

Morphological effects of alcoholic extract of *Costus speciosus* Koen. on *Aspergillus* sp. That causing pulmonary infections(III)

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Abstract:

The present study aimed to know the extension of effects of the plant extract *Costus speciosus* toward some species of *Aspergillus* and by study of the morphological changes of the fungus *A. fumigatus*, *A. niger*, *A.flavus*, *A. terreus* developing in an environment containing 75 mg / ml of methanol extract of the plant test The results showed an increase hyphae formation and morphological changes in the growth of some parts hyphae was atrophied and increased lateral branching points and low distances between these points subsidiarity and condensing the material cytoplasm and other net changes.

Keywords: *Aspergillus* spp. ; *Costus speciosus* ; Morphological effects.

Introduction

Aspergillus fungi are an environmentally ubiquitous, spore-forming mold saprophyte. This airborne filamentous fungal pathogen is known to be a major cause of lethal lung infections in immunocompromised hosts and allergic asthma in atopic individuals (Gersuk *et al.*, 2006) . Considers the infection of species belonging to the genus *Aspergillus* spp. offs phenomenon among the most frequent fungal infections mixed worldwide and the most deterioration of health status , are common for patients with debility immunoprecipitation (Gavalda and Roman , 2007) . Aspergillosis has high mortality rates, and its incidence has been increasing gradually(Aydogan *et al.*,2010) . Notwithstanding the increasing need for effective therapy and the range of antifungal agents available is limited, and some of the most effective agents are also toxic (Ueda-Nakamura *et al.*, 2009) . Treatment of Aspergillosis infections mainly involves azole derivatives ,which has historically been the front-line drug in these treatments (Limper *et al.*,2011) . However, the pharmacological profile of azole drugs is determined and restricted by their liver toxicity, metabolic elimination, and pharmacokinetic drug-drug interactions involving CYP3A4 metabolic inhibition (Billaud *et al.*,2010).

With limited reaction antibiotics manufacturers pay a lot of researchers to raise the banner back to nature and see the traditional medicine and quotation and attributes of the people and subjected to scientific studies resulted in the pharmacies natural high safety broader ecosystem, where that single plant can operate as a drug by the impact of its components effective known and unknown, which already synergistic intervene in addressing the imbalance caused by the physiological mechanisms of injury complex (Chevalie , 2005) . This is what has prompted us to seek with sustained efforts and constant attempts by researchers through completing a series of research (AL-Ameri and Azeez, 2013a,b), which include screening for the inhibitory effect of extracts of plant *Costus speciosus* in order to determine the possibility of introducing such extracts in the pharmaceutical human as material anti-fungal for the treatment of medical conditions caused by the spread of such isolates.

Materials and methods

Plant Materials Powder of *Costus speciosus* (Koen ex.Retz.) root was obtained herbalists stores equipped with the consent of the Ministry of Health/Herbal Medicine Center, and is subject to examination and diagnosis of the health aspects and pharmacological effectiveness. The company has filled in the food bus Ines life, Amman – Jordan.

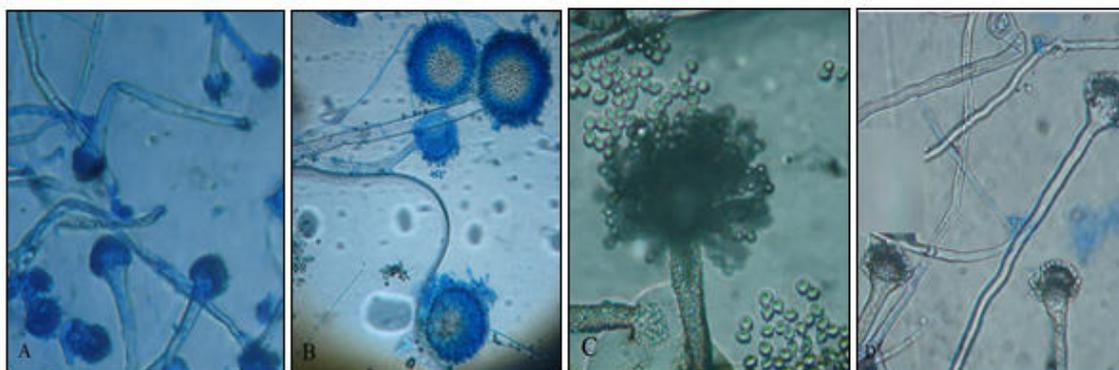
Preparation of Plant Extracts: Abstract attended depending on the method of AL-Ameri and Azeez (2013a)

