SDM
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& Hospital

"ERYTHROSINE MEDIATED PHOTODYNAMIC ANTIMICROBIAL CHEMOTHERAPY ON PLAQUE MICROORGANISMS"

By

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ABSTRACT

Introduction: Dental plaque is one of the predominant causes of major oral diseases. Although, mechanical and chemical methods are extensively followed to control the development of plaque, plaque related diseases still persist. Therefore this necessitates for alternative measures of plaque control, one such alternative is Photodynamic Antimicrobial Chemotherapy. Hence the aim of the present study is to evaluate the effect of erythrosine mediated photo dynamic anti-microbial chemotherapy (PACT) on plaque microorganisms. ***Methodology:*** Split mouth randomised clinical trial was conducted on 30 subjects who reported to the Department of Public Health dentistry, SDM College of Dental Sciences and Hospital, Dharwad. Subjects were asked to rinse their mouth for one minute using 10 ml of 25 μM erythrosine solutions. Same tooth on both quadrants of the same jaw are selected as the Test and Control Intervention used was halogen based composite curing light with wavelength of 500 – 600 nm. Plaque sample from the control tooth and test tooth was collected before and after exposure respectively. Plaque sample was immediately transferred to TG broth media under sterile condition using Columbia scaler. The effect of Photodynamic therapy was evaluated by microbiological culture for both aerobic and anaerobic colony forming units. Logarithmic transformations of the results was done and followed by independent t test was carried out to evaluate the differences in means between the control and experimental microbial counts. ***Results:*** Logarithmic mean and standard deviation of control group with 10^2 dilutions of aerobic microbial count were found to be 5.34± 0.94 and for experimental group, it was 4.47± 1.37. Similarly logarithmic mean and standard deviation of control and experimental group with 10^2 dilutions of anaerobic microbial count were found to be 6.18 ± 0.66 and 5.64±1.008 respectively.

The statistical difference between mean CFU values between aerobic and anaerobic bacterial counts were significant (P = 0.006, 0.017 respectively) ***Conclusions:*** Erythrosine mediated photodynamic antimicrobial chemotherapy reduces the extent of dental plaque microbial count and might have a potential preventive and therapeutic use in day to day life and in dental clinics. Further studies are required in this direction to access effectiveness of erythrosine based photodynamic antimicrobial chemotherapy compared to that of regular mechanical and chemical plaque control methods.

Key words: Dental plaque, Erythrosine, Photodynamic antimicrobial chemotherapy (PACT)