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Silver and polymeric nanoparticles: An alternative to control infections

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The emergence of multidrug-resistant bacteria is a world health problem. In Brazil, according to data obtained from the first five years of the SENTRY Antimicrobial Surveillance Program, Methicillin-resistant *S. aureus* (MRSA) strains were among the most prevalent pathogens and contributed to 56% of the nosocomial and community infections. Our research group has studied the antibacterial effect of silver and polymeric nanoparticles against multi-resistant bacteria, including MRSA strains from several diseases (hospital infections and bovine mastitis). Silver nanoparticles were obtained by *Fusarium oxysporum* (biological silver). Silver nanoparticles combined with others antimicrobials such as phenazine (natural compound) showed synergic effect against MRSA. Biocompatible polymeric particles comprised by alginate/chitosan or chitosan/sodium tripolyphosphate (TPP) were prepared and used for the encapsulation of mercapto succinic acid (MSA) and nitrosation for sustained and controlled NO (nitric oxid)-releasing. The antibacterial activity of NO-releasing particles showed a decrease in the number of bacteria isolated from bovine mastitis. Ours studies indicate that silver and polymeric nanoparticles are an interesting approach to combat bacteria resistance and they may be a good alternative treatment to control infections caused by multi-resistant bacteria.

Biography

Gerson Nakazato is graduate in Veterinary Medicine from Universidade Federal de Vicosa (UFV) in 1999 year, and he has completed his PhD in 2006 year from Universidade Estadual de Campinas (UNICAMP) and postdoctoral from same institution. He is professor, researcher and the vice coordinator director of Post-graduation Program of Microbiology from Universidade Estadual de Londrina (UEL). He has published more than 20 papers in reputed journals and serving as an editorial board member of reputed. He coordinates projects from CNPq and Fundação Araucaria. His works is focused on antimicrobials, nanotechnology and *E. coli* virulence.

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