

عنوان مقاله:

Efficacy of Syzygium aromaticum essential oil on the growth and enzymatic activity of pathogenic *Candida albicans* strains

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نویسندگان:

Ashkan Hekmatpanah - *Department of Microbiology and Immunology, Faculty of Veterinary Medicine, University of Tehran, Tehran, Iran*

Aghil Sharifzadeh - *Department of Microbiology and Immunology, Faculty of Veterinary Medicine, University of Tehran, Tehran, Iran*

Hojjatollah Shokri - *Department of Pathobiology, Faculty of Veterinary Medicine, Amol University of Special Modern Technologies, Amol, Iran*

Sepideh Abbaszadeh - *Health Research Center, Lifestyle Institute, Baqiyatallah University of Medical Sciences, Tehran, Iran*

Donya Nikaein - *Department of Microbiology and Immunology, Faculty of Veterinary Medicine, University of Tehran, Tehran, Iran*

خلاصه مقاله:

Background and Purpose: *Candida albicans* (C. albicans) is the most common human pathogen owing to the most virulence factors. It seems that extracellular hydrolytic enzymes play a key role in C. albicans pathogenicity. The present study aimed to assess the susceptibility and enzymatic activity of pathogenic C. albicans isolates exposed to the *Syzygium aromaticum* (S. aromaticum) essential oil. **Materials and Methods:** S. aromaticum oil was characterized using gas chromatography-mass spectrometry (GC-MS). The broth microdilution technique (CLSI, M27-A3) was used to determine the minimum inhibitory concentration (MIC) of test compounds. Furthermore, before and after treatment with S. aromaticum essential oil, the yeasts were analyzed regarding the proteinase (Prz), hemolysin (Hz), and phospholipase (Phz) production/activity. **Results:** β -caryophyllene (۱۲.۷۶%) was found to be the major constituent in the essential oil after eugenol (۸۴.۶۴%). Only one isolate of C. albicans showed the antifungal resistance to fluconazole. All isolates were susceptible to S. aromaticum essential oil with MIC of ۶۲۵-۱۲۵۰ μ g/ml. S. aromaticum oil represented the best antifungal effect against C. albicans at MIC ۱۰۰۰ μ g/ml. The mean $\pm$ SD enzyme activity of C. albicans not exposed to S. aromaticum essential oil was obtained at 0.55 ± 0.03 , 0.73 ± 0.04 , and 0.61 ± 0.05 for proteinase, hemolysin, and phospholipase, respectively. The activities of these enzymes were reduced significantly ($P<0.05$) to 0.33 ± 0.06 , 0.40 ± 0.04 , and 0.16 ± 0.03 for phospholipase, proteinase, and hemolysin, respectively, after the yeasts were subjected to S. aromaticum essential oil. **Conclusion:** The present study aimed to determine the ability of S. aromaticum essential oil to prevent the growth of C. albicans and decrease their enzymatic activity. As a natural antifungal agent, S. aromaticum can be utilized in pharmaceutical systems.

کلمات کلیدی:

candida albicans, Dianthus caryophyllus, Enzymatic activity, Fluconazole, growth inhibition

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