ABSTRACT

In the whole investigation “Antibacterial photodynamic therapy against Streptococcus sanguinis induced by synthetic and natural photosensitizer using low-power laser radiation” is make an effort to achieve most effective use of light based bacterial modality to exclude varieties of oral infection. In this regard photodynamic therapy has been used in the field of periodontal with the lower laser radiations.

Photodynamic therapy is an efficacious alternative of antibiotic used against microbial infection. This regimen investigation is to use photodynamic therapy against Streptococcus sanguinis which is responsible for the oral cavity.

The study comprises the efficacy of a chemical photosensitizer methylene blue and a natural photosensitizer Oryza sativa for the use in the photodynamic therapy against oral infection. This examination the effect appraise the effect of laser radiation red diode laser at wavelength (635 nm) and blue laser (405 nm) with different time duration using two photosensitizers on the viability of Streptococcus sanguinis causing periodontitis disease. The assessment was done by Agar Well Diffusion method and Paper disc method.

The result of present study infer that, the photoactivation of methylene blue (1g/10ml) by red diode laser at wavelength 635 nm with power 130 mW for 30 min was much effective for the inhibition of Streptococcus sanguinis than other laser. The percentage of suppression seen in this case in Agar Well Method Technique is 94%, and the photoactivation of methylene blue (1g/10ml) by blue laser at wavelength 405 nm with power 100mW for 30 min was much effective for the inhibition of Streptococcus sanguinis than red diode laser. The percentage of suppression has been analyzed with 92% inhibition in Agar well Method Technique is 92%.

While in the case of photoactivation of natural photosensitizer (1g/10ml) by red diode laser at same wavelength with same time duration reveal the percentage of inhibition seen in this case in Agar Well Diffusion and Paper Disc Method Technique is 93.42%, and with the blue laser radiation at wavelength 405nm with power 100 mW for 30 min was for the inhibition of Streptococcus sanguinis than red diode laser. The percentage of suppression has been analyzed with 90.90% inhibition in this case in Agar well Method Technique.

In this experiments, effect of time (30min, 20 min, 10 min) has been analyzed at power 100 mW photoactivation natural photosensitizer (Oryza sativa) red diode laser (635 nm) assessment was done by Agar Well Diffusion and Paper disc method.

To the best of our knowledge this is the first report of the Oryza sativa (natural photosensitizer) against Streptococcus sanguinis by low power laser radiations. According to percentage of inhibition of bacteria represent that rice is the most suitable as photosensitizer for photodynamic therapy.