

**P4-4: Antifungal activity against *Trichophyton rubrum*
of inorganic vs. biogenic silver nanoparticles
produced by filamentous fungi**

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The dermatophytoses are skin diseases caused by dermatophytes, which have the highest incidence worldwide with an estimation of 20 to 25% of the population infected [1]. Although the condition is relatively benign and easy to treat, dermatophytoses are often associated with relapses after antifungal therapy. Besides that prophylaxis with antifungals may lead to the emergence of resistant strains, there is a pressing need to search for a new generation of antifungal agents. The fungi have important and favorable characteristics for the production of nanoparticles, such as tolerance and metal bioaccumulation potential, as compared with other microorganisms, and could be used as an ecological or "green" alternative to chemical and physical methods for the production of metal nanoparticles. Due to their antimicrobial properties silver nanoparticles are produced to incorporate an increasing number of consumer products and medical devices. The present study was undertaken to investigate the antifungal activity of inorganic versus biogenic nanoparticles produced by *Aspergillus oryzae* MUM 97.19 and *Penicillium chrysogenum* MUM 03.22 comparing with conventional antifungal drugs, terbinafine, itraconazole and fluconazole. The antifungal activity was tested against eight clinical strains of *Trichophyton rubrum* and the reference strain *T. rubrum* ATCC MYA-4438. Biogenic nanoparticles from *A. oryzae* MUM 97.19 and *P. chrysogenum* MUM 03.22 showed an average size ranging between 19-51 nm and 51-85 nm, respectively. Irrespective of the process used, inorganic and biogenic silver nanoparticles exhibited a stronger inhibiting activity than fluconazole. Terbinafine has shown higher antifungal activity than silver nanoparticles, nevertheless, the terbinafine-resistant strain ATCC MYA-4438 was susceptible to the last ones. The synthesis parameters in future studies should be carefully studied to take full advantage of all the potential of filamentous fungi in the synthesis of silver nanoparticles.

[1] Dias, N., Santos, C., Portela, M., Lima, N. *Mycopathologia*, 172, 55 (2011).



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