

# Marine Tenacibaculosis

## I. Causative Agent and Disease

*Tenacibaculum maritimum* is a filamentous, Gram-negative bacterium that moves by gliding motility. These marine bacteria are opportunistic pathogens of fish producing external (sometimes systemic) infections such as bacterial gill disease, fin rot, skin ulcers or eroded mouth disease. Infections are often initiated by physical trauma, pinheading and adverse environmental conditions. Resulting fish mortality can be significant.

## II. Host Species

All marine fish worldwide are potentially susceptible to infection by *Tenacibaculum maritimum* which has been isolated from a variety of salmonid fishes, Dover sole, sea bass, turbot, bream, halibut and sardines. In Alaska, this bacterial pathogen has caused mortality of juvenile Pacific salmon in seawater netpens during the winter and early spring.

## III. Clinical Signs

Diseased fish have ulcerated skin lesions, frayed or eroded fins and tail. Moderate to severe erosions of the head and mouth may also occur. Infected epidermal tissue may appear pale yellow to white due to the presence of large numbers of bacteria. Infected gills of fish may produce excessive mucus, have pale color and exhibit lamellar hyperplasia. Secondary systemic infections by other bacteria commonly occur through open lesions.

## IV. Transmission

*Tenacibaculum* is a naturally occurring marine bacterium and is transmitted horizontally through the water from fish to fish, generally requiring minor

external trauma or other environmental stressors.

## V. Diagnosis

Diagnosis of *Tenacibaculum* infections is made by observing large numbers of filamentous bacteria in wet mounts of lesion material. The bacteria can be cultured on seawater Cytophaga or TYES agars with added 1.5% NaCl or 30 ppt to full strength seawater and incubated at 15°C. The colonies, often yellow in color, are catalase and oxidase positive with no flexirubin pigment in cell walls. Identity confirmation of *T. maritimum* is by PCR and there are three O serotypes.

## VI. Prognosis for Host

This external bacterial infection can cause significant mortality, especially if fish are stressed. Treatment has been successful with oral antibiotic therapy.

## VII. Human Health Significance

There are no human health concerns associated with *Tenacibaculum maritimum*.

BACTERIA



Caudal fin lesion on a halibut caused by infection with a marine *Tenacibaculum*.



Severely eroded head and upper jaw of a coho salmon smolt due to marine *Tenacibaculum* infection.