

ANTIFUNGAL POTENTIAL OF NATURAL EXTRACT

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ABSTRACT: Extracts of essential oils have secondary aromatic principles resulting from plant metabolism that evaporate when exposed to atmospheric air, presenting various chemical and biological activities. Fungi are microorganisms regularly found in atmospheric air and are responsible for respiratory allergic manifestations and the decay of organic matter. This paper aims to test the antifungal activity against anemophilic fungal strains.

Keyword: Anemophilic fungi, Natural oil extraction, Antifungal activity.

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POTENCIAL ANTIFÚNGICO DE EXTRATO NATURAL

RESUMO: Os extratos de óleos essenciais apresentam princípios aromáticos secundários resultantes do metabolismo vegetal que evaporam quando expostos ao ar atmosférico, apresentando diversas atividades químicas e biológicas. Os fungos são microrganismos encontrados regularmente no ar atmosférico sendo responsáveis por manifestações alérgicas respiratórias e deterioração da matéria orgânica, presente trabalho tem como objetivo testar a atividade antifúngica frente as cepas fúngicas anemófilas.

Palavra-chave: Fungos anemófilo, Extração de óleo natural, atividade antifúngica.

INTRODUCTION

Fungi are heterotrophic, filamentous and multicellular organisms. They occur in every environment on the planet and are important parasites, decomposers or saprophages. Some can be pathogenic, due to the production of toxins. While others play an important role in the degradation of organic matter. Fungi that are dispersed through atmospheric air are called airborne fungi. Therefore, the airborne fungal microbiota can be similar or different in each city or region. The fungal elements that are found in atmospheric air are spores (propagules). They are aeroallergens that, when inhaled, can be responsible for allergic respiratory manifestations, such as asthma, rhinitis and food spoilage, reducing their nutritional value. Environmental factors such as temperature, relative humidity, rainfall rate and wind speed and direction directly influence the presence of fungi and spores in the air (Pereira et al. 2009 and Rodriguez-Amaya et al., 2002).

Rosemary pepper is a medicinal plant of the Verbenaceae family, characteristic of the semi-arid vegetation, originating in the northeast region of Brazil. The species is shrubby, with

many branches, reaching up to three meters in height. It has aromatic leaves that present essential oil rich in thymol and carvacrol (LORENZI & MATOS, 2008), monoterpenes responsible for the bactericidal and fungal activity (LEMOS et al., 1990). It stands out for its use in the preparation of antiseptic drugs for topical use, having relevant applications in pharmacy, medicine, dentistry and public health (MATOS & OLIVEIRA, 1998).

JUSTIFICATION

Filamentous fungi, also known as molds or molds, are a microbiota present in all environments, they are important in medicine and industries, in addition to being important decomposers, however they can contaminate food, causing its deterioration, reducing its value. nutritional, altering organoleptic properties, some genera can release mycotoxins, such as aflatoxin, ochratoxin A, zearalenone, patulin, fumonisin, trichothecene and citrinin. (RODRIGUEZ-AMAYA et al., 2002) This fungal invasion process can lead to grain contamination during the drying, transport and storage process of the product. (RUPOLLO et al., 2004). The growth of fungi is determined by several parameters, among which, we can highlight: the moisture content, aeration, temperature and storage time, being the biggest problems of the development of fungi in seeds and grain, with the loss of germination power and of dry matter, altering the nutritional value (LIMA., et al 2004 and MARCIA., et al 1998).

GOALS

General

The general objective of this project is to test the antifungal activity of the crude ethanolic extract of the Rosemary Pepper plant, with regard to environmental contamination and food deterioration in storage, drying or even transport.

Specific

- ▶ Isolation of Fungi.
- ▶ Cultivate airborne filamentous fungi in appropriate culture media;
- ▶ Archiving the anemophilous filament fungi in mycothecae;

- ▶ Carry out the extraction of the crude extract of the plant of the genus Rosemary pepper;
- ▶ Carry out the antifungal test of the extract;

Methodology

Isolation of anemophilic filamentous fungi

The filamentous fungi will be isolated from the air, following the methodology described by Mueller, Bills and Foster (2004), Bernardi (2006) and Menezes (2006), with modifications. This isolation will be carried out with sterile Petri dishes containing Potato-Dextrose-Agar (PDA) culture medium.

Fungi cultivation and storage:

The fungi will be cultivated in medium. solid culture (Potato-Dextrose-Agar) and stored in mycotheques both in solid medium (BDA) and in mineral oil.

Extraction and antifungal activity

The ethanolic crude extract was prepared from the collection of Rosemary pepper from the viva pharmacy project of the Federal University of Ceará, soon after its leaves were removed and placed in a 500ml volumetric flask, where 400ml of 96° GL ethanol was later added and conditioned for three days in a dark place, being homogenized during this period. (CARVALHO, 2001). The antifungal activity was characterized in solid medium, using the depletion technique (ALVES et al., 2006; GONZALES and MORAES. 2001), with adaptation, prepared with Potato-Dextrose-Agar (PDA) medium. Subsequently, approximately 20ml was distributed in petri dishes. These plates were left until solidification, then they were seeded with the aid of sterile swabs that were passed on the library benches. The action of the extract was carried out by dividing the petri dish into two parts, in one the fungal strain was placed and in the other the ethanolic extract was placed, waiting for 72 hours to verify its action. Figure 1 and Figure 2.

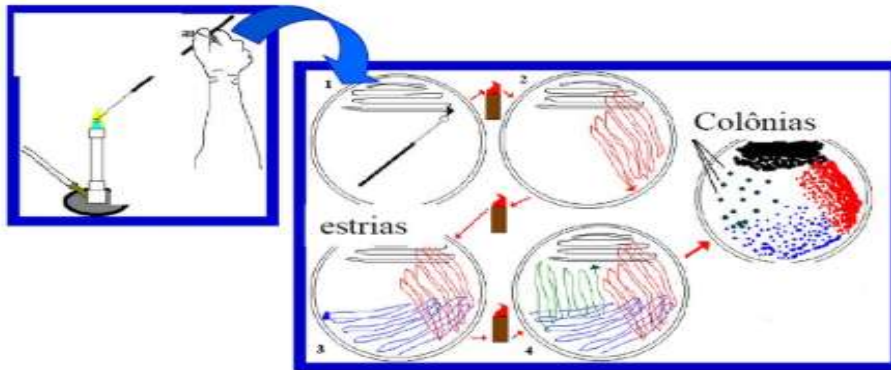


Figura 1: Técnica de esgotamento.

RESULTS AND DISCUSSION

After carrying out the test using the crude extract of Rosemary pepper, it was observed that it showed inhibitory activity against the strains tested. Figure 3.



Figure 2: Isolated fungal strains.



Figure 3: Inhibitory activity

FINAL CONSIDERATIONS

It was concluded that the ethanolic extract of Rosemary pepper leaves can be used as a means of cleaning in places that present anemophilous fungal strains that are often responsible for respiratory allergic processes mentioned above.

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