

Henneguya

I. Causative Agent and Disease

Henneguya is not a protozoan but a metazoan in the class Myxosporrea in the phylum Cnidaria (anemones, jellyfish, corals) based on molecular studies and the feature of discharging cells (cnidocytes) known as polar capsules. The genus has about 120 different species, some are very host and tissue specific. The parasite is found in fish as an ovoid spore (11 x 9 um) with two anterior polar capsules and two long caudal appendages (26-40 um). The most common species in Alaska is *H. salminicola*. The spores of this parasite occur in the muscle and under the skin of Pacific salmon causing a condition known as “milky flesh” disease because of the creamy white fluid containing spores that oozes from the cysts (pansporoblasts) during filleting. It is also known as “tapioca” disease from the many small round spore containing cysts in the flesh.

II. Host Species

Many species of anadromous, marine and freshwater fishes are susceptible to the several different species of *Henneguya* distributed worldwide.

III. Clinical Signs

Fish infected with *Henneguya* have numerous white pansporoblasts (cysts) in the target tissues that may contain thousands of spores.

IV. Transmission

Henneguya salminicola is transmitted by an infectious stage in freshwater. Pacific salmon become infected as juveniles and the parasites reach the muscle via the circulatory system passing through several developmental stages that eventually become spores. The spores are enclosed in a visible pan-

sporoblast or cyst formed of host tissue. When post-spawned salmon decompose, the cysts rupture and release spores into the water where they likely are ingested by an invertebrate alternate host such as a tubificid worm. Infectious stages (actinospores) for juvenile salmon develop in the invertebrate host and are released into the water column.

V. Diagnosis

White cysts in the flesh are examined microscopically for the typical 2-tailed spores characteristic of *Henneguya*. The condition can also be diagnosed by histological examination of tissues to verify presence of the parasite. Species is determined by further spore morphology.

VI. Prognosis for Host

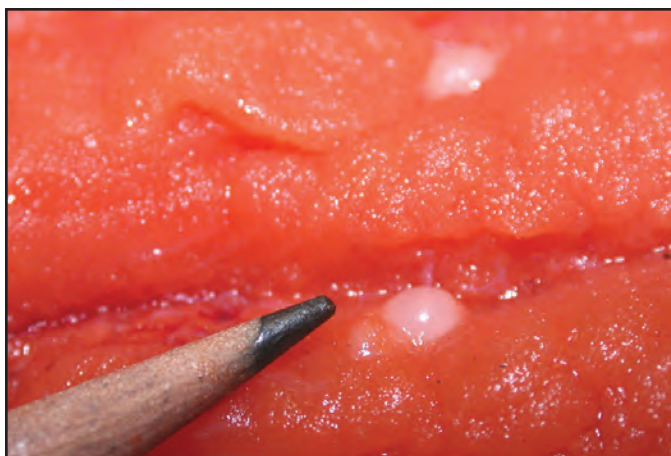
Many fish parasites are well tolerated depending on the target tissue affected. Fish mortality from *Henneguya* targeting the flesh has not been reported.

VII. Human Health Significance

Although the cysts in the flesh are unsightly when present in large numbers, there are no human health concerns associated with *Henneguya*.



White pansporoblasts of *Henneguya* scattered within muscle of sockeye salmon.



Single white pansporoblast of *Henneguya* containing myriad numbers of spores.



Wet smear from pansporoblast showing *Henneguya* spores with two polar capsules and two caudal appendages, X 1000.