

## Preventing ulcerative colitis through parasitic helminths is being studied

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(De izquierda a derecha): Antonio Marcilla, María del Carmen Recio, Dolores Bernal, Rosa María Giner, María Trelis, Alicia Galiano y Javier Roig.

**A research of the Universitat de València, the Health Research Institute of La Fe Hospital and the National Centre of Cardiovascular Research has described the utility of extracellular vesicles produced by parasitic helminths (a type of worm that inhabits within the human being and the cattle) as an alternative to prevent ulcerative colitis. These vesicles, which are secreted by a wide variety of organisms and cells, can be found in most of the human fluids and participate both in physiological and pathological processes.**

"This research introduces new knowledge on the role of extracellular vesicles of parasite organisms, like helminths, and reveals its possible implication not only in controlling the infections that they produce, but also the diseases in which there is a deregulation of the immunological system, such as in inflammatory disorders", has highlighted Antonio Marcilla, professor of the Department of Pharmacy and Pharmaceutical Technology of the Universitat de València and director of the study.

This work, published last week in the magazine *Frontiers in Microbiology*, is added to recent researches that prove that helminths parasitism can be linked to the lack of autoimmune diseases, meaning those caused by the immunological system when it attacks the cells of the organism itself. This type of disorder is the main cause of chronic diseases. They encompass a series of pathologies apparently not linked to one another, such as ulcerative colitis, type 1 diabetes, celiac diseases, psoriasis or multiple sclerosis.

The research, which has been developed in an animal model, analyses the cell and molecular mechanisms involved in the response to the secreted vesicles by parasites with an immunomodulatory effect. It concludes that they are not interceded by adult lymphocytes, which were the cells that had been proposed to be the responsible of the immunological response in the ulcerative colitis. Nowadays, there is no treatment to such inflammatory diseases and the use of secreted vesicles by parasites with an immunomodulatory effect opens a new way to control these pathologies.

Published works in the last years have revealed that helminths parasitism can be linked to the lack of autoimmune diseases. Several ongoing tests are assessing the use of experimental infections with helminth parasites for that purpose. They entail ethical and sometimes health problems, though. Researchers of the Group ParaSalut of the Universitat de València have participated in the research. They have used products that secrete parasites, instead of infecting them directly.

In addition, this research has recently been awarded in the Yearly Conference of the International Society for Extracellular Vesicles (ISEV) as one of the best announcements in poster format, given to Alicia Galiano Hernández.

The research had the support of the Valencian Government (Proyecto Prometeo/2016/0156), the Foundation Ramón Areces and Rediex Excellency networks of MINECO).

Article:

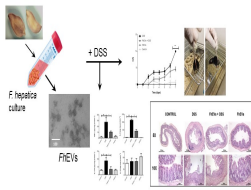
Roig J, Saiz ML, Galiano A, Trelis M, Cantalapiedra F, Monteagudo C, Giner E, Giner RM, Recio MC, Bernal D, Sánchez-Madrid F and Marcilla A (2018): «Extracellular Vesicles From the Helminth Fasciola hepatica Prevent DSS-Induced Acute Ulcerative Colitis in a T-Lymphocyte Independent Mode». *Front. Microbiol.* 9:1036. doi: 10.3389/fmicb.2018.01036

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**Image caption:**

- Outline of the research. Adult parasites obtain secreted vesicles (FhEVs) that are inoculated in mice before causing them severe ulcerative colitis with the chemical agent DSS (dextran sodium sulphate). A week later, the disease indicators and the damage at an intestinal level are analysed (Source: Dra. Dolores Bernal).

**Images:**



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