

Tapeworms could prevent, treat inflammatory bowel disease in children

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New research suggests that parasitic worms could someday help prevent or treat pediatric inflammatory bowel disease (IBD). The study, published ahead of print in the *American Journal of Physiology—Gastrointestinal and Liver Physiology*, was chosen as an APS select article for March.

IBD encompasses several conditions, including colitis, that cause severe and long-lasting inflammation of the digestive tract. Common IBD symptoms such as diarrhea and lack of appetite can lead to reduced absorption of nutrients. Chronic lack of nutrition may result in stunted growth and developmental delays in children.

Research has found that adult animals that were previously infected with parasites experienced less severe or fewer symptoms of IBD compared to those that were parasite-free. This type of protection may have occurred through an immune response called [immunological memory](#). When the body is faced with a threat, it remembers a previous interaction to a same or similar invader and produces more [white blood cells](#) to fight the infection. A research team from the University of Calgary in Canada exposed young mice to a species of parasitic [tapeworm](#) (*H. diminuta*) to determine if immunological memory is triggered in younger animals as well.

Ten days after the young mice were exposed to the tapeworms, the animals expelled the parasites, a normal physiological response indicating that the immune system fought the infection. Next, when they

were exposed to colitis-causing substances, mice that had been infected with worms developed less severe cases of colitis than a worm-free control group. In addition, after exposure to colitis, some mice were treated with an extract derived from the tapeworms (helminth extract) that simulated a recurring infection of [parasitic worms](#). This group was found to produce higher levels of anti-inflammatory proteins and had few to no colitis symptoms. This reaction suggests that immunological memory protected the young mice from disease.

"In conclusion, we provide some of the first proof-of-concept data in support of the potential of developing helminth therapy to prevent or treat inflammatory disease in children and [we show] that a history of infection opens the possibility of using immunological memory against helminths to treat inflammation," the researchers wrote.

"Young [mice](#) expel the tapeworm *Hymenolepis diminuta* and are protected from colitis by triggering a memory response with worm antigen" is published ahead of print in the *American Journal of Physiology—Gastrointestinal and Liver Physiology*.

More information: Toshio Arai et al. Young mice expel the tapeworm *Hymenolepis diminuta* and are protected from colitis by triggering a memory response with worm antigen, *American Journal of Physiology-Gastrointestinal and Liver Physiology* (2018). [DOI: 10.1152/ajpgi.00295.2017](#)

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