



**Research Project Proposal**  
Academic year 2021-2022  
**Máster en Investigación Biomédica**

**Project Nº 54 ASIGNADO**

Project title

Embedding of drugs in polymeric fibres for dermal release: application to the treatment of cutaneous leishmaniasis

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

ISTUN Instituto de Salud Tropical, Departamento de Microbiología y Parasitología / Departamento de Química. Universidad de Navarra

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Summary:

The main objective of the MSc project is the preparation, by means of solution blow spinning (SBS), of sprayable, polymer-based wound dressings for the treatment of cutaneous leishmaniasis (CL). This disease is caused by the intracellular protozoan *Leishmania* and transmitted by the bite of phlebotomine sand flies, its manifestations being painless, chronic and slowly-healing ulcers in the spots where vectors bitted the patients, typically face and extremities. These ulcers may become scars and may cause disfiguration and social stigma. CL has been classified by the World Health Organization as a neglected tropical disease, category 1 emerging and uncontrolled pathology.

In recent years, SBS has proven to be a fast and scalable process for preparing polymeric materials consisting of fibres of less than 1 µm in diameter. With this method, a concentrated polymer solution or suspension is injected into the flow of a pressurized gas and projected from a nozzle to produce the micrometric fibres. The ulterior entangling and stacking of the fibres upon application produces biodegradable polymeric mats from which a drug, incorporated to the polymer prior to the airbrushing process, can be directly released to the wound.

The MSc thesis project, framed in MINECO coordinated project PID2020-112713RB-C21, comprises:

- i) The definition of conditions under which selected drugs will be combined with different polymers and solvents to be sprayed by SBS and the release capacity of the fibres
- ii) The evaluation of the biological activity of the drug-loaded fibres, both *in vitro* as *in vivo*, produced in the form of dressings by SBS.

yes	X
no	

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