

The Antifungal Activity of Silver Nanoparticles and Fluconazole on *AspergillusFumigatus*

Naghsh,N.(PhD)

Assistant Professor of Biology, Islamic Azad University, Falavarjan Branch, Iran.

Doudi,m.(PhD)

Assistant professor of Microbiology, Islamic Azad University, Falavarjan Branch Iran.

Safaeinejad,Z.(MSc)

MSc Student of Microbiology, Islamic Azad University, Falavarjan Branch, Isfahan, Iran

Corresponding author: Safaeinejad,Z

Email:safayinejad@yahoo.com

Received:21 Jan 2012

Revised:23 Jan 2013

Accepted: 9 Mar 2013

Abstract

Background and objective: In recent years, the resistance of opportunistic fungal strains to commercially available antifungal agents has been increased. The serious side effects of these compounds on mammalian cells forced the researchers to search for new antifungal substances. Thus we decided to investigate the antifungal properties of silver nanoparticles against *Aspergillusfumigatus*.

Materials & Methods: To investigate the antifungal effect of the round silver nanoparticles with 10nm diameter against *Aspergillusfumigatus*, the diameter of colonies after 8 days as well as the number of colonies in different days was determined, using direct drop test. After that, to measure the Minimum Inhibitory Concentration (MIC) and Minimum Fungicide Concentration (MFC) values of silver nanoparticles and fluconazole, Micro Dilution Broth method was performed. At the end, the MIC and MFC values of silver nanoparticles were compared to MIC and MFC of fluconazole.

Results: The results obtained from direct drop test confirm that the silver nanoparticles can decrease the diameter of fungal colonies in dose dependent manner. The data of silver nanoparticles on the number of colonies in different days shows that the number of colonies increases up to sixth day and then becomes fixed. Based on the results of Micro Dilution Broth method, the MIC and the MFC values of this component are 31.25 and 62.5ppm, respectively.

Conclusion: The present study confirms that silver nanoparticles with 10nm diameter have antifungal activity against *Aspergillus fumigates*.

Key words: Silver nanoparticles, *Aspergillusfumigatus*, Antifungal activity.