Study the effect of plant extract on the morphology of fungal cells: Followed method (Benson, 2002), a Slide Culture Technique, with some modulations as follows:

1. Sterility petri dish shower glaze on wet filter paper and glass rod in the letter V attic and put a clean glass slide and sterile.
2. Cut amid agar containing plant extract alcohol concentration of 75 mg / ml in the form of small cubes and dimensions of no more than (1 cm) cubes and transfer and placed on the surface of the glass slide and covered with a sterile cover slide.
1. Vaccinated nook corresponding of the cube on the surface of the slide type fungal and wet the surface of filter paper 3 ml of distilled water and put the lid sterile petri dish and lap at 28 m for a period of 7 days.
2. Slide the cover was lifted with forceps and placed on a glass slide another container on a drop of Lacto phenol-cotton blue stain.
3. Observed shape and arrangement of spinning fungal structures under a microscope like the shape and form of craw Vesicle Metula or Phialides or both, and the shape and color and dimensions, accompanied by the identification of the type of influence through the presence or absence of abnormalities in the end of the thread and mildew, as well as the type of these distortions.

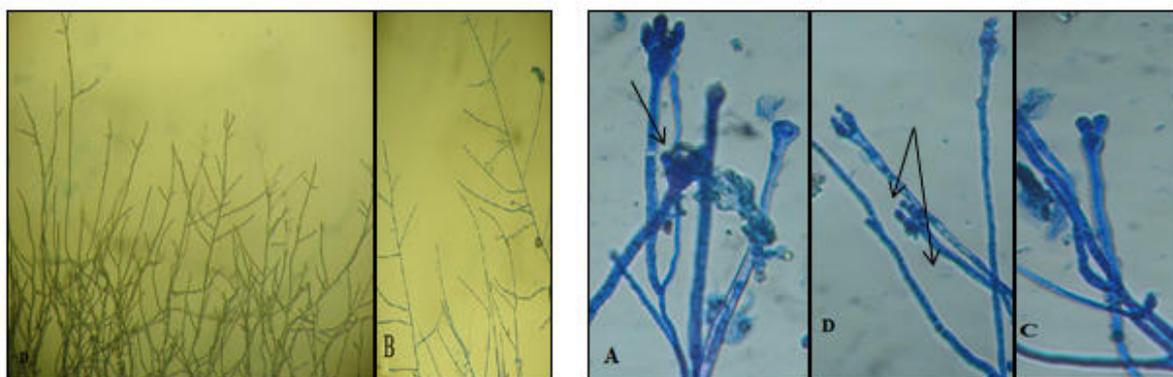
Results

Fig.(1) shows the typical appearance of the fungi *Aspergillus* spp. where to take a final site flooded with a row or two rows of phylidia depending on the type of innate.



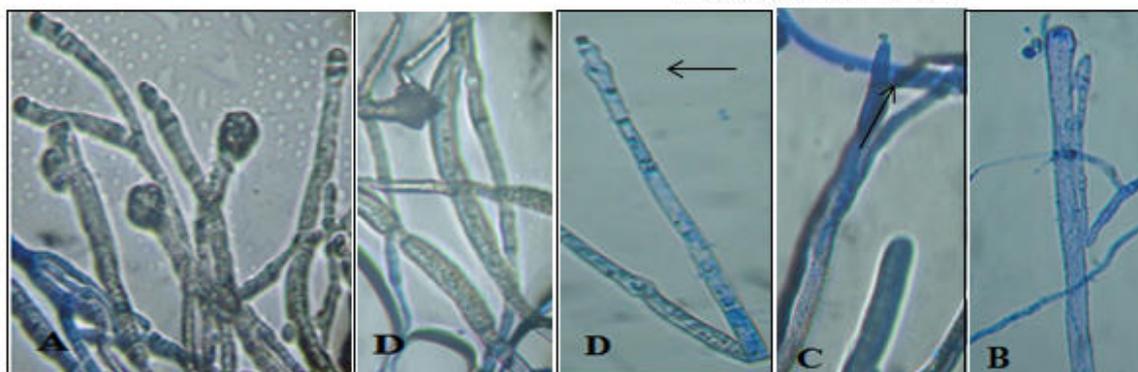
(Fig.1) Morphological appearance typical of the fungus *Aspergillus* spp. That's where (*A.fumigatus*, *A.niger*, *A.flavus*, *A.terreus*).

