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ANTIBACTERIAL ACTIVITY OF SELECTED PLANTS IN DIFFERENT SOLVENT FROM AKOT TEHSIL OF AKOLA DISTRICT AGAINST *Escherichia coli.*

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Abstract -

Since from ancient times, one of the most significant sources of medicines has been plants. Herbal medicine is becoming more and more important every day. The antibacterial activity of crude leaf extracts of *Boswellia serrata, Gardenia latifolia, Woodfordia fruticosa* and *Wrightia tinctoria* also fruit of *Gardenia latifolia* in four distinct solvents dist. water, ethanol, acetone, and petroleum ether is examined. *Boswellia serrata, Gardenia latifolia, Woodfordia fruticosa* and *Wrightia tinctoria* dry leaf extracts were tested against *Escherichia coli*. *Boswellia serrata, Gardenia latifolia, Woodfordia fruticosa* and *Wrightia tinctoria* leaf extracts have antibacterial activity against *Escherichia coli* when extracted in Acetone, Petroleum ether and Ethanol. There is no antibacterial activity observed in Dist. water. These findings demonstrate that a wealth of primary and secondary metabolites with antibacterial action found in leaves also in fruits of *Gardenia latifolia*.

Introduction -

Humans have been using plants as medicines since ancient times to treat a wide range of illnesses, and these uses have been quite effective. people have been inspecting the plants in search of novel drugs which has resulted in the use of numerous medicinal plants for the cure of various diseases (Verpoorte, 1998). According to World Health Organization (WHO, 2008) 80% populations living in the developing countries rely exclusively on traditional medicine for their primary health care needs of which most involve the use of plant extracts (Sandhya et al., 2006).

Plant antimicrobials provide a potential remedy for the biological warfare risk (Gibbons, 2008). In this new era of chemotherapeutic infection healing through the use of plant-derived principles and on the development of new anti-infective agents, attention to the detection of novel plant antimicrobials must be given (Cowan, 1999). Herbal remedies can be utilized in addition to conventional medical systems to treat bacterial illnesses (Archana and Abraham, 2011). As potential modulators of bacterial resistance, efforts are really being made to find and extract secondary metabolites from plants (Stavri et al., 2007).

Warm-blooded animals and humans frequently harbor the bacteria *Escherichia coli*, sometimes known as *E. coli.* Most *E. Coli* strains are not harmful. Still, some strains, like *E. Coli* that produces Shiga toxin (STEC), have the potential to cause serious foodborne illnesses. The main way that it spreads to people is via eating infected foods, which includes raw or undercooked ground beef products, raw milk, and contaminated raw sprouts and vegetables.

2. Materials and Methods

2.1 Collection and extraction of plant material:

Boswellia serrata, Gardenia latifolia, Woodfordia fruticosa and *Wrightia tinctoria* plants was identified by using the flora of Amravati district with special reference to the distribution of tree species (Dhore, 1986). Akot Tehsil in Akola District (M.S.) from the road side at Popatkhed, Shahanoor, Khatkali was the source of the fresh and matured leaves of Boswellia serrata, Gardenia latifolia, Woodfordia fruticosa, and Wrightia tinctoria, as well as the fruits of the latter. To get rid of dust and other pollutants from the leaves, running tap water was used to wash the fruits and leaves, and then distilled water was used. After being shade-dried for seven days, the leaves were finely ground, stored, and ready for use.

