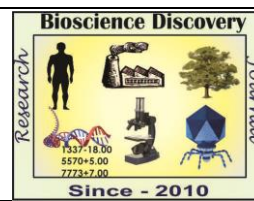


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**Research Article**



## Antimicrobial activity of *Ocimum sanctum* and *Jasmine officinalae* on selected bacteria

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### Abstract

Petroleum ether extract of *Ocimum sanctum* and *Jasmine officinalae* were screened for their antimicrobial activity by agar diffusion method and compared with standard antibiotic ampicillin. The antimicrobial activity of extract were studied against gram negative and positive bacteria viz *Escherichia coli* *Bacillus subtilis* *Pseudomonas aeruginosa* and *Staphylococcus aureus* as a test organism. Petroleum ether extract of *Ocimum sanctum* was effective against all four test organism. Jasmin extract also have inhibited all test organisms except *staphylococcus aureus*.

## INTRODUCTION

Medicinal plants have immense importance in ayurveda. It is used to treat various diseases. Plant extracts have been used for different purposes for several thousands of years. Antibacterial screening of medicinal plants offers clue to develop newer drugs (Ali *et al.*, 2017) Pathogenic microorganism develop resistance against antibiotics used in the modern medical science so there is growing attention towards medicinal plants as a source of new antimicrobial drug discoveries (Rathnayaka, 2013)

*Ocimum sanctum* L. is a grassy annual plant which is originated from Iran, Afghanistan and India. It belongs to order Lamiales and family Lamiaceae. *Ocimum sanctum* has antimicrobial, antioxidant, antiviral properties (Pingale *et al.* 2012). It is also used as cardio protective, renal damage recovery and wound healing (Asha *et al.*, 2011)

Jasmin officinale which is well known as chameli is evergreen shrub cultivated in the plains

and on the hills specially in Kashmir, Afghanistan, Parisia, China, India and Japan. (Sandeep *et al.*, 2009; Wealth of India 2004). It belongs to order Lamiales and family Oleaceae. Leaves of Jasmin are very useful in odontalgia, fixing loose teeth, skin diseases, leprosy, ulcers, wounds, ring worms, wounds and corns (Kulkarni *et al.*, 2004, Padmaa M Paarakh *et al.*, 2009) Present investigation was aimed at evaluation of antimicrobial potential of aforementioned herbs

## MATERIAL AND METHODS:

**Sample collection:** The leaves of *Ocimum sanctum* and *Jasmin officinalae* were collected from the field of Selu tq. Selu dist. Parbhani. The leaves were collected to be healthy and free from any deformities. The collected leaves were brought to laboratory for further processing. The leaves were cut into small pieces by sharp cutter and shaded dried for 4-5 days. The plant material the blended into powder using mixture blender in air tight container at the moisture free place.

**Sample extraction:**

The green powder of leaves was placed in soxhlet apparatus flask for extraction. Petroleum ether is used as solvent for extraction. Three cycles of extraction for 3, 2 and 2 hours were carried out in soxhlet apparatus. At the end of extraction process the flask containing extract was removed and condensed at 34-40°C overnight in water bath. The extract was stored at 4°C (Pathak *et al.*, 2012).

**Antibacterial activity:**

The antibacterial activity of plant extract was determined by using agar well diffusion method. Active culture of *Escherichia coli*, *Bacillus subtilis*, *Pseudomonas* and *Staphylococcus aureus* were spread on sterile nutrient agar plates by using sterile spreader. Each plate has been equally divided into two parts then by using 6mm diameter sterile cork borer two wells were prepared in each plate. 30 microliter of extract of *Ocimum sanctum* and *Jasminum officinale* were added separately in each well and as positive control ampicillin (1mg/ml stock) is used. These plates were incubated at 37°C for 24 hr. After incubation clear zone of inhibition was observed and diameter of zone was measured.

**RESULTS AND DISCUSSION****Sample collection:**

Leaves were successfully collected in month of Feb 2018 when plant was in blossom condition. Dried green fine powder of same was used for further studies.

**Extraction:** 20ml pale yellow colored extract was recovered using 50gm dried powder and Petroleum ether to assess its antimicrobial properties.

**Antimicrobial activity of plant extract:**

*O. sanctum* extract showed remarkable zone of inhibition against all test organism *J. officinale* showed considerable zone of inhibition against *Bacillus subtilis*, *Pseudomonas aeruginosa* and

*Escherichia coli*. Diameter of zone of inhibition are given in table 1.

The agar diffusion method is the basic technique used to check antibacterial activity of plant extract this requires very less quantity of plant extract and is very easy to implement therefore we used this method. Our results have strongly supported bacteriostatic activity of *Ocimum sanctum* and *Jasminum officinale* extract against *Escherichia coli*, *Bacillus subtilis*, *Pseudomonas* and *Staphylococcus aureus*. (Table No.-1) These results are broadly similar to those of studies based on well diffusion or disk diffusion method.

Bishu Joshi *et al* 2009, M. Sonia *et al* 2013, Naik *et al* 2015 have reported bacteriostatic activity of *O. sanctum* using Methanol, hexane, acetone and aqueous extract. Sandeep *et al* 2009 and Ali *et al* 2017 have reported bacteriostatic activity of *J. officinale* by using Methanol, Petroleum ether, chloroform, acetone and aqueous extract.

