**Thelohania contejani Infection of Eye Muscle Tissue of a Crayfish**

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**Fish Species:** Crayfish, *Pacifastacus leniusculus*

**Age/Size:** Adults and subadults.

**Case History:** A crayfish farm reported high mortality. The farmer saw white plaques on the crayfish, which exhibited uncontrolled spasms and lethargy.

**Histological Description:** The eye muscle (Fig 1) showed degeneration and massive infiltration of *Thelohania contejeani* spores (Fig 2).

**Diagnosis:** Eye muscle degeneration, severe, diffuse, acute, with *Thelohania contejeani* infection.

**Discussion:** The microsporidian *Thelohania contejeani* is responsible for porcelain disease (thelohaniasis), which affects a number of decapod crustaceans including freshwater crayfish. The fungus induces the destruction of myofilaments, loss of muscle function and death.

The route of transmission is not yet resolved. The presence of the parasite is easy to recognize in advanced stages of disease because the muscle fibres in the tails of infected individuals assume an opaque white colouration. The infected muscle becomes filled with spores.

*T. contejeani* exhibits 2 different routes of sporogony simultaneously within the same host tissue. The first route occurs inside sporophorus vesicle and results in the formation of 8 uninucleated (haploid) spores with 9-10 turns of the polar filament. The second route occurs in “vacuole-like compartments” and results in the formation of single diplomykaryotic spores with 5-7 turns of the polar filament. Molecular and ultrastructural data indicate that *T. contejeani* is closely related to *T. montirivilorum* and *T. parastaci*, which occur in Australian crayfish species and have similar developmental patterns in the muscle tissue.

The virulence of the pathogens could increase owing to environmental stressors such as pollution, increase in crayfish density and paucity of food.
Fig 1. Low magnification photomicrograph showing general structure of the eye of a crayfish (*Pacifastacus leniusculus*) infected with *Thelohania contejeani*. (H&E)

Fig 2. Higher magnification photomicrograph showing the eye muscle of a crayfish infected with *Thelohania contejeani*. The muscle is almost completely degenerated with massive infiltration of *Thelohania* spores. (H&E)