Introduction

The genus Aeromonas sp. is ubiquitous in the aquatic environment\(^1\). However, several species are considered emerging pathogens to humans\(^2\). The infection pathway occurs mainly through direct contact with water, or consumption of contaminated water and food, including the fecal-oral route\(^2\). Estuaries, as transitional zones under anthropogenic pressure and as recreational waters, are of particular interest for Aeromonas sp. ecology studies.

Aims

- Investigate the spatial-temporal occurrence of estuarine Aeromonas sp.;
- Understand Aeromonas sp. dynamics in relation to key environmental constrains;
- Understand the potential role of sediment as a reservoir;

Methods

Monthly abundance of Aeromonas sp. was estimated by qPCR\(^3\) in surface water and sediment samples along the Douro estuary gradient, over a 15-month time period.

Results

Aeromonas sp. were detected throughout the year, with abundances between 4.32 – 8.75 Log copies / mL and 5.78 – 10.79 Log copies / g in water and sediment, respectively.

A seasonal trend in Aeromonas sp. abundance was observed, with an increment throughout the summer and fall, associated to higher water temperature and precipitation.

A spatial downstream to upstream decrease in aeromonads could be noted, as the anthropogenic pressure in the estuary diminished.

Significant positive correlations (p<0.05) between water abundance and ammonium, nitrite, particulate organic matter, and fecal coliforms were detected, suggesting a potential common anthropogenic origin.

An inverse relationship was observed between the abundance of Aeromonas sp. in the water column and in the sediment, suggesting the role of sediment as a reservoir for these bacteria.

Conclusions

The presence of Aeromonas sp. in the Douro River estuary throughout the year, highlighted an under looked potential public health risk to recreational water users that need to be further examined. The problem is more pressing since Aeromonas sp. are considered emerging microorganisms, and the number of water-related infections worldwide, including Europe, have been increasing in recent years, associated with autochthones bacteria that meet favorable conditions to spread under the ongoing climatic changes. Understand the dynamics of these agents and its relationship with environmental constrains is key to help public health risk management and assure users safety.

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References