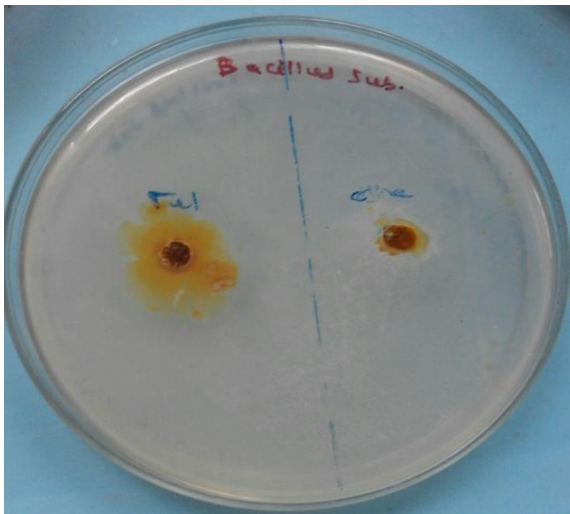
In our studies we have first time reported remarkable zone of inhibition with petroleum ether extract of *O. sanctum*.

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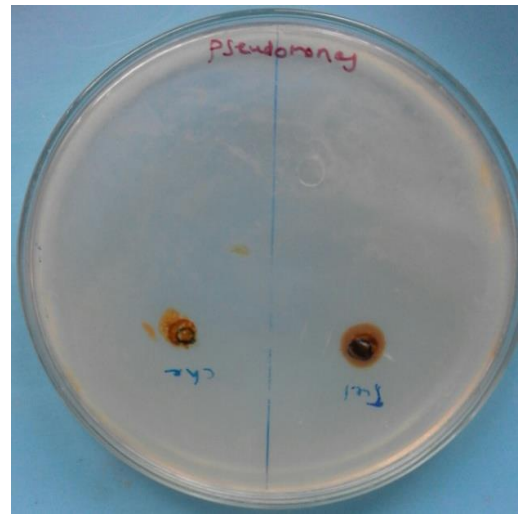
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**Table 1: Results obtained are compared with antibiotic viz ampicillin**

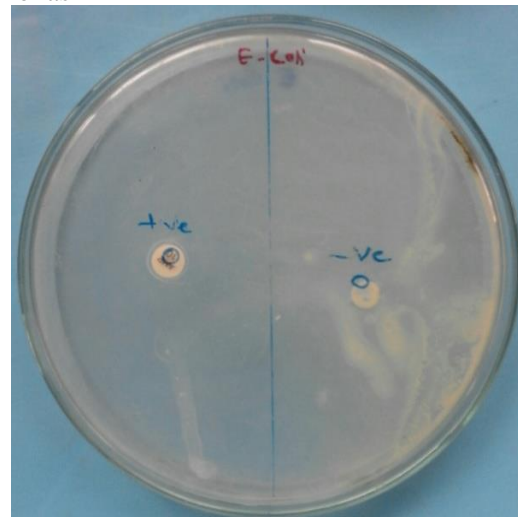
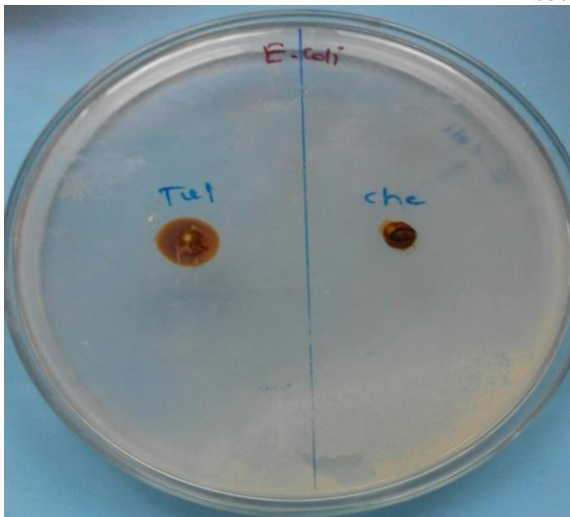
Sr.no.	Microorganisms	<i>Ocimum sanctum</i> (mm)	<i>Jasminum officinale</i> (mm)	Ampicillin (+ve control)(mm)
1	<i>Escherichia coli</i>	7	4	3
2	<i>Bacillus subtilis</i>	11	2	4
3	<i>Pseudomonas</i>	10	3	5
4	<i>Staphylococcus aureus</i>	5	-	3



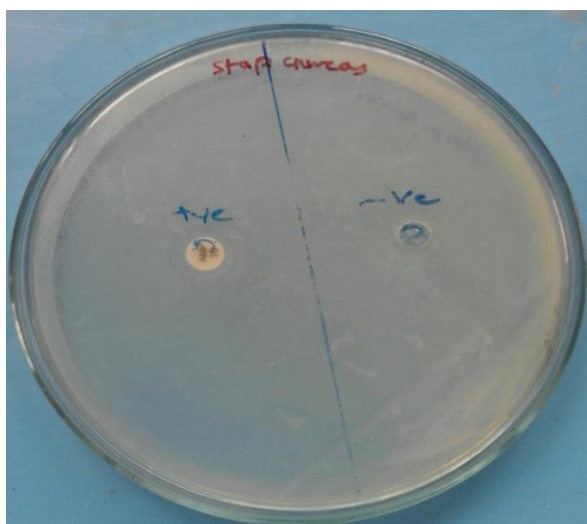
*Bacillus subtilis*



*Pseudomonas*



*Escherichia coli*



*Staphylococcus aureus*

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