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Short Communication

ANTIFUNGAL POTENTIALITY OF *SYZYGIUM AROMATICUM* AGAINST THE FUNGI PENICILIUM NOTATUM AND *ASPERGILLUS NIGER*

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ABSTRACT
In the present study the antifungal activity of the *Syzygium aromaticum* has been investigated against the fungi like *Penicillium notatum* and *Aspergillus Niger. Syzygium aromaticum*, syn. *Eugenia aromaticum* or *Eugenia caryophyllata*) are the aromatic dried flower buds of a tree in the family *Myrtaceae* (Srivastava and Malhotra, 1991; Chaieb *et al.*, 2007). It is commonly known as Cloves. Cloves are used in Ayurveda, Chinese medicine and Western herbalism. Cloves are used as a carminative, to increase hydrochloric acid in the stomach and to improve peristalis (Phyllis and James, 2000). In this study different conc. of samples and media was prepared (10%, 20%, 30% and 40%) and poured onto the different petri plates. This was left to solidify for 20 minutes. With the help of cork borer one hole was made in the center of each petri plate. Fungus culture (*A.niger, P.notatum*) with the help of cork borer was removed from the pure culture. This was then inoculated onto the Petri plates containing diff. conc. of samples. Petri plates were wrapped with paraffin and incubated after incubation of 4days at room temperature with P.notatum and *A.niger* the growth of fungus was seen inhibited at 10% conc. And no growth was observed at increasing concentration.

Key Words: *Antifungal, Cloves, Cork Borer, Pure Culture.*

INTRODUCTION
Cloves (*Syzygium aromaticum*) are the aromatic dried flower buds of a tree in the family. There are several reports on the antimicrobial activity of different herbal extracts Bonjar (2004). Many Medicinal plants have been found to cure urinary tract infections, gastrointestinal disorders, respiratory diseases and cutaneous infections Brantner and Grein (1994). Cytotoxic compounds have been isolated from the species of *Vismia* Hussein *et al.*, (2003).Antimicrobial activity of cloves (*Syzygium aromaticum*), to treat pneumonia, diarrhea and conjunctivitis has also been reported earlier. According to the WHO, medicinal plants would be the best source for obtaining variety of drugs Santos, Oliveira, Tomassini, (1995).These evidences contribute to support and quantify the importance of screening natural products. *Penicillium notatum* is very widely distributed in soils, occurring in the temperate zones in forests, grasslands and arable soils with comparable frequencies. It can be isolated from decaying vegetable and leaf litter. It is also found on stored cereals, and hay. The conidia are easily discharged into the air and are counted with high frequency in all aeromycological studies. It is also considered an important in-house mould. Indoors, Penicillium has no great seasonal variation but reaches peak concentrations in the winter and spring. *P. notatum* is a potent antigenic mold both in animals and in humans (Alonso 1990 ref.57567) .The study's results suggest that the 34 and 32 kDa major allergens of *P. notatum* may be the alkaline and the vacuolar serine proteinase respectively. *Aspergillus niger* is a member of the genus *Aspergillus* which includes a set of fungi that are generally considered asexual, although perfect forms (forms that reproduce sexually) have been found. Aspergilli are ubiquitous in nature. They are geographically widely distributed, and have been observed in a broad range of habitats because they can colonize a wide variety of substrates. *A. niger* is commonly found as a saprophyte growing on dead leaves, stored grain, compost piles, and other decaying vegetation. The spores are widespread, and are often associated with organic materials and soil.

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The primary uses of *A. niger* are for the production of enzymes and organic acids by fermentation. *A. niger* is also used to produce organic acids such as citric acid and gluconic acid. The growth of the fungus *Aspergillus* in human tissue or within air containing spaces of the body, such as bronchus or pulmonary cavity, is termed aspergillosis (Bennett, 1979a). Exposure to *Aspergillus* must be nearly universal but disease is rare. The physiological condition of the exposed individual thus appears to be of paramount importance. Patients exhibiting aspergillosis are generally immunocompromised, and thus susceptible to otherwise common and usually harmless microorganisms. Factors that may lead to immunosuppression include an underlying debilitating disease (e.g., chronic granulomatous diseases of childhood), chemotherapy, and the use of supraphysiological doses of adrenal corticosteroids .Pulmonary aspergillosis is the most common clinical manifestation of aspergillosis.

