

**Title: ANALYSIS OF ANTIFUNGICAL ACTIVITY OF SILVER NANOPARTICLE AND SIMVASTATIN AGAINST *Aspergillus spp.***

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**Resume:**

Fungi are an important cause of morbidity and mortality worldwide. Some filamentous fungi (molds) cause mycoses and/or are toxigenic and synthesize mycotoxins that are harmful to humans and animals. Currently, high rates of resistance against antifungals have been found in clinical settings and in the feeding area. Thus, the search for alternative compounds grows every day. Molds also produce chemicals which are important for health, such as antibiotics and silver nanoparticles (AGNPS), which shows antifungal activity. Simvastatin, used to lower cholesterol and triglycerides in the blood, inhibits enzyme HMG-CoA reductase, which plays an essential role on the synthesis of steroids (including ergosterol) also shows antifungal action. AGNPS are already used in biomedical applications, such as infection prevention and wound healing. The mechanism which silver nanoparticles employ to cause antimicrobial effect is under debate, but it is known that silver ions interact with thiol groups. This study aims to investigate synergistic action of AGNPS and simvastatin against toxigenic strains of *Aspergillus flavus*, *A. melleus*, *A. nomius*, *A. ochraceus* and *A. parasiticus*. Simvastatin were acquired from commercial source. AGNPS were produced by the fungus *Fusarium oxysporum*. Fungi were cultivated for five days in Sabouraud Dextrose Agar and then the tests were conducted following the Reference Method for Broth Dilution Antifungal Susceptibility Testing (CLSI M38-A document), for determination of Minimum Inhibitory Concentration (MIC). The MIC for simvastatin were 39.6 µg for all tested fungi. MICs for silver nanoparticle were: 0.03mM for *A. flavus*, *A. nomius* and *A. parasiticus*; 0.15 mM for *A. melleus* and *A. ochraceus*. The checkerboard tests were performed in this study with two fungal species. We verified synergistic effect for *A. parasiticus* and additive action for *A. flavus*. The results were encouraging and in the next future more fungi will be tested by Checkboard method. Our findings may open new ways for controlling commonly occurring fungal growth, preventing the formation of mycotoxins.

**Key-words:** statins, silver nanoparticles, synergism

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