Ecto- and Endo-parasites in Rats

This is a guide to the most common parasites in pet rats. Please consult your vet for the correct diagnosis and treatment, especially in severe cases where the health of the animal was already compromised. If you suspect your rats having internal parasites (e.g. worms) then it is generally the best option to get treatment at your vet.

Lice

Lice are common ecto-parasites in wild rat populations, but less common in pet rats. In severe infestations, animals can lose enough blood to develop anaemia. Lice are transferred from wild rats, infected rodents (handling other rodents before returning to your rats) or transferred from something in the environment like litter or hay. \(^1\)

Lice are species specific and will spend its entire life cycle (egg, nymph and adult), lasting 14 to 21 days on the host. \(^3\)

TYPES OF LICE

SUCKING LICE (ANOPLURA) are similar to chewing lice but more common in rats. \(^2\)(\(^3\))

**Sucking louse** \(^{(a)}\)

SPINED RAT LICE (POLYPLAX SPINULOSA) cause hair loss and itchiness in rats. \(^3\)(\(^4\))

**Spined rat louse** \(^{(b)}\)

CLINICAL SIGNS \(^1\)(\(^3\))

- Visible red or brown dots in fur that moves around
- Scratching
- Sores and scabs
- Hair loss
- Dry blood spots in fur (not to be confused with buck grease or porphyrin)
- Eggs – white-grey specs attached to fur
- Possible weakness due to anaemia

**Lice on rat** \(^{(c)}\)

**Lice eggs** \(^{(d)}\)
Mites

Mites are very common in pet rats. Under normal conditions, a small number of mites are not bothersome to the host, but as soon as the rats’ immune system is compromised due to illness or stress, they are unable to keep the numbers down by normal grooming. Poor husbandry, illness or ineffective treatment may lead to severe outbreaks or re-infestation. (3)

Mites are transferred from infested rats, even if they do not display any clinical symptoms. It is therefore important to treat all animals during an outbreak or when new animals are introduced to the colony, unless the breeder or rescue already treated the animal.

The life cycle is approximately 23 days and least vulnerable during the egg cycle. It is therefore sometimes needed to repeat treatment to break the cycle. (3)

Mites are considered part of normal microfauna and are transferred from mom to pup. (4)
TYPES OF MITES

TOPICAL MITE (LIPONYSSUS / ORNITHONYSSUS BACOTI) is round in shape and darkens when engorged with blood. They can survive on the bedding and litter and only stay on the host when feeding. They will also bite humans and other animals causing itchy welts. The larva are microscopic but the adults range from about the size of a pinprick to 1 mm long.

SARCOPTIC MITES (DEMODEX SPP. & NOTOEDRES) are primarily found deep within the hair follicles and sebaceous glands that cause mange in animals. They do not infest humans or other animals. Mange mite (Notoedres muris) is rare. It burrows into the skin and causes crusty bumps on the ears and sometimes nose and rarely red bumps or blisters on the tail, feet and genitals. This mite is microscopic—only 0.04 mm long—so can only be seen under a microscope.

FUR MITES (RADFORDIA ENSIFERA) may cause dermatitis in rats. It causes severe itching and may lead to scabs most frequently seen in the shoulders, neck and face of the rat. They do not infest humans or other animals.

CLINICAL SIGNS

- Scratching causing sores and scabs, usually on the shoulders, neck and face. (Fur mites)
- Hair loss and skin sensitivity
- Blister like bumps on the ears or crusted growths on the nose. (Sarcoptic)
Fleas

Flea infestation in pet rats are very rare. Typically, they get infested when they were come in contact with wild rodents. A flea infestation can be determined by the actual presence of adult fleas (1-5 mm long) or flea excreta (black dots of digested blood). Reinfestation can occur if care is not taken to include the surrounding environment and any other animal in the home when treating.

TYPES OF FLEAS

There are several types of fleas, but the most common is Ctenocephalides Felis. FLEAS (CTENOCEPHALIDES FELIS) may cause severe irritation and be responsible for flea allergy dermatitis. They can survive in the environment and even lie eggs away for the host, emerge as young adults and move back to the host or a new host. They will also bite humans and other animals.
CLINICAL SIGNS

- See actual fleas on the rat
- Indication of presence – droppings of digested blood which may appear like particles of blood.[3]
- The skin may be red/inflamed in some areas due to the flea feeding on the area, as well as to irritation from scratching by the rat.[6]

TREATMENT

Please note that Kitten Revolution and Ivomec should not be used on pregnant animals or new born pups. Moms with older pups could be treated and the pups will receive the correct dosage through her milk.