Boswellia serrata

Gardenia latifolia

Woodfordia fruticosa

Wrightia tinctoria

2.2 Preparation of plant extract for Phytochemical Analysis:

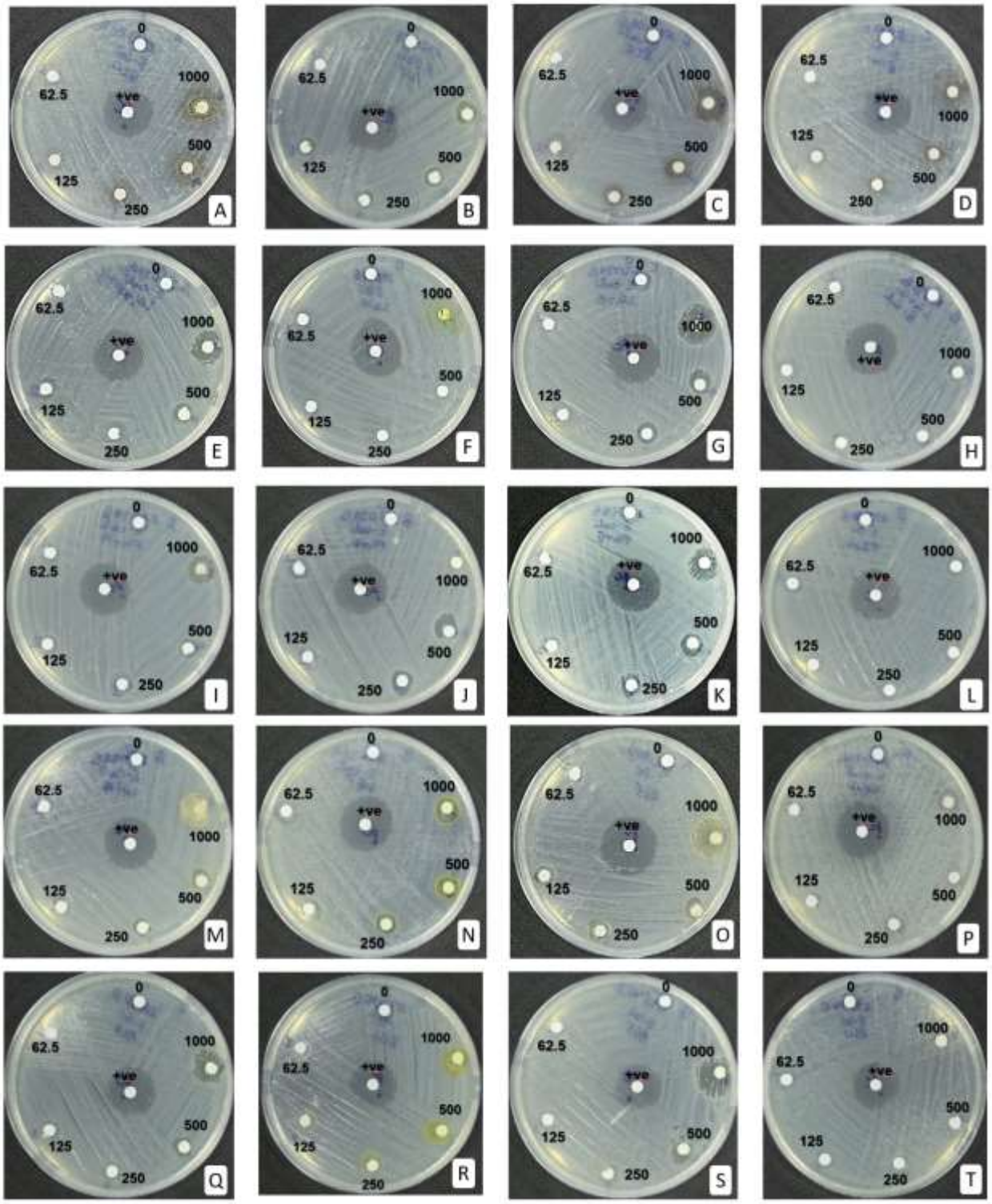
Boswellia serrata, *Gardenia latifolia*, *Woodfordia fruticosa*, and *Wrightia tinctoria* leaf extracts were produced in acetone, petroleum ether, and ethanol using a Soxhlet extractor. Aqueous extract was made by boiling the powdered leaves in a solution. After 30 minutes at 50 to 60 º C, pass the water through Whatman No. 01 filter paper. Following the extraction of every component, the solvent is evaporated to get the concentrated extract, which is then stored for later use.

2.3 Antibacterial Activity for *E. Coli*

The Antibacterial activity was checked by following Zone Inhibition Method (Kirby-Bauer method). The MHA plates were inoculated by spreading with 100 µl of Bacterial culture, *E. coli* (adjusted to 0.5 McFarland Unit - Approx cell density (1.5 X 10^8 CFU/mL) and followed by placing the discs containing 10 µl of different concentration (0 to 100 mg/ml). 10 % of the sample was taken and serially diluted to achieve the required amount to be loaded on the disc. One disc in each plate was loaded with solvent alone which served as vehicle control and Ciprofloxacin disc (10µg) were taken as positive control. The plates of *E. coli* were incubated at 37 °C for 24 hrs. A clear zone created around the disc were measured and recorded.

Result and Discussion: The Observations of Antibacterial activity of *Boswellia serrata, Gardenia latifolia, Woodfordia fruticosa,* and *Wrightia tinctoria* against test organism *E. coli* are shown as following table -

Plant Name	Amount (µg/disk) → / Solvents ↓	Zone of Inhibition (mm)							Photo Plates
		P.C.	0	50	125	250	500	1000	
Boswellia serrata (Leaves)	Acetone	18	0	0	0	6	6	10	**A**
	Petroleum Ether	18	0	10	10	7	8	13	**B**
	Ethanol	18	0	0	6	7	8	13	**C**
	Dist. Water	18	0	0	0	0	0	0	**D**
Gardenia latifolia (Leaves)	Acetone	19	0	0	0	5	8	10	**E**
	Petroleum Ether	18	0	0	0	0	0	0	**F**
	Ethanol	19	0	0	0	8	9	10	**G**
	Dist. Water	20	0	0	0	0	0	0	**H**
Gardenia latifolia (Fruits)	Acetone	19	0	0	0	0	6	9	**I**
	Petroleum Ether	19	0	7	7	5	7	0	**J**
	Ethanol	18	0	0	0	0	8	14	**K**
	Dist. Water	18	0	0	0	0	0	0	**L**
Woodfordia fruticosa (Leaves)	Acetone	19	0	0	0	6	5	6	**M**
	Petroleum Ether	20	0	0	4	8	9	10	**N**
	Ethanol	20	0	0	6	7	8	11	**O**
	Dist. Water	18	0	0	0	0	0	0	**P**
Wrightia tinctoria (Leaves)	Acetone	18	0	0	0	0	6	9	**Q**
	Petroleum Ether	17	0	0	0	0	0	0	**R**
	Ethanol	18	0	0	0	5	8	10	**S**
	Dist. Water	15	0	0	0	0	0	0	**T**



Conclusion: The antibacterial activity of leaf extracts from *Boswellia serrata, Gardenia latifolia, Woodfordia fruticosa*, and *Wrightia tinctoria* in various solvents leads to the conclusion that these plants' leaves exhibit antibacterial activity against *Escherichia coli* in acetone, petroleum ether, and ethanol extracts. At increasing concentrations, the ethanolic, acetone, and petroleum ether extracts have the strongest antibacterial activity; the zone of inhibition also grows in size with concentration, and the aqueous extract dosage does not exhibit any antibacterial activity. It was determined that plant extracts are the only source of the aforementioned zone of

inhibitions as no zone of inhibition was seen at zero concentration, indicating that the solvent dosage alone does not exhibit antibacterial action.

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