

THIS CPD/CEU EXERCISE IS PRESENTED UNDER THE THISTLE QA SERVICE PROVIDER NO : MT00025. IT IS DESIGNED TO TAKE PLACE WITHIN YOUR OWN LABORATORY AS A SMALL GROUP ACTIVITY LASTING APPROXIMATELY ONE HOUR. PLEASE ENSURE THAT YOU KEEP A REGISTER OF THOSE TAKING PART IN THIS EXERCISE AND SUBMIT YOUR APPLICATION FOR 1 CEU POINT ON THE APPROPRIATE HPCSA FORM, ALONG WITH THE RELEVANT THISTLE QA PARTICIPATION CERTIFICATE SENT TO YOUR LAB WITH YOUR EQA KIT AND INSTRUCTIONS.

## Cycle 19 Organism 12

The causative organism was *Aeromonas hydrophila*

*Aeromonas* species and *Plesiomonas shigelloides* are included along with *Vibrio* species in the family *Vibrionaceae*. It has however, been proposed that based on molecular genetic evidence that *Aeromonas* be placed in a separate family, *Aeromonadaceae*. Likewise it has also been proposed that *Plesiomonas* be moved to the genus *Proteus*<sup>1</sup>.

### **The genus *Aeromonas***

As the species name *hydrophila* “water loving” indicates the natural habitat of this genus is fresh or seawater where they commonly cause infections in cold-blooded aquatic animals. These organisms also reside in drainpipes, sinks and other sources of water, which are potential for causing nosocomial infections.

### **Taxonomy**

The genus *Aeromonas* consists of a large number of distinct taxa. The currently recognized species and various DNA hybridization groups consist of three phenotypic groups; *Aeromonas hydrophila*, *Aeromonas caviae*, and *Aeromonas sobria*. The *A. hydrophila* group has two named species, *A. hydrophila* and *Aeromonas salmonicida*. Phenotypic group *A. caviae* has 4 named species, and *A. sobria* has 7 named species. The genus *Aeromonas* is usually grouped into two subdivisions. The psychrophilic group: the only species in this group is *A. salmonicida*, which is a fish pathogen. This species is non-motile and does not grow at 37°C. The mesophilic group: members of this group grow at 37°C and are motile. Species in this group include *A. hydrophila*, *A. caviae* and *A. sobria*<sup>2</sup>.

## Laboratory identification

*Aeromonas* species are cytochrome oxidase positive and can easily be differentiated from the family *Enterobacteriaceae* by performing the oxidase test. *A. hydrophila* are beta-haemolytic on blood agar, motile by means of polar flagella, DNase positive, and indole positive. They utilize glucose fermentatively which will differentiate it from the oxidase positive *Pseudomonas* species. *Plesiomonas shigelloides* is also an oxidase positive which differentiates it from the family *Enterobacteriaceae*, and is not haemolytic on blood agar. *P. shigelloides* grows on MacConkey and XLD agars and may resemble a *Shigella* species. Indole is produced, and arginine, lysine, and ornithine are decarboxylated. The DNase and esculin tests are negative for *P. shigelloides*<sup>3</sup>.

## Infections caused by *Aeromonas*

Acute diarrhoeal disease that closely mimics cholera.

Cellulitis and wound infections following exposure to contaminated water, soil, or food.

Septicemia, especially patients with hepatobiliary disease.

Miscellaneous infections include; endocarditis, urinary tract, wound, meningeal, and ear infections<sup>3</sup>.

## References

1. Colwell *et al.* 1986. *Int J Syst Bacteriol.* **36**:473-477.
2. Collins *et al.* 1993. *J Syst Bacteriol.* **43**:855-856.
3. Koneman *et al.* 1997. *Color Atlas and Textbook of Diagnostic Microbiology.* 5<sup>th</sup> Edition. Lippincott Williams & Wilkins.

## Questions

1. How would you differentiate *Aeromonas hydrophila* from:
  - a. The family *Enterobacteriaceae*
  - b. *Pseudomonas* species
  - c. *Plesiomonas shigelloides*



2. How would you isolate *Aeromonas hydrophila* from a stool/pus/fluid specimen?
3. What infections are caused by *Aeromonas hydrophila*?

S A N A S



PROFICIENCY  
TESTING

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