EVALUATION OF BACTERICIDAL EFFECT OF SILVER NANOPARTICLES PRODUCED BY Phoma spp. FUNGI

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Introduction and objectives: Silver nanoparticles (AgNPs) have already been exploited for the antibacterial activity. In this study, Escherichia coli and Staphylococcus aureus were tested against AgNPs produced by Phoma putaminum and Phoma eupyrena cultures. Material and methods: The characterization was made using the dynamic light scattering method (DLS) and zeta potential. The bactericidal activity was evaluated using the method of disk diffusion. Each disc was impregnated with antibiotics (ampicillin and kanamycin) and AgNPs alone or in conjugation. AgNO₃ and PBS were used as controls.

Results: AgNPs produced by Phoma putaminum showed a hydrodynamic diameter medium value of 76.13 ± 1.27 nm and a bimodal distribution. Comparatively, AgNPs of Phoma eupyrena showed a value of 113.73 ± 2.64 nm of hydrodynamic diameter and a unimodal distribution. Both AgNPs presented low polydispersity (Pdl), under than 0.3. Additionally, the surface charge for P. putaminum AgNPs and P. eupyrena AgNPs were -14.6 and -12.6 mV, respectively, showing an incipient colloidal stability. In the antibiogram tests, P. eupyrena AgNPs showed an inhibition zone of 11.6 mm to E. coli and 10.4 mm to S. aureus, while P. putaminum AgNPs showed 10.0 mm to E. coli and 10.4 mm to S. aureus. Phoma eupyrena AgNPs impregnated with ampicillin and kanamycin showed a mean value inhibition zone of 16.3 mm and 19.1 mm to E. coli; and 18.8 mm and 20.6 mm to S. aureus, respectively. Phoma putaminum
AgNPs impregnated with ampicillin showed 15.9 mm of inhibition zone to *E. coli* and 19.2 mm to *S. aureus*; and with kanamycin the inhibition zones were 19.0 mm to *E. coli* and 20.6 mm to *S. aureus*. Was not observed inhibition zone in the disk containing PBS and AgNO₃. **Conclusions:** Biologically synthesized AgNPs can be efficiently used as antimicrobial agents. **Acknowledgements:** CNPq, CAPES – REDE NANOBOTEC/BRASIL. **Key-words:** *Phoma*; bactericidal activity; silver nanoparticles.