Nanosilver solution stability comparison with amoxicillin antibiotic on S. mutans and P. aeruginosa growth

Mohammad Niakan[1], HamidReza Azimi[2], Zahra Jafarian[3], Golnoosh Mohammadtaghi[3], Sara Niakan[4], Seyed mostafa Mostafavizadeh[5], Farhood Najafi[6], Aliakbar Jafarian[7]

1. Department of Microbiology, Faculty of Medicine, Shahed University, Tehran, Iran
2. Department of Oral and Maxillofacial Surgery, Dentistry School of Shahed University, Tehran, Iran
3. Dentistry School of Shahed University, Tehran, Iran
4. Faculty of Specialized Veterinary medicine Sciences and Research Branch, Islamic Azad University, Tehran, Iran
5. Faculty of Medicine, Shahed University, Tehran, Iran
6. Science and Technology of Color Research, Tehran University, Tehran, Iran
7. Department of Anesthesiology, Shafa-yahyaeian Teaching Hospital, and institute for history, Islamic and complimentary research, Tehran University of Medical Sciences, Tehran, Iran

Background and Aim:

Nanosilver compounds are admired in different fields of medicine and industry, due to their unique antibacterial properties. Maximum contact of silver particles in *Nanosilver* suspension causes increasing antibacterial effect of this compound. This study is done to evaluate the antibacterial effect and stability changes of *Nanosilver* solution.

Methods

In this invitro study, the effect of serial concentration of *Nanosilver* solution and amoxicillin antibiotic as control group on the standard bacteria *Streptococcus mutans and Pseudomonas aeruginosa* were measured in 0-3-9 month period by Disc diffusion method and results were examined by t-test statistic test.

Results:

Reduction in antibacterial activity and stability of *Nanosilver* solution in comparison with amoxicillin were measured and the results were examined by T-Test statistic test. During 9 months, there was no significant reduction in antibacterial activity of *Nanosilver* solution (4000 ppm) against *Pseudomonas aeruginosa*. In other concentration of *Nanosilver* solution and amoxicillin, reduction of antibacterial activity was observed.

Conclusions:

Antibacterial activity of *Nanosilver* was stable in 9 months but reduction of antibacterial activity of lower concentrations of *Nanosilver* and amoxicillin were significant in this period.

Keywords: *Nanosilver*, antibacterial effects, periodic stability

Corresponding Author:

Mohammad Niakan: niakan@shahed.ac.ir