

ANTIBACTERIAL ACTIVITY OF TERMINALIA ARJUNA (COMBRETACEAE)

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Abstract: In recent years, multiple drug resistance in both human and plant pathogens has been developed due to indiscriminate use of synthetic drugs especially in developing countries .thus, a diverse arsenal of new antibacterial agents is urgently needed to combat the diminishing efficacy of existing antibiotics.

Terminalia arjuna is a tree of combretaceae family .the plant parts extracts in 70% methanol were tested against multidrug resistance strain E coli and S. aureus. arjunic acid arjungenin are some compounds of Terminalia arjuna are reported as antimicrobial compounds .100% concentration extract of *Terminalia arjuna* show the strong inhibition zones against S aureus i.e. 7mm,9mm,7mm,by leaves , bark and fruits extract respectively

Index terms-*Terminalia arjuna*, antimicrobial, zone of inhibition. Methanol.

INTRODUCTION-

In India ,medicinal plants from the backbone of several indigenous traditional systems of medicine .pharmacological studies have acknowledged the value of medicinal plants(Prusti et al 2008).nature has been a source of medicinal agents for thousands of years and an impressive number of modern drugs have been isolated from natural sources ,many of which based on their use in traditional medicine.it has been noted that the original source of many important pharmaceuticals currently in use have been plants used by indigenous people (Balick et al)herbal medicine or phytomedicine refers to the use of any plant seeds ,berries ,roots, leaves, bark or flowers for medicinal propose (barrette et al, 1999)

In order to promote the use of medicinal plants as potential sources of antimicrobial compounds, it is pertinent to thoroughly investigate their composition and activity and thus validate their use. Some phytochemicals produced by plants have antimicrobial activity allowing these plants to be studied and used for the development of new antimicrobial drugs.

Recent bans and restrictions on the use of animal antibiotic growth promoters stimulated interest in bioactive secondary metabolites of plant source as alternative performances enhancers

Material and methods

Selection of plant material-

In the present work terminalia arjuna which is the plant of family combretaceae was selected based on ethno medicinal importance screened for potential antibacterial activity .healthy leaves ,bark, and fruits of the above medicinal plant were collected in and around Amravati and were used for the preparation of solvent extracts. Fresh plant parts of terminalia arjuna were collected from the university campus area in the month of February

Preparation of extract-

Preparation of the methanol extract-

10 gm. of each material was weighted accurately and placed in soxhlet extraction chamber which was suspended above the flask containing 150 ml of 80% methanol.

Source of microorganism-

Authentic culture of human pathogenic bacteria viz .Escherichia coli (MTCC 7410) and staphylococcus aureus (MTCC 7443) were obtained from microbial type culture collection .Chandigarh, India and they served as test organism.

Result and discussion

In vitro preliminary screening of the antibacterial activity of the plant extract from *Terminalia arjuna* was studied against two microorganisms using filter paper disc diffusion method.

Methanolic extract of plant generally possess terpenes and phenolic which are reported by different workers as antimicrobial compounds (Duvised, 2007; Sanchez N R et al, 2005 BEGUM el al .2001)

The antimicrobial effect of plant extract against the E.coli and S. aurius are illustrated in table below.

As indicated in the table the 100% concentration of extract of T.arjuna show the strong inhibition zones against s.aureus i.e.7mm,9mm,and 7mmby leaves ,bark and fruit extract respectively.

Sr. No.	Plant Name	Plant Part (100% Cons.)	Bacterial Strain		Standard Ampicillin	
			<i>E Coli</i>	<i>S aureus</i>	<i>E Coli</i>	<i>S aureus</i>
1		Leaves	7mm	7mm	17	10
2	T. arjuna	Bark	7mm	9mm	17	14
3		Fruit	10mm	7mm	16	16

Table Shows – Antimicrobial activity of T arjuna 100% conc.



Fig. 2 Terminalia arjuna Tree at University Campus

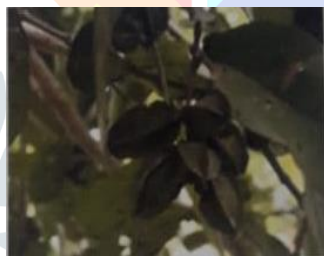


Fig. 2 Terminalia arjuna Fruit



Fig. 3 Terminalia arjuna Bark



Fig. 4 Terminalia arjuna Leaves

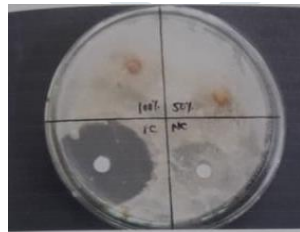


Fig. 5 Terminalia arjuna Bark S aureus

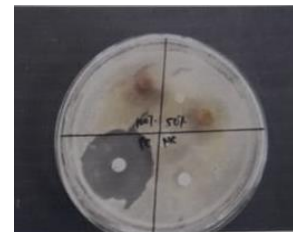


Fig. 6 Terminalia arjuna Fruit E coli

Photograph showing the zone of inhibition of terminalia extract against E coli and S aureus

Conclusion

The present study revealed that whole extract can be used for the protection against gram positive and gram negative bacteria .however further studies on the extract are needed to pinpoint the finding .the strong bacterial potential among the T. arjuna bark (9mm ZOI) might be because of active principle present in it.

ACKNOWLEDGMENT

My Sincere Thanks To Dr. N. H. Shahare Head Dept of Botany Biyani Science College Amravati, Dr G.C. Kamble Head Dept of Botany Shri R.R. Lahoti Csience College Morshi Dr R.S Dhande,

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