



MÁSTER EN INVESTIGACIÓN BIOMÉDICA

Research Project Proposal

Academic year 2024-2025

Project Nº 41

Title: *PRODUCTION OF MULTIFUNCTIONAL POLYMERIC WOUND DRESSINGS BY SOLUTION BLOW SPINNING FOR THE TREATMENT OF LEISHMANIASIS*

Department/ Laboratory *Laboratory where the project will be carried out indicating Department, Area, Faculty, CUN, CIMA etc.*

Departamento de Microbiología y Parasitología

Departamento de Química (research group SUMBET)

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Summary *Short summary of the project with a maximum extension of 250 words, including the goals and the methodology that will be used.*

More than half of the twenty neglected tropical diseases (NTDs) listed by the World Health Organization (WHO), are pathologies with skin manifestations, often associated with long-term disability, stigma and mental health problems. Cutaneous leishmaniasis (CL) is one of these skin NTDs, and its manifestations are slow-healing chronic ulcerations, which develop into scars causing disfigurement and social stigma. This TFM project, framed into the objectives of MCINN project PID2020-112713RB-C21, aims to establish the conditions under which certain antimicrobial drugs, including those currently administered for the treatment of CL, can be incorporated into biocompatible polymeric fibers, obtained by solution blow spinning (SBS), in the form of sprayable wound dressings, for the controlled release of the drug through the skin. The research project entails an exhaustive investigation at a physicochemical level about the affinity of the drugs for the fibres and their release capacity. Subsequently, the microbicidal activity of the drug-loaded fibers produced by SBS will be investigated in vitro, as well as the evaluation of the biological activity in Leishmania cultures and in mouse macrophages. Finally, tests will be carried out on the lesions produced in infected experimental models. These assays will provide information on the genes involved in the drug's activity and its ability to modulate host immunity, a key aspect of parasite elimination. The results obtained will help correlate the morphological properties of the drug-functionalized fibers with the biological activity and thus better understand the mechanism of action, with the aim of developing alternatives to existing current formulations for the treatment of the disease. REFERENCES: *Int. J. Mol. Sci.* **2023**, *24*, 14757; *J. Mol. Liquids* **2024**, 124455. If you are interested in pursuing a doctorate after the finalization of the MSci, please contact the supervisors of this project.

yes	X
no	

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