Research Project Proposal
Academic year 2020-2021

Máster en Investigación Biomédica

Project Nº 46

Title: Development of a hydrogel containing a novel diselenide for the topical treatment of localized cutaneous leishmaniasis

Department/ Laboratory
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Summary

Leishmaniasis is a neglected tropical disease caused by *Leishmania* parasites that is endemic in 98 countries, accounting for 1.5 million new cases annually. It causes a large spectrum of clinical pathologies, ranging from cutaneous lesions (cutaneous leishmaniasis, CL) to visceral parasite dissemination (visceral leishmaniasis, VL). Some forms of leishmaniasis cause localized skin lesions, LCL, that may spontaneously heal or persist, causing severe tissue damage, permanent disfigurement and serious disability. Currently, there is no satisfactory therapy for CL and the WHO recommends the topical treatment for its better patient compliance and lower toxicity and costs.
Selenium (Se) is an essential element with a wide range of activities, including antimicrobial properties. Increased Se concentration in plasma has been proposed as a new defensive strategy against *Leishmania* infection. In recent years, our research group has been engaged in the design, synthesis and biological evaluation of new Se compounds with potent leishmanicidal activity *in vitro*. Among these compounds, some diselenides, including 2m, showed enhanced antileishmanial activity against VL compared to reference drugs miltefosine and amphotericin B.
The aim of this work is the development of a hydrogel containing the diselenide 2m for the topical treatment of LCL. The objectives include: 1) *In vitro* leishmanicidal activity and cytotoxicity of 2m; 2) Development and characterization of hydrogels containing 2m; 3) *In vitro* penetration and retention studies in skin samples; and 4) *In vivo* efficacy studies in a murine model of LCL

yes	**X**
no	

Does the project include the possibility of supervised animal manipulation to complete the training for animal manipulator?