

Biofilms as possible microenvironments for *H. pylori* subsistence in water-exposed environments

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Helicobacter pylori is one of the leading causes for gastric human pathogenesis, but the way the bacterium is transmitted across the human population is uncertain. Nevertheless, evidences that water and associated biofilms might be an external reservoir for *H. pylori* are accumulating in the literature.

During the last years, our lab has been studying the ability of the water-exposed bacterium to adhere and survive either as monospecies or in heterotrophic biofilms. Using specific peptide nucleic acid probes labelled with a fluorescent reporter molecule, we were able to conclude that when *H. pylori* comes across a mature biofilm formed by a heterotrophic consortium of microorganisms, it tends to subsist close to the basal layer of the biofilm, which suggests that the bacterium is able to migrate to low redox zones created by these structures to enhance survival.

In monospecies experiments, *H. pylori* was also able to adhere to all surfaces commonly used as plumbing materials, but formation of 3-D structures only occurred in copper (as assessed by DAPI). These structures appeared sparsely after one week of contact, but by the end of two months, the oxidized area of the copper surface becomes completely covered by them.

Data gathered so far indicates biofilms as possible microenvironments for enhanced *H. pylori* subsistence in water-exposed environments which is an obvious cause for public health concern.