

Weight loss helps to oust worms

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Scientists from The University of Manchester have discovered that weight loss plays an important role in the body's response to fighting off intestinal worms.

The findings have been published in the journal [PLOS Pathogens](#) and show that the immune system hijacks the natural feeding pathways causing weight loss. This then drives the defense mechanisms down the correct pathway to expel the worms.

Nearly one quarter of the world's population is infected with [gastrointestinal parasites](#). These prevalent infections often result in a period of reduced appetite resulting in weight loss. However, little is known about the factors controlling these feeding alterations and the reason why they occur.

Scientists from the Manchester Immunology Group and the Institute of Inflammation and Repair studied the immune response system in mice that were lacking [immune cells](#) and feeding hormones. The mice were infected with the round worm parasite *Trichinella spiralis*.

They identified that the mouse immune response to the parasite was behind two periods of reduced feeding through two distinct immune mediators. Interestingly, the immune system was using the hormone cholecystokinin, which usually stops feeding during daily meals to cause a reduction in weight and fat deposits. This then reduced the levels of the fat produced [hormone leptin](#), which can influence the immune response.

To see if this reduction in leptin was beneficial, the researchers restored the [leptin levels](#) in the mice during the [worm infection](#). They found that the treated mice did not make the correct immune response to the parasite resulting in a delayed worm expulsion.

Dr John Worthington from the Faculty of Life Sciences carried out the research: "We were quite surprised by what we found during this study. Normally weight loss is associated with a negative immune response but this appears to suggest just the opposite that the immune driven weight loss was actually beneficial to the mouse's ability to resolve an infection and get rid of the worm."

Dr Worthington continues: "Our study provides novel insights into how the immune system interacts with feeding pathways during intestinal inflammation. We hope it will help us to design new treatments for the many millions of people who suffer from parasitic infections of the gut."

Professor McLaughlin added: "This may also have relevance to why other human diseases causing inflammation of the digestive system affect appetite and nutrition".

The laboratories are currently expanding these studies to examine how other feeding hormones interact with the immune system during different infectious diseases.

More information: The paper entitled "Adaptive Immunity alters Distinct Host Feeding Pathways during Nematode Induced Inflammation, a Novel Mechanism in Parasite Expulsion" will be published in *PLOS Pathogens* on January 17.
[dx.plos.org/10.1371/journal.ppat.1003122](https://doi.org/10.1371/journal.ppat.1003122)

Provided by University of Manchester

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