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Short Communication

Antifungal activity of roots of *Argyreia speciosa* Burm. f. (Bojer)

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ABSTRACT

Argyreia speciosa is a potent medicinal plant in the Indian systems of medicine. Traditionally it is used as an antibacterial, antifungal, antipyretic, etc. In the present study, the hydro-alcoholic extract and its acetone, chloroform and methanol fractions of the root of *A. speciosa* were studied for their antifungal activity by disc diffusion method against *Aspergillus niger* and *Candida albicans*. . It was found that the hydro-alcoholic extract, acetone, chloroform and methanol fraction (100µg/disc) gave promising inhibitory activity against all the fungi tested herein.

Key words: *Argyreia speciosa*, disc-diffusion method, antifungal activity.

INTRODUCTION

Argyreia speciosa (Convolvulaceae), commonly known as Vryddhadaru in Sanskrit is a woody climber and has been used as a 'rasayana' drug in the traditional Ayurvedic system of medicine. The roots of this plant have been regarded as alterative and tonic, and are said to be useful in rheumatism and diseases of the nervous system [1]. It is found throughout India, up to an altitude of 300m, viz., Assam, Bengal, Puri district of Orissa, Dehra Dun, cultivated in Rajasthan, Konkan, Deccan, Mysore. Traditionally, the root is useful in anorexia, Loss of appetite, dyspepsia, flatulence, colic, ascites, haemorrhoids, hemiplegia, nervous weakness, neuralgic pains, cerebral disorders, synovitis and general debility [2]. The aim of the present study is to understand the antifungal spectrum from natural resources and to support the traditional uses of *Argyreia speciosa* and its isolated compounds in the treatment of infectious diseases.

EXPERIMENTAL SECTION

Collection and authentication of plant material: Fresh plant/plant parts were collected randomly from Gujarat region, India and authenticated through Department of Biosciences, Saurashtra University, Rajkot, Gujarat, India (Specimen no.PSN492) and a voucher Specimen has been preserved for further reference. The roots were washed under running tap water; air dried under shade, coarsely powdered and kept in airtight container for further use.

Preparation of extracts: The roots were dried under shade, coarsely powdered and the hydro-alcoholic extract was prepared by maceration. Further the acetone, chloroform and methanol fractions of the concentrated hydro-alcoholic extract were prepared by using percolator.

Antifungal activity: The antifungal activity was evaluated by disc-diffusion method [3],[4]. The fungal strains used were *Candida albicans*, and *Aspergillus niger*. Nutrient agar media was taken in a pre-sterilized petri-dish and the microorganisms were grown. Accurately weighed 5mg of plant extract and its different fractions and dissolved separately into 1ml dimethyl sulfoxide (DMSO). From these solutions, 20 µl were transferred to sterile empty discs (0.7 cm), so that concentration becomes 100µg/disc. Discs were allowed to dry and then introduced on the upper layer of the seeded agar plate. Similarly disc of Fluconazole (10µg/disc) was placed on the seeded agar plate and incubated at 37^0C for 24 hr. The diameters of zone of inhibition (mm) were recorded and the experiment was done three times and the mean values are presented and compared with standard drug Fluconazole.

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RESULTS AND DISCUSSION

The antifungal activity of *A. speciosa* was tested against two fungi (*C. albicans* and *A. Niger)* and compared to that of Fluconazole (10µg/disc). The results of the inhibition of Antifungal activity are given in Table 1 and Fig. 1. It was found that the hydro-alcoholic extract, acetone, chloroform and methanol fraction (100µg/disc) gave promising inhibitory activity against all the fungi tested herein. The zone of inhibition of hydro-alcoholic extract and chloroform fraction were 13 mm and 12.5 mm respectively against *C.albicans* and zone of inhibition (10.5 mm in diameter) was recorded against *A.niger* of chloroform fraction. Standard antifungal antibiotic Fluconazole (10µg/disc) was also found to be active against the two fungi. Further, the hydroalcoholic extract and its fractions were found to contain alkaloids, carbohydrates, protein tannins, flavonoids and amino acid, through preliminary photochemical screening[5]. The antifungal activity may be due to one/more group of above phytoconstituents.

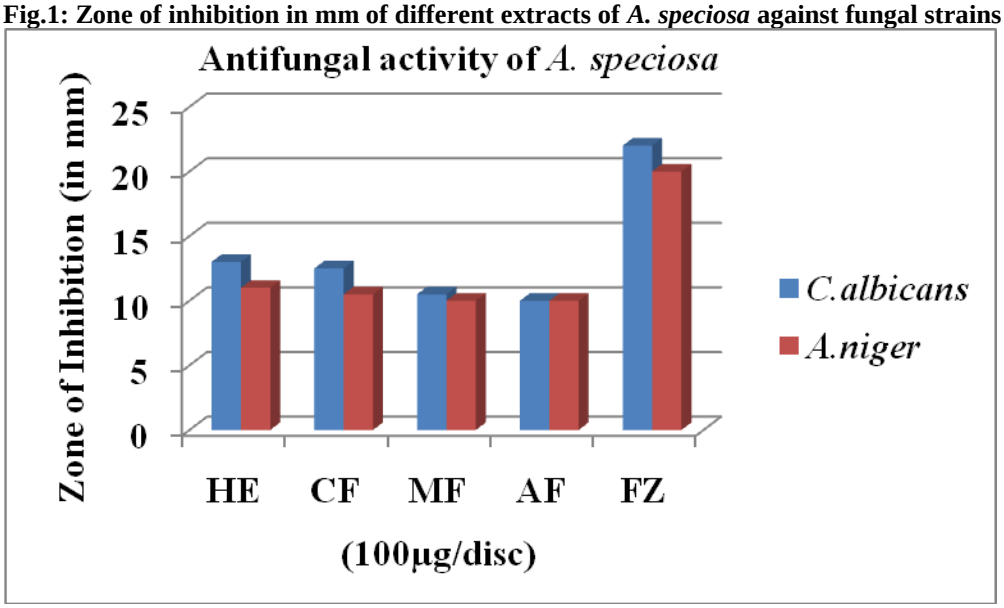
Table 1: Antifungal Activity of A. speciosa

Test organism	*Zone of Inhibition in mm				Fluconazole (10µg/disc)
	Different extracts (100µg/disc)				
	EXT-1	EXT-2	EXT-3	EXT-4	
C. albicans (ATCC10231)	13.33±1,15	9.66±0.57	10.33±0.57	12.33±1.52	21.66±1.15
A. niger	10.33±1.15	10.67±0.57	10.33±1.15	10.67±1.15	20.33±0.57

**Average of three readings; Values are expressed as mean ± S.D*

EXT-1, Hydro-alcoholic extract; **EXT-2,** Acetone fraction; **EXT-3,** Methanol fraction; **EXT-4,** Chloroform fraction.

Fig.1: Zone of inhibition in mm of different extracts of *A. speciosa* against fungal strains



HE, Hydroalcoholic extract; **CF**, Chloroform fraction; **MF**, Methanol fraction; **AF**, Acetone fraction

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