

Immune response against *Toxocara* roundworms helps explain disease

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Neurotoxocarosis (NT) occurs in humans when larvae of the *Toxocara* roundworm migrate into the central nervous system. That infection is accompanied by a complex molecular signaling cascade, including changes to anti-inflammatory lipid molecules, researchers now report in *PLOS Neglected Tropical Diseases*.

Toxocara roundworms are globally distributed and carried by animals in the dog and cat families. Humans and other species can also act as hosts after accidental ingestion of the infectious larvae stage. *Toxocara* are known to affect host immune responses, however the role of bioactive lipid mediators originating from polyunsaturated fatty acids known from e.g. fish oil have been poorly understood. These mediators often play important roles in [infection](#) response as well as in induction and resolution of inflammation.

In the new work, Christina Strube, of University of Veterinary Medicine Hannover in Germany, and colleagues measured the levels of a broad variety of different [lipid](#) mediators in the brains of mice infected with either the dog roundworm *Toxocara canis* or the cat [roundworm](#) *Toxocara cati*. Lipid mediators were profiled in the acute (day 7 post infection [pi]), subacute (days 14, and 28 pi) and chronic (days 42, 70, and 98 pi) phase of infection.

The team found only minor changes in the levels of pro-inflammatory prostaglandins throughout infection. However, they detected significant elevations in numerous anti-inflammatory metabolites derived from

lipoxygenase pathways. These molecules were elevated in multiple stages of infection. The researchers did note some differences to [lipid profiles](#) between animals infected with *Toxocara canis* and those infected with *T. cati*.

"Results contribute to a further understanding of the largely unknown pathogenesis and mechanisms of host-parasite interactions during NT," the researchers say.

More information: Waindok P, Janecek-Erfurth E, Lindenwald D, Wilk E, Schughart K, et al. (2019) Multiplex profiling of inflammation-related bioactive lipid mediators in *Toxocara canis*- and *Toxocara cati*-induced neurotoxocarosis. *PLOS Neglected Tropical Diseases* 13(9): e0007706. doi.org/10.1371/journal.pntd.0007706

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