The photodynamic therapy, a non-invasive therapeutic modality for the treatment of infections, depends in great part of the dosimetry of total light energy, light exposure time, and light delivery mode, also the light propagation through a medium implicates processes of refraction, reflection, absorption and scattering.

Now days there is an increasing insertion and implantation of prosthetic medical devices and foreign bodies (for example catheters), these medical devices are associated with a risk of bacterial infections, so it’s important to develop and improved the techniques to treat this kind of infections.

The aim of this study is determinate if the irradiation of a laser (argon, 532 nm, 200 j) over PpIX generated from exogenous administrate 5-ALA produce a transition from a low energy state to an excited state producing an antibacterial effect.

Methodology. From isolated bacteria (E. faecalis) from a teeth infection a biofilm was produce, then it was place under the next conditions: application of laser argon, 532 nm, 200 j; 5 ALA-thioglycolate solution; 5-ALA-thioglycolate solution irradiated with laser argon, 532 nm, 200 j. To determinate the generation of PpIX from 5-ALA was used a spectrofluorometric test and finally a cell viability test was performed.

Results. The spectrofluorometer test confirm the presence of PpIX, demonstrating that the PpIX can be generate from exogenous administrate 5-ALA. The cell viability test of the biofilms treated with exogenous administrate 5-ALA and irradiated with a laser argon, 532 nm, 200 j. show a low amount of bacteria in comparison with the other groups, demonstrating that the activation of PpIX by laser has an antibacterial effect, this technique may could be used to prevent and treat infections associated to medical devices.

Keywords: Laser, Photodynamic therapy, Medical Device

References:


Presenting author's email: a.israel.mr@gmail.com