Short Communication | Research & Reviews: Journal of Dental Sciences | 2021 | Vol.9 No.5

# Dental and Clinical Dentistry 2019: Evaluation antibacterial effect of diode laser in combination with or without metallic nanoparticles - Doaa Mohamed Mohamed Sadony - National Research Center

**Doaa Mohamed Mohamed Sadony**
National Research Center, Egypt

**Introduction:** Streptococcus mutants are the main etiological agent for dental caries. Recently, laser diode and metallic nanoparticles has been introduced as a new method in bacterial decontamination.

**Objective & Aim:** Present study was conducted with the aim of evaluating antimicrobial efficacy of silver (AgNPs) and gold nanoparticles (AuNPs) with and without diode laser (970nm, 1.5 watt,C.W mode) irradiation against experimentally inoculated Streptococcus Mutans bacteria in infected root dentin as a container.

**Material & Methods:** 30 extracted single rooted human teeth were prepared and inoculated with Streptococcus Mutants for 24 hrs. The teeth were then randomly divided into 5 experimental groups. Group (I): AgNPs group (n=6): irrigation for 3minutes with 50 µl of 100 ppm, Group( II): AuNPs group(n=6): irrigation with 50 µl of 100 ppm, Group(III)( n=6): the AgNPs & diode lasers group: irrigation with 50 µl of 100 ppm + irradiation with 1.5W laser for 60 seconds, Group( IIII)(n=6): the AuNPs & diode lasers group: irrigation with 50 µl of 100 ppm + irradiation with 1.5W laser for 60 seconds. One control group (VI)(n=6) contain only the bacteria strain. The specimens were collected from the canal and colony forming units (CFU's) were observed.

**Results:** Significant difference was found among all the groups in comparison to the control group ($p<0.05$). The greatest reduction in CFU's was observed with combination of AgNPs & diode lasers group. Application of diode laser in combination with silver nanoparticles had significant effects in the reduction of bacteria in comparison to other experimental groups. No significant differences were found among Au + diode laser group and control group, although significant difference existed among rest of the groups. The treatment in group (III) has the highest antibacterial effect by 90% followed by group (I) 80%, group (IIII) by 65 %, and the lower effect was group (II) 40% at the same time.

**Conclusions:** AgNPs in combination with diode laser irradiation has the potential to be used as disinfectant in dentistry.

This work is partly presented at 4th International Conference on Dental and Clinical Dentistry July on 08-09, 2019 held at Berlin, Germany