- **Kitten Revolution** – One drop applied topically behind the ear or between the shoulder blades. Usually a once off treatment. In severe cases, and only by your vets recommendation, may a rat be treated repeatedly in two week intervals.[3]
- **Ivomec** – One drop applied topically behind the ear or between the shoulder blades. Apply three times a week apart to break the egg cycle. (3)
- **Vacuum in the room where the rats are kept.** The three stages of immature fleas (eggs, larvae and pupae) often live in carpets and rugs. They will avoid high traffic areas so vacuum under furniture and against the wall. This can eliminate 30% of larvae and 60% of flea eggs. Change the vacuum bags regularly or place a flea collar inside the bag to kill emerging fleas. Carpets can be steamed or shampooed to remove additional fleas and larvae. Wash toys, accessories and bedding regularly with hot soapy water.[7]

Worms

Worms or helminths are endo-parasites that are intestinal parasites. Helminths are multicellular worms, like tapeworms, pinworms and roundworms. These worms are mainly spread as a result of poor hygiene, or when rats come into contact with faeces from an infected rat / wild rats, as the eggs are released from the intestinal system through the faecal matter. Pinworms can also infect rats by way of the respiratory tract, as their eggs are capable of becoming airborne and inhaled. (8)

TYPES OF WORMS

**TAPEWORMS**

**DWARF TAPEWORM (HYMENOLEPIS NANA)** is transmitted by ingestion of the cyst that is found in the cage, litter, water bottles, carried on hands or spread through the air.

**HYMENOLEEPIS DIMINUTA** requires an intermediate host such as fleas, cockroaches or grain beetles for transmission.

**TAENIA TAENIAEFORMIS** is transmitted through cat faeces or feed contaminated with the parasite. Rats can be an intermediary by harbouring it in the liver and **TAENIA SERALIS** in connective tissue.

![Dwarf Tapeworm](image1.jpg)

![Tapeworm](image2.jpg)
ROUND WORMS

RAT PIN WORM (SYPHACIA MURIS), also known as threadworms, are small white worms between 2-13 mm long. They can often be seen near the anal area of the infected rat. Diagnosis is verified by identifying the worms or their eggs through a fecal examination. The life cycle is direct and only 11-15 days. After ingestion they migrate to the large intestine and then to the anal area to deposit eggs. They can survive for weeks outside the host before being re-ingested or ingested by another rat.

BLADDER THREADWORM (TRICHOSOMOIDES CRASSICAUDA), is found in the wall of the bladder. It can migrate to the lungs. Transmission is through eggs in the urine and can be passed from doe to offspring. It causes irritation to the bladder, with painful urination as a result.

MOUSE HOOKWORM (NIPPOSSTRONGYLUS MURIS), is found in the small intestines and transmission is by ingestion of eggs in faeces. It can produce pneumonia and pulmonary haemorrhaging on migration through the lungs.

CLINICAL SIGNS (8)
- Diarrhoea
- Changes in appetite (loss or increase)
- Weight loss
- Excessive licking and chewing of rectal area and base of tail
- Bits of worms or whole worms in faeces
- Severe infection can lead to blockage or perforation of the intestines
- Tapeworm infections can cause liver enlargement by forming cysts in the liver.

TREATMENT

PINWORMS, ROUNDWORMS & BLADDER WORMS:
- Kitten Revolution – One drop applied topically behind the ear or between the shoulder blades. Usually a once off treatment. In severe cases, and only by your vets recommendation, may a rat be treated repeatedly in two week intervals.
- Ivomec – One drop applied topically behind the ear or between the shoulder blades. May need to repeat to break the cycle.
- Fenbendazole (Panacur) – consult your vet for a prescription.

TAPE WORMS:
- Profender – Cat topical dewormer. Apply behind the ear or between the shoulder blades. 0,03mls per 100g body weight. About a drop for an average sized adult rat.

Keep rats away from cat litterboxes when free roaming. Food, particularly meat should be well cooked and store dry food in tightly closed containers. Prevent exposure to rats in the wild and insects known to spread the infection.
Protozoa

“The digestive tract in rats is home to a wide variety of microorganisms, including protozoa, single celled organisms that play an important and beneficial role in the digestive balance. In some cases, however, protozoa can be of a parasitic variety, and can bring harm to the host animal. Under healthy conditions the beneficial microorganisms are higher in number than the harmful microorganisms. But when a rat is stressed or in a diseased condition with a lowered immunity, the balance between the beneficial and harmful protozoa is tipped in favour of the harmful ones, which can allow for intestinal infections. There are also some species of harmful protozoa that can be transmitted to rats through various sources, most notably infected faeces, and which can also lead to intestinal infections.” (12)

PROTOZOA are one or grouped celled organisms. It is mainly transmitted via ingestions of cysts in faeces. Healthy adults may not exhibit disease, but heavy infestation or rats who are immunocompromised and noted to have inflammation of the intestines, with resulting diarrhoea. In some cases you may see weight loss and abdominal enlargement. (10)

CLINICAL SIGNS (10)

- Diarrhoea
- Change in appearance of faeces
- Weight loss

TREATMENT

- Treat with Flagyl or Metronidazole. (10) Consult a vet for treatment.

NOTE: Do not treat pregnant females as it may cause foetal deformities.
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Photo Credit:

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