Streptococcus mutans (S. mutans) is the principal pathogen involved in the formation of dental caries, moreover others systemic diseases are also associated according specific S. mutans serotypes (c, e, f, and k). Silver nanoparticles (SNP) have demonstrated good antibacterial effects against S. mutans; therefore limited studies have evaluated the antimicrobial activity of biofunctionalized SNP on S. mutans serotypes. The purpose of this work was to prepare and characterize coated SNP using two different organic components as well as evaluate its antimicrobial activity in clinical isolates of S. mutans serotypes. SNP using bovine serum albumin (BSA) and chitosan (CS) coatings were prepared and their physical, chemical and microbiological properties were evaluated. All samples of coated SNP showed particular antimicrobial activity and statistical differences in antimicrobial results were found associating their bactericidal action with smaller sizes and BSA coating on SNP (p<0.05). S. mutans serotypes c, e, f and k were successfully inhibited and similar antimicrobial sensibilities to coated SNP were identified (p>0.05). This study concludes that BSA and CS coated SNP had good antimicrobial activity against S. mutans serotypes and might be used as antimicrobial agent for inhibition of S. mutans bacteria.

Keywords: Silver nanoparticles, Biofunctionalization, Antimicrobial effect

References:

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Presenting author’s email: leohamet@hotmail.com