MATERIALS AND METHODS

The MRBA(Martin Rose Bengal Agar) Media is used to culture the fungi.It contains the following ingredients per liter: K2HPO4- 0.5 g,KH2PO4- 0.5 g ,MgSO4.7H20-0.5 g, Dextrose- 10.0 g, Peptone- 5.0 g, Yeast extract-0.5 g. Rose Bengal- 50 mg, Agar- 15.0 g. Streptomycin sulfate (30 mg) was aseptically added to the medium after autoclave sterilization. The Spice sample used for the experiment is ClovesThe Spice sample (Cloves) was collected from the local market. About 50 gm of fresh sample were weighed & ground to paste using a mixer with addition of 100ml distilled water. The paste was filtered through 8 layered muslin cloth. Further the filtrate was centrifuged @ 5000 rpm for about 10 min. The supernatant was collected and filtered using wattman filter paper. This filtrate was called the "mother solution". The fugul strains investigated & identified. The microbes studied are: *Penicilium notatum* and *Aspergillus niger*. The fungal cultures were maintained at 4^{o}c on Nutrient Agar and MRBA media respectively.250 ml of MRBA media was prepared. Different concentration of samples (cloves) and MRBA media was prepared (10%, 20%, 30%, 40%) and poured onto the 10 petri plates. This was left to solidify for 20 mins. Now, with the help of cork borer one hole was made in the center of each petri plate. Fungus culture (*A.niger, P. notatum*) with the help of cork borer was removed from the pure culture under aseptic condition. This was then inoculated onto the Petri plates containing different concentration of samples. Petri plates were wrapped with paraffin and incubated for 4 days at room temperature. After 4 days the results were observed. The experiment was repeated to confirm the result.

RESULTS

In the present investigation our aim was to check the antifungal potentiality of the cloves extract against the fungi *P. notatum* and *A. niger*.

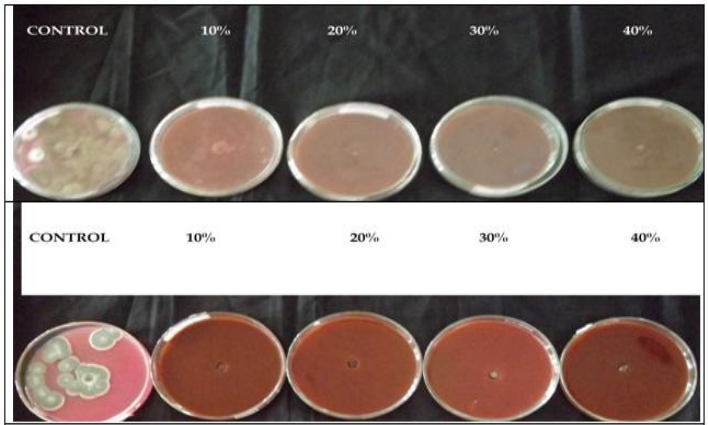

Fig- Showing no growth of the fungus *A.niger* and *P.notatum* at different concentrations (10%, 20%, 30%and 40%) of the cloves extract used, the growth is observed only in Control in both the fungi.

To achieve the objective after incubation of 4days at room temperature with *P. notatum* and *A. niger* the growth of fungus was seen inhibited at 10% concentration. And no growth was observed at increasing concentration. The no growth of the fungus was observed in any of the test petri plates.

Conclusion

The antimicrobial activity of spices may differ between strains within the same species. Moreover, the antimicrobial properties of spices may differ depending on the form of spices added, such as fresh, dried, or extracted form and also differ depending on the harvesting seasons and between geographical sources. However, there is evidence that the essential oils of spices are more strongly antibacterial than is accounted for by the additive effect of their major antimicrobial components; minor components to play a significant role. The antifungal activities of clove extracts were tested using different fungus. It was found that the extract of clove was potentially active against Penicillium *notatum* and *Aspergillus niger* .The growth of fungus was seen inhibited at the lowest (10%) concentration. And no growth was observed at increasing concentration of the cloves extract.

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