

Parasitic worms of the digestive tract - Generalities

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Dozens of different parasites can be found in the digestive tracts of rabbits, hares, and cottontails. Some are very rare, some are pathogenic only under exceptional circumstances; others have barely been studied. We will describe those most commonly found in house rabbits.

In contrast to wild rabbits, healthy house/pet rabbits living in clean conditions are rarely affected by gastrointestinal parasites. The main reason for this relates to the life cycles of the various parasites, many of which are naturally disrupted when the appropriate conditions for development of the larval stages (L₁, L₂ and sometimes L₃) are not met indoors.

Many parasites are heteroxenous (multihost): in order to reproduce, they must live in several host intermediates before affecting the final host. For

instance, the different juvenile forms of the liver fluke (*Fasciola hepatica*) are found in certain snails in the grass of marshy areas before entering the rabbit digestive tract. The little fluke larvae (*Dicrocoelium lanceolatum*) need to live in snails and ants before becoming infective in rabbits. Those worm parasites are rarely found in house rabbits, as their life cycle is broken due to the absence of intermediate hosts in the house environment. Other parasites are monoxenous (single-host). Their larval stages are generally found in wet grassland, stagnant



water, or hay before being ingested by the unique and final host, the rabbit. Such worms are more commonly found in house rabbits.

In order to prevent worm invasion in a house rabbit, it is essential that:

- forage not be gathered in areas where there are numerous dogs, cats, rodents,
- fresh greens and vegetables be washed carefully with running water,
- hay and straw used as litter be changed daily,
- hay that cannot be changed daily be given on a feed rack, where it cannot be soiled with feces or urine,
- the litter boxes themselves be cleaned daily with hot running water, acetic acid, or chlorine.

If a worm infestation appears in a house rabbit, it can easily be eliminated with the appropriate medication. A veterinarian should always be consulted prior to treatment, in order to determine which kind of worms affect the rabbit. The prescribed timing for the medication must be strictly applied.

Nematode parasitic worms

The word "nematode" originates from the Greek words "nematos" (thread) and "eidos" (form), referring to their filariform shape. Nematode worms belong to the most abundant multicellular animals on earth.

An adult worm consists of about one thousand cells, of which hundreds are involved in reproduction. Other cells have specialized digestive, nervous, or excretory functions. These parasitic worms have neither circulatory nor respiratory systems. Their structure is simple, consisting basically of "a tube within a tube," with an alimentary canal extending from the poorly developed buccal part to the posterior anus. Parasitic nematodes (pinworms and oxyurid) are commensal, little- or non-pathogenic, bacteria-feeding roundworms that generally live in the lower portion of the intestine. Although they are common among vertebrate hosts, they are usually host-specific, infecting mainly cattle and rabbits. Cases of cross-transmission have, however, been reported.

Nematodes are more commonly found in lagomorphs with a decreased immune resistance. The population of worms varies according to the age and the sex of the host, but also according to the intestinal bacterial flora of the host. Male rabbits are more frequently infested with pinworms than females are. A high-fiber diet is said to reduce the worm population. Pinworms are found worldwide, although some species occur more frequently in some regions.

The population of worms fluctuates; when reaching a peak number, they will



be shed and can be observed in the dropping of the rabbit. Occasionally, they can be in such high number, resulting in a blockage of the intestine. Once expelled, the surviving worms start a new cycle of growth in the cecum, shedding eggs that may be re-ingested, re-infecting the rabbit.

Nematode parasitic worms of the domestic rabbit

Parasitic nematodes found most frequently in the gastrointestinal system of rabbits are:

Oxyuridae	<i>Passalurus ambiguus</i> <i>Dermatoxys veligera</i>
Trichostrongylidae	<i>Trichostrongylus calcaratus</i> <i>Trichostrongylus sp.</i> <i>Obeliscoides cuniculi</i> <i>Nematodirus leporus</i> <i>Graphidium strigosum</i> <i>Strongyloides sp.</i>
Trichuridae:	<i>Trichuris leporis</i>
Filarioideae	<i>Dirofilaria scapiceps</i> <i>Dirofilaria uniformis</i> <i>Brugia lepori</i>
Metastrongyloidea	<i>Protostrongylus boughtoni</i>
Ascaroidea	<i>Bayliascaris procyonis</i> <i>Bayliascaris columnaris</i> <i>Toxocara canis</i>

Symptoms and diagnosis

The presence of thick brown threads of mucus in the droppings can be an indication for the presence of intestinal worms.

In some cases, the presence of intestinal worms leads to cecal impaction, accompanied by stasis, terrible pain and gas formation. This is independent from the type of worm (pinworm or tapeworm) in rabbits. More rarely, sudden death occurs, without prior clinical symptoms of disease, no signs of parasitic worms during earlier fecal flotation tests. At necropsy, the cecum was found to be heavily infected with pinworms, the site where the worms were located was inflammatory and presented dystrophic modifications.





Samuel Boucher and Loïc Nouaille

**Left: Healthy cecum and intestine, devoid of parasitic nematode parasites
Right: Cecum injured by a severe infestation of *Passalurus* spp.**

The presence of intestinal parasites is determined by a fecal flotation test. In rare cases, the fecal flotation test result of heavily infested rabbit can return negative. When left untreated, the presence of worms will be observed in the droppings.



Simone van der Meij

**Left and Middle: Droppings with hair (fine white filament) and worms (thick translucent threads)
Right: Dropping with hay fiber (short yellowish stalks) and live roundworm.**

Treatment

The presence of parasitic intestinal nematodes must be treated by administration of benzimidazoles, more specifically fenbendazole or thiabendazole. Piperazine is reported efficient, while ivermectin does not kill all the roundworm worms (e.g. *Passalurus* sp.). Praziquantel is used to treat tapeworm infestation in rabbits.

See the [texts related to the particular worms](#), for details of treatment.



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Further information

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