

Novel Compounds to Treat and Prevent Nematode Infestation in Plants and Animals

INVENTION: Investigators at Salk in collaboration with scientists at Cornell University and its affiliate, The Bryce Thompson Institute, have identified a novel class of lipid-based small molecules from the secretions of a terrestrial nematode, *Pristionchus pacificus*. These compounds are sulfate-containing lipids, and are shown to be a potent repellent for *C. elegans* and other nematodes. Apart from inducing avoidance behaviors, this class of compounds also negatively affects *C. elegans* growth and metabolism. Along with *C. elegans*, current results also show that these molecules negatively affect *Steinernema carpocapsae* and *Heterorhabditis bacteriophora*, indicating a broad use for these molecules in controlling nematodes. Additional plant and nematode parasites are being tested. This novel class of compounds provides a new modality to prevent or treat nematode infestation of plants and animals.

APPLICATIONS:

- Novel class of compounds that repels and kills multiple nematode species, possibly including those that infect crop plants, livestock, and companion animals.
- A new method for treating or preventing a nematode infestation of plants or animals.

ADVANTAGES:

- The sulfolipids are stable and highly active.
- These compounds are potent repellents and growth inhibitors of multiple nematode species that infect plant and animal hosts.
- Preliminary data suggests that the compound/these compounds have anti-microbial activity, which could be used to treat bacterial infections and biofilms.

STAGE OF DEVELOPMENT:

The novel sulfolipid compounds have been characterized and synthesized using organic synthesis. The synthetic compounds are currently in testing on plant and animal nematode pests.

BACKGROUND: Nematodes are microscopic roundworms that live in the soil and on plant roots and represent a type of plant pests in certain parts of the United States. Nematodes are particularly a problem in areas with warm temperatures and sandy soils and negatively impact lawns throughout the Southeastern United States. Nematodes cause injury to lawns by feeding on plant root cells which damages the root system preventing proper water and nutrient absorption by the plant. The lawn is then weakened and more susceptible to other stresses, such as drought. Other species of nematodes also infect animal hosts, including companion animals and livestock.

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PATENT STATUS: U.S. patent is pending

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