

Background:

Oxyuriasis, or pinworm infection, is very common in mouse and rat colonies with the two species most often diagnosed in mice being *Syphacia obvelata* and *Aspiculuris tetraptera*. The rat pinworm, *Syphacia muris*, may also infect mice, and rats may also be infected with mouse species.

Pinworms are transmitted directly via ingestion of eggs from the environment. *Syphacia* has a 12-15 day life cycle with adults residing and mating in the cecum and large colon. Females migrate to the perianal area to deposit their eggs which become infective within a few hours. *Aspiculuris* has a 23-25 day life cycle with adults residing in the colon. The female excretes her eggs within a mucous layer that then covers the feces and is carried out via defecation. Due to the shorter life cycle, *Syphacia* will be found in younger mice and also in higher numbers. Pinworm eggs are highly resistant to environmental conditions and may also be disseminated in the air.

Diagnosis is done in various ways including applying cellophane tape to the perianal area and looking under the microscope for eggs (for *Syphacia*), fecal flotation (for *Aspiculuris*), direct examination of the cecum and colon contents at necropsy, and PCR. Clinical signs are rarely seen but heavy infestations may cause unthriftiness, rectal prolapse, intussusception, and weight loss.

Research Effects:

In significant infestations, mice/rats may show decreased weight gain and/or unthriftiness. Immunodeficient animals are more susceptible to disease including immune system disturbances and intestinal mucosal invasion leading to colitis. Additionally, infestations can compromise

collaborations between facilities if one facility excludes these parasites from their colony.

Prevention/Control:

Every attempt is made to only acquire animals from approved vendors with documented histories of pinworm-free mice. Animals coming in from other institutions or non-approved vendors may undergo an extended treatment and quarantine period until they are pinworm free. Animals being taken out of the LAR animal spaces to an investigator laboratory for treatments or procedures are kept in a separate holding area and are not returned to the general colony areas.

When pinworms are detected in our colony, investigators are contacted to develop an eradication plan. In most cases, the affected animals will be switched to a feed which has an anthelmintic medication-Fenbendazole-mixed in it for an extended period of time. Additional containment measures such as increased PPE and entering affected rooms last will be put in place until testing is negative for parasites.

References:

Duan Q, Liu Y, Booth CJ, Rockwell S. 2012. Use of Fenbendazole-Containing Therapeutic Diets for Mice in Experimental Cancer Therapy Studies. *JAALAS* 41: 224-230.

Fox JG, Anderson LC, Loew FM, Quimby FW, editors. *Laboratory Animal Medicine, 2nd Edition*. San Diego: Academic Press; 2002.

Percy DH, Barthold SW. *Pathology of Laboratory Rodents and Rabbits*. Ames: Iowa State University Press; 2007.