The decline in the growth rate of the test fungi resulting from the impact of transactions plant extract test is usually accompanied by changes the morphology of the developing fungal spinning. This is apparent by the results of the current study represented in the lack configure Hyphae aerobic and changes Morphologic abnormal in some parts of developing it appear lighter or thinner and naked and less aggressive towards the front of the growth is accompanied by damage and fractures to the extension in the different levels, and consists of a few strands of fungal air as well for increasing the number of points the forest side and low distances between points subsidiarity. In addition to the decomposition of Hyphae fungal and condensation of material cytoplasm and emphysema parties phialides addition to form irregular vesicles and lack of phialides and swelling in the formed of them although these changes morphological resulting from treatment with extract of plant testing be general in all groups of fungal as shown in (Figure 2).



1. Fungal filaments appear atrophic and bonds

2. Lack of phialides bulge formed in them and increase the number of branches



3. Condensation of material cytoplasmic and swelling at the ends Hyphae.

4. Irregular shape of the vesicles.

(Fig. 2) some of the morphological changes that occur on the morphology of spinning fungus *Aspergillus* spp. , having grown on the alcoholic extract of the plant test. That's where (A:*A.niger*, B:*A.terreus* , C:*A.flavus* , D:*A.fumigatus*)

Discussion

Showed results of a study Neeran and Zahraa (2013I,II) the previous high sensitivity for all kinds of fungus *Aspergillus* tested against the plant extract test in all the tests that carried out indicating that extracts of this plant has the capacity influence the anti-fungal growth, particularly at high concentrations, is illustrated clearly through the results of the present study the effect on the morphology mycelium, as the decline in the rate of growth of fungi resulting from the effect of alcoholic extract of the plant is usually accompanied by changes to the morphology of the developing mycelium. It was concluded that the focus of our study (75 mg / ml) of alcoholic extract of the plant causes severe morphological changes similar to those changes resulting from the effect of anti-fungal Itraconazole on *A. fumigatus* isolated from lung injury satisfactory within the study (Lei et al., 2011) . Can be explained by the current results to the plant extracts has worked similar to the work of the antibiotics manufactured This is consistent with Château (2003) where it was stated that the physiological effects of the compounds effective inhibitory to the growth of fungi may be caused by interference in one of the vital functions of your target and is working to defuse it, the plant extracts inhibit construction of basic proteins and nucleic acids (DNA, RNA) . She also noted a study (Thobunluepop et al., 2007) that some plant compounds effective to increase the effectiveness of the enzymes (Malik, Fumaras, Succinic dehydrogenase, dehydrogenase), leading to increased toxicity and thus reduce the rate of growth of the fungus or destroy the cell wall as affecting extracts in the metabolism of a compound Ergosterole , a type of fat alcoholic is an essential part of the innate components of the wall and through their impact on the effectiveness of the enzyme (3 - hydroxyl-3-methyl glutase) responsible for building the acid mevalonic acid , which paves the way for building Ergosterol and thus prevent the compound leading to inhibition of action channels and ionic conductors and crush the fungal cell membrane and the contents inside out and cellular death (EL-Mehalawy , 2006). Perhaps this is what explains the extent of the change morphological mycelium fungi tested, and this is consistent with the opinion of Neeta and Abhishek (2006), who attributed the changes morphological incident at the level of the cell wall when processing

Phythin ultimum both Thym and Lavender Oil to the extent of overlapping vehicles oily with interactions enzyme responsible for the synthesis parietal, which is reflected on the effectiveness of growth and morphological conformation . These results are consistent in terms of the direction in effect with the findings of the (Mostert *et al.*, 2000; Leroux *et al.*, 1999) in that the active substances in the roots of a plant *C.speciosus* have been able to access inside the fungal cell and associated components of the cell wall and led to a lack of growth and lack of formation of fungal spinning.

4. References

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