### 1. Name of the Organism:

*Aeromonas hydrophila*, *Aeromonas caviae*, *Aeromonas sobria* & *(Aeromonas veronii)?*

*Aeromonas hydrophila* is a species of bacterium that is present in all freshwater environments and in brackish water. Some strains of *A. hydrophila* are capable of causing illness in fish and amphibians as well as in humans who may acquire infections through open wounds or by ingestion of a sufficient number of the organisms in food or water.

Not as much is known about the other *Aeromonas* spp., but they too are aquatic microorganisms and have been implicated in human disease.

### 2. Nature of Acute Disease:

*A. hydrophila* may cause gastroenteritis in healthy individuals or septicemia in individuals with impaired immune systems or various malignancies.

*A. caviae* and *A. sobria* also may cause enteritis in anyone or septicemia in immunocompromised persons or those with malignancies.

### 3. Nature of Disease:

At the present time, there is controversy as to whether *A. hydrophila* is a cause of human gastroenteritis. Although the organism possesses several attributes which could make it pathogenic for humans, volunteer human feeding studies, even with enormous numbers of cells (i.e. \(10^{11}\)), have failed to elicit human illness. Its presence in the stools of individuals with diarrhea, in the absence of other known enteric pathogens, suggests that it has some role in disease.

Likewise, *A. caviae* and *A. sobria* are considered by many as "putative pathogens," associated with diarrheal disease, but as of yet they are unproven causative agents.

Two distinct types of gastroenteritis have been associated with *A. hydrophila*: a cholera-like illness with a watery (rice and
water) diarrhea and a dysenteric illness characterized by loose stools containing blood and mucus. The infectious dose of this organism is unknown, but SCUBA divers who have ingested small amounts of water have become ill, and *A. hydrophila* has isolated from their stools.

A general infection in which the organisms spread throughout the body has been observed in individuals with underlying illness (septicemia).

### 4. Diagnosis of Human Illness:

*A. hydrophila* can be cultured from stools or from blood by plating the organisms on an agar medium containing sheep blood and the antibiotic ampicillin. Ampicillin prevents the growth of most competing microorganisms. The species identification is confirmed by a series of biochemical tests. The ability of the organism to produce the enterotoxins believed to cause the gastrointestinal symptoms can be confirmed by tissue culture assays.

### 5. Associated Foods:

*A. hydrophila* has frequently been found in fish and shellfish. It has also been found in market samples of red meats (beef, pork, lamb) and poultry. Since little is known about the virulence mechanisms of *A. hydrophila*, it is presumed that not all strains are pathogenic, given the ubiquity of the organism.

### 6. Relative Frequency of Disease:

The relative frequency of *A. hydrophila* disease in the U.S. is unknown since efforts to ascertain its true incidence have only recently been attempted. Most cases have been sporadic rather than associated with large outbreaks, but increased reports have been noted from several clinical centers.

### 7. Course of Disease and Complications:

On rare occasions the dysentery-like syndrome is severe and may last for several weeks.

*A. hydrophila* may spread throughout the body and cause a general infection in persons with impaired immune systems. Those at risk are individuals suffering from leukemia, carcinoma, and cirrhosis and those treated with immunosuppressive drugs or who are undergoing cancer chemotherapy.
8. **Target Populations:**

All people are believed to be susceptible to gastroenteritis, although it is most frequently observed in very young children. People with impaired immune systems or underlying malignancy are susceptible to the more severe infections.

9. **Food Analysis:**

*A. hydrophila* can be recovered from most foods by direct plating onto a solid medium containing starch as the sole carbohydrate source and ampicillin to retard the growth of most competing microorganisms.

10. **Selected Outbreaks:**

*Literature references can be found at the links below.*

Most cases have been sporadic, rather than associated with large outbreaks.

**MMWR 39(20):1990**

Aeromonas species are associated with gastroenteritis and with wound infections, particularly wounds incurred in outdoor settings. On May 1, 1988, isolates of Aeromonas became reportable in California, the first state to mandate reporting of isolates of and infections with these organisms. From May 1, 1988, through April 30, 1989, clinicians and clinical laboratories in California reported 225 Aeromonas isolates from 219 patients. Cases were reported on Confidential Morbidity Report cards to local health departments, which then conducted case investigations and forwarded their reports to the California Department of Health Services.

*For more information on recent outbreaks see the CDC.*

11. **Education and Background Resources:**

*Literature references can be found at the links below.*

Available from the GenBank **Taxonomy database**, which contains the names of all organisms that are represented in the genetic databases with at least one nucleotide or protein sequence.
12. Molecular Structural Data:
None currently available.

CDC/MMWR
The CDC/MMWR link will provide a list of Morbidity and Mortality Weekly Reports at CDC relating to this organism or toxin. The date shown is the date the item was posted on the Web, not the date of the MMWR. The summary statement shown are the initial words of the overall document. The specific article of interest may be just one article or item within the overall report.

NIH/PubMed
The NIH/PubMed button at the top of the page will provide a list of research abstracts contained in the National Library of Medicine's MEDLINE database for this organism or toxin.

AGRICOLA
The AGRICOLA button will provide a list of research abstracts contained in the National Agricultural Library database for this organism or toxin.

mow@cfsan.fda.gov
April 1991 with periodic updates