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ANTIFUNGAL ACTIVITY OF STEM OF VITEX NEGUNDO LINN

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ABSTRACT

Vitex negundo L. (Verbenaceae) is a large aromatic shrub around 4-5 meters in heights, growing in drier parts of India. In India, it is distributed in Kerala, Tamilnadu, and Goa. It is frequently available in North Karnataka i.e. Belgavi, Dharwad, Gadag, Bellary, Bijapur. During month of January. The plant V.negundoWas collected from Gokak taluk, Belgavi district, Karnataka, India. The plant V.negundo is known to exhibit many dynamic biological and pharmacological activities particularly the stem of this plant are being used for antifungal drug. The antifungal activity of the extracts of V.negundo was studied in comparison with that of standard antifungal drug, Ciclopirox olamine, by cup-plate method.

Keywords: Crude extract of stem of Vitex negundo, Anti-fungal activity and Method of testing anti-fungal activity by cup-plate method.

INTRODUCTION

Plants are known to produce a variety of compounds which have evolved as defense compounds against microbes' and herbivores .The elaboration on the biochemically active ingredients and the medicinal properties of *V.negundo* elicits queries on the effect of the plant extracts on other biological organisms. *V.negundo* has shown promise as an effective bio-control agent [1-3].

Fig 1. *Vitex negundo*

V.negundo is an erect shrub or small tree growing from 2 to 8 m (6.6 to 26.2ft) in height. The bark is reddish-brown, leaves especially useful in rheumatism, seeds used as vermicide. The plant is used as a diuretic, antifungal, febrifuge, anti-inflammatory and laxative. Roots are used for leprosy, dyspepsia and piles. Flowers are used in cholera. Fruit used as anthelmintic. The anti fungal activity of some isolated principles from plant extracts may be more effective than some commercial synthetic fungicides. This plant is also proved for its cardio protective property. It is also used to control population of mosquitoes. In the USA, hardiness zone 6–9, its purple flowers bloom most of the summer and it is a popular plant visited by bees and butterflies [4-7].

Fig 2. *Vitex negundo*

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Taxonomic classification
Kingdom: plantae

Sub-kingdom: Tracheobionta
Division: magnoliophyta
Sub-class: magnoliophyta
Order: Lamiales
Family: Lamiaceae
Genus: Vitex
Species: negundo

Fig 3. *Vitex negundo*

Botanical Name- Vitex Negundo Linn.
Family- Verbinaceae (Nirgundi Kula)
Hindi Name- Sambhalu, mewri, Nisinda, Sawbhalu
Telugu Name- indhuvara; Vavili; Nalla-vavili; Tella-vavili, Lekkali
TamilName- hinduvaram; Nirnochchi; Nochchi; Notchi; Vellai-nochchi
BengaliName- Nirgundi; Nishinda; Samalu
English – Five Leaved Chaste
Filipino – Lagundi
Assamese – Pochotia
Chinese name – Huang jing
Kannada name – Bile-nekki, Lakki soppu, Lakki gida, Lekki gida
Punjabi name – Banna; Marwan; Maura; Mawa; Swanjan Torbanna [8, 9]

MATERIALS AND METHODS

1. Potato dextrose agar
2. Micropipette
3. Sterilized petridishes
4. Potato dextrose broth (48 hours old)
5. Tuberculin syringes with needles
6. Sterile test tubes for preparation of solutions of the test compounds in desired concentration.

Sterilization of media and glassware's

The media used in the present study, nutrient agar and nutrient broth, were sterilized in conical flasks of suitable capacity by autoclaving at 15 Ibs pressure for about 20 min as shown in below fig.3 . The cork borer, petridishes, test tubes and pipettes were sterilized in hot air oven at 160^{o}c for an hour [10].

Preparation of solution of test compounds

The suspension of each extract (500g) in Tween-80 is dissolved in distilled water (10ml) in suitably labeled sterile test tubes separately, to get the solution of the extract of 50mg/ml concentration [11].

Preparation of media

Potato dextrose agar was prepared by dissolving of potato dextrose (20gm) agar in distilled water (500ml), the P^{H} of the solution was adjusted to 5.6 and then sterilized for 15min at 121^{o}c at 15 Ibs pressure in autoclave.

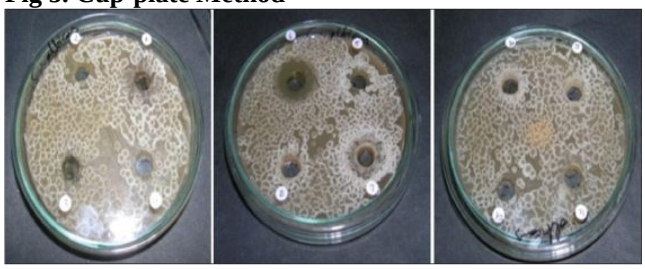
Preparation of sub-culture

Two days prior to the experiment, the microorganism were inoculated into sterilized potato dextrose broth tubes and incubated at 25^{o}c for 48 hours [12].

METHOD OF TESTING: CUP-PLATE METHOD

This method depends on the diffusion of an antifungal agent from a cavity through the solidified agar layer in a petridish to an extent such that the growth of added microrganism is prevented entirely in a circular area or zone around the cavity containing a solution of antifungal agent.

Fig 5. Cup-plate Method



A previously liquefied medium was inoculated appropriate to the assay with the requisite quantity of the suspension of the microorganisms between 40-50^{o}c and the inoculated medium was poured into petridishes to give a depth of 3 to 4mm.Ensured that the layers of medium were uniform in thickness by placing the dishes on a leveled surface.

The dishes thus prepared were stored in a manner so as to ensure that no significant growth of death of test organism occurs before the dishes were used and the surface or the agar layer was dry at the time of use with the help of a sterile cork borer, three cups of each 6mm diameter were punched and scooped out the set agar in each petridish (three cups were numbered for the particular

compound and the standard) using sterile pipettes, the standard and the sample solution (0.1ml) of known concentrations were fed into the bored cups.

The dishes were left standing for 2 hours at room temperature as a period of pre-incubation diffusion to recorded in the table. Each zone of inhibition recorded was average of three measurements.

minimize the effects of variation in time among the application of different solutions. These were then incubated for three days at 25^{o}c.The zone of inhibition developed, if any, was then accurately measured and

The data of antifungal activity of standard and the extracts of *Vitex negundo Linn* is given Table 1.

Table 1. Antibacterial and antifungal activity of *Vitex negundo*

Compound	Antibacterial activity zone of inhibition (in mm)		Antifungal activity zone of inhibition (in mm)	
	S.aureus	***K.pneumoniae***	***A.niger***	***C.albicans***
Control	---	--	--	--
Standard	20	22	24	26
Petroleum ether extract	08	13	10	11
Chloroform extract	11	14	12	14
Ethanol extract	07	09	08	12
Water extract	06	08	10	11

RESULTS AND DISCUSSION

The results revealed that both petroleum ether extract and chloroform extract exhibited antimicrobial activity. Considerable zone of inhibition was observed for chloroform extract against *K.pneumoniae* when compared to the standard drug. The chloroform extract has also shown good antifungal activity against *A.niger* and *C.albicans* .The antimicrobial activity of other extracts was very poor.

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CONFLICT OF INTEREST

No interest

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