitory concentration (MIC) values of test compounds against various microbes by broth microdilution method.

Composition of Nutrient Broth

Sodium chloride	-	5.0 g/lit
Peptone	-	5.0 g/lit
Beef extract	-	1.5 g/lit
Yeast extract	-	1.5 g/lit
$_P$H	-	7.4 $\pm$ 0.2

The ingredients were dissolved in appropriate quantity of distilled water, mixed thoroughly and distributed 0.5 ml volumes each in glass test tubes (12 x 75 mm). All the tubes were plugged with cotton and sterilized in autoclave for 15-20 min at 125^0C (15 lbs/inch^2 pressure). After sterilization tubes were cooled to room temperature.

Microbial cultures were obtained from Department of Microbiology , Shankarlal Khandelwal College, Akola.

Preparation of the inoculum:

Stock inoculum of the microbes was prepared by the inoculation the 50 ml nutrient both with test organisms and incubating it at 37 ± 2^0C for 24 hrs.

Preparation of the stock solution extracted polar flavanoids and non polar flavanoids

The dried extract of polar flavanoids was dissolved in distilled water and dilutions were made as 100mg/ml and 500mg/ml and 1000mg/ml. Same procedure was adopted for polar flavanoids

Antimicrobial study by cup plate method

Cup plate method :- The sterilized nutrient agar medium was poured into the petridishes and allowed to solidify. The lawn of the culture was prepared by spreading the microbial suspension on the surface of the medium with the help of sterilized triangular loop. Petridishes were allowed to remain for 10 min, after which excess of nutrient broth cultures were taken out aseptically using pasture pipettes. Standard 8 mm size cups were then prepared in the solidified medium with the help of pre-sterilized steel cylinder of 8 mm diameter. The wells were then filled with the 0.5 ml stock solution of the test samples.

RESULTS AND DISCUSSION

The zone of inhibitions is recorded in the following table. The zones are recorded including the well diameter of 8 mm.

Antimicrobial activity of polar flavanoides

Conc.	Proteus vulgaris	S. Aurius	E.coli	Salmonella typhi
100mg/ml	16mm	17mm	16mm	18mm
500mg/ml	19mm	18mm	19mm	19mm
1000mg/ml	21mm	18mm	20mm	20mm

Antimicrobial activity of non-polar flavanoides

Conc.	Proteus vulgaris	S. Aurius	E.coli	Salmonella typhi
100mg/ml	16mm	16mm	16mm	17mm
500mg/ml	18mm	17mm	18mm	18mm
1000mg/ml	19mm	18mm	16mm	19mm

The extracts showed good to moderate activity against the pathogens.

Acknowledgment
The author is thankful to the Management & the Principal of Shankarlal Khandelwal college Akola for providing necessary facilities and the Head, Department of Microbiology for providing the microbial culture.

REFERENCES

[1] National Institute of Industrial Research (India) (**2004**). *Compendium of Medicinal Plants*. **2004**. National Institute of Industrial Research. p. 320.
[2] Kuhn, Merrily; David Winston (**2007**). *Winston & Kuhn's Herbal Therapy & Supplements: A Scientific and Traditional Approach*. Lippincott Williams & Wilkins. p. 260.
[3] Prakash, P.; Gupta, N. (**2005**), *Indian Journal of Physiology and Pharmacology* **49** (2): 125–131.
[4] Rai, V.; Mani, U.V.; Iyer, U.M. (**1997**) ,*Journal of Nutritional and Environmental Medicine* **7** (2): 113–118.
[5] Wagner H. Bladtst (Edition) Plant drug analysis, A thin layer chromatography Atlas Spinger –Verlag Berlin. Heidelberg Germany ,**1994**.