Title Seasonal and tissue distribution of *Laribacter hongkongensis*, a novel bacterium associated with gastroenteritis, in retail freshwater fish in Hong Kong

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Abstract

Laribacter hongkongensis, a recently discovered bacterium associated with community-acquired gastroenteritis, has been found in the intestines of freshwater fish. To better understand the epidemiology and ecology of the bacterium, we carried out a surveillance study to investigate possible seasonal variation in the recovery of *L. hongkongensis* and its distribution in various organs in retail freshwater fish in Hong Kong. Forty whole freshwater fish of two species (20 grass carps and 20 bighead carps), and intestines from 120 grass carps were sampled during a one-year period. *L. hongkongensis* was isolated from 11 (55%) of the 20 grass carps and 6 (30%) of the 20 bighead carps; and the intestines of 49 (41%) of 120 grass carps. Seasonal variation in the recovery of *L. hongkongensis* from both whole fish and intestines was observed, with higher isolation rates in spring and summer than in fall and winter. There was also positive correlation between temperature and the isolation rates. When *L. hongkongensis* was cultured *in vitro* at different temperatures, shorter lag time and higher growth rate were observed at higher temperatures, with 37 °C being optimal among the tested temperatures. *L. hongkongensis* was commonly found in the gills, stomachs and intestines in both grass carps and bighead carps, and on the skin surface of one fish, but not in other organs. Proper handling of freshwater fish for cooking, especially the gills and gut, is recommended to prevent acquisition of *L. hongkongensis*, and other freshwater fish related infections.