

SURVIVAL OF *LEGIONELLA PNEUMOPHILA* AND *HELICOBACTER PYLORI* IN DRINKING WATER AFTER CHLORINATION

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Legionella pneumophila is a well-known pathogen that can be commonly detected in water environments and hence cause waterborne outbreaks. By contrast, the possibility of *Helicobacter pylori* transmission through water is still under debate. The aim of this work is to evaluate and compare the resistance of both pathogens to chlorination. *L. pneumophila* NCTC 12821 and *H. pylori* NCTC 11637 were inoculated (separately) in dechlorinated and filter-sterilised drinking water. Chlorine was added at different concentrations and samples were taken up to 30 minutes for cell quantification by standard techniques and viability assessment using SYTO 9/PI double staining. In the control assay, where no chlorine was added, the number of cultivable and viable cells remained constant with time for both bacteria. When exposed to 0.2 mg L⁻¹ of chlorine it was observed that cultivability of both bacteria decreased with time, but the number of viable cells remained constant. When chlorine concentration was increased to 0.7 and 1.2 mg L⁻¹ *L. pneumophila* lost cultivability in 30 and 10 minutes respectively, whereas *H. pylori* loss of cultivability only occurred after 20 minutes for the highest concentration of chlorine. For both concentrations and bacteria there were still viable cells remaining in suspension. Results obtained here demonstrate that cells will survive in the Viable But Non Cultivable state in drinking water. In addition, it was found that *H. pylori* is more resistant than *L. pneumophila* to chlorination. This work raises concerns about the reliability of detection methods for pathogens in potable water and efficiency of disinfection.