Effect of gamma irradiation on polymeric gel with glucantime and silver for the alternative treatment of cutaneous leishmania

OLIVEIRA, M.J.A., VÁSQUEZ, P.A.S., ALCÂNTARA, M.T.S., LUGÃO, A.B.
Nuclear and Energy Research Institute-IPEN-CNEN/SP. Av. Professor Lineu Prestes, 2242, - Cidade Universitária 05508-000, São Paulo-SP Brazil
mariajhho@yahoo.com.br

ABSTRACT

The drugs used to treat leishmania are in injectable form and the applications are painful that many patients give up during the treatment. The treatment requires hospitalization to monitor the side effects caused by the drugs, such as cardiac arrhythmia, renal dysfunction, among others. In addition to this situation, if the patient has symptoms such as cardiac arrhythmia, renal dysfunction they can not make use of the treatment. For these reasons finding new forms of treatments with minor side effects as alternative treatments for leishmaniasis has been the object of study of many research laboratories. The objective of this work was to analyze the effects of gamma irradiation on polymeric gel with glucantime and silver as the alternative treatment of cutaneous leishmania. In this case, the polymeric gel prevents the drug from falling directly into the bloodstream, avoiding the side effects, which would make unnecessary the patient's hospitalization. For the development of the gels was used, alginate, polyethylene glycol (PEG), polyvinylpyrrolidone (PVP), laponite clay, silver ions, and glucantime. The cobalt-60 source gamma irradiation was used for gel formation, silver nanoparticles and simultaneous sterilization. The physico-chemical characterizations were elemental analysis for quantification of Sb(V) and Sb(III) antimoniate, infrared spectroscopy (FTIR), dispersive energy spectrometry (EDS), transmission electron microscope (TEM). The results are promising, they show that the irradiation does not interfere with the drug's active principle, as expected in this study.

Keywords: Polymeric gel. Glucantime. Gamma irradiation.