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Water-Exposed *H. pylori* Presents Decreased Virulence Properties

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Helicobacter pylori transmission has been associated in epidemiological studies with water. *H. pylori* has been identified in this environment using molecular techniques. As water may be an environmental reservoir for *H. pylori*, and because there is lack of information regarding the capacity of water-exposed bacteria to induce a response in host cells, we assessed the cultivability of

water-exposed *H. pylori* and determined whether these bacteria retain the ability to adhere to and to induce inflammation.

We used *H. pylori* strain 26,695 and AGS cell line. Bacteria were grown in TSA with 5% sheep blood and incubated for 48 hours at 37 °C under a microaerophilic atmosphere. After that, *H. pylori* was exposed to water at 25 °C, in aerobic conditions for different time periods. *H. pylori* cultivability was determined by standard plating methods. Adhesion to and Interleukin-8 production by AGS cells were assessed by ELISA, using an anti-*H. pylori* antibody and a commercially available kit, respectively.

Our results showed that, after 24 hours water exposure, *H. pylori* was no longer cultivable. Water exposure of *H. pylori* led to a significant decrease of its ability to adhere to AGS cells. Also, significantly lower IL-8 secretion was observed in AGS cells cultured with water-exposed *H. pylori* than with unexposed bacteria.

Altogether, these results suggest that after being exposed to water, planktonic *H. pylori* presents decreased virulence properties. As such, additional mechanisms of protection in water, such as inclusion in biofilms, might be needed for the maintenance of the infectious ability by this bacterium.

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