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IN-VITRO ANTIFUNGAL ACTIVITY OF CLOVE EXTRACTS

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Clove (dried fruit of *Eugenia caryophyllus,* family Myrtaceae) is a common spice having wide range of medicinal properties (Tyler *et al* 1981). Antibacterial properties of clove have already been reported (Chopra *et al,* 1982, Ueda *et al,* 1982, Watanabe *et al.,* 1985, Briozzo *et al,* 1989 and Islam *et al.,* 1990). In the present study antifungal activity of clove has been discussed.

Twenty five gm powdered clove was extracted separately with chloroform, ethanol and water for 48 hours. The extracts were filtered and concentrated to dryness to yield 5.0, 3.5 and 3.0 gm dried mass respectively. Solutions (100 mg/ml) of each extract were prepared and 20 µl of extract was adsorbed on sterile Matricel filter paper disc (5 mm dia.). Griseofulvin sensidiscs were used as reference standard in the experiment. Twelve identified strains of fungi were collected from INF'S, University of Dhaka. The sensitivity of the fungi to clove extracts was checked by disc diffusion method (Bauer et al, 1966). Sterile Sabouraud's agar medium (20 ml) was taken in each of twelve test tubes and inoculated with one loopful of fungal strain. The medium was transferred to 12 sterile petridishes and allowed to solidify. The test materials and antibiotic discs were then placed on the inoculated plates and incubated at 25°C for 48 hours.

The results of the experiment are shown in Table 1. Chloroform extract was found to have promising inhibitory effect on eleven out of twelve fungal strains. Ethanol and aqueous extract was active against only eight strains. Antifungal antibiotic griseofulvin showed weak inhibitory effect against only one fungus. *Aspergillus niger* was resistant to all extracts and antibiotic tested. Chloroform produced 21-50 mm zone of inhibition, followed by ethanol extract, 10-25 nun and aqueous extract, 9-19 mm. The antibacterial activity of clove has already been reported (Islam *et al,* 1990). This is the first report of antifungal activity of chloroform, ethanol and aqueous extracts of clove.

Table-1

Antifungal activity of clove extracts against twelve strains of fungi. The values indicate zone of inhibition in mm.

Fungi	Strain No.	C-ext. 20 µl* / disc	E-ext. 20 µl* / disc	A-ext. 20 µl* / disc	GF 25µg/disc.
Aspergillus flavus	EDCL	40	26	16	-
Aspergillus fumigatus	BTCC488	50	11	12	-
Aspergillus niger	QL107	-	-	-	-
Candida albicans	EDCL	30	18	10	-
Candida krussi	BTCC345	21	-	-	-
Carvullaria sp.	BTCC486	50	21	19	-
Rhizopus arrizae	UICC138	22	11	12	-
Rhizopus oligosporum	UICC116	30	11	12	-
Rhizopus orizae	UICC110	26	10	9	-
Saccharomyces cerevisceae	BTCC335	35	-	-	7
Saccharomyces carlbergensis	ATCC8090	22	-	-	-
Trichoderma sp.	BTCC487	26	22	18	-

C-ext. = Chloroform extract
E-ext. = Ethanol extract
A-ext. = Aqueous extract
GF = Griseofulvin
- = No inhibition

*Each µl of the extract contained approximately 100 µg.

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