Risk associated to Vibrio parahaemolyticus in shellfish in Ferrara (Emilia Romagna)

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Vibrio parahaemolyticus is an autochthonous microorganism of the marine environments, frequently isolated from seafood, including bivalve mollusks, and a human pathogen responsible for gastroenteritis outbreaks and sporadic cases. The mechanism of pathogenicity has yet to be comprehensively determined, but two haemolysins (TDH and TRH) have been recognized as virulence factors.

The aims of this work were: a) the evaluation of the prevalence of V. parahaemolyticus in mollusks harvested in Ferrara; b) the evaluation of the presence of pathogenic strains; c) the assessment of a possible effect on the public health. A total of 859 mollusc samples (601 Manila clams and 258 mussels) were collected and analyzed from January 2011 to March 2015 by the Local Health Service (AUSL) of Ferrara as a part of the regional Bivalve Mollusks Monitoring Plan. Analyses were
performed according to ISO/TS 21872–1:2007 and isolates were characterized for species-specific (toxR) and pathogenicity genes (tdh and trh) by PCR. V. parahaemolyticus was detected in 288 samples (33.5%), 251 Manila clams and 37 mussels, with a statistically significant difference (Fisher’s exact test p < 0.0001) between the prevalence in the two species (41.8% in clams vs. 14.3% in mussels). The molecular characterization showed the presence of the toxR gene in 276 isolates (95.8%), while the tdh and trh genes were detected respectively in 21 and 15 isolates; one more strain was characterized by the simultaneous presence of both pathogenicity markers. Overall, the prevalence of potentially pathogenic V. parahaemolyticus strains was 13.4% and, significantly, almost all (36 out of 37) of them were isolated from Manila clams.

The data provided in this study on the prevalence of potentially pathogenic V. parahaemolyticus in different shellfish species harvested in the Ferrara district, will help defining guidelines for the management of the associated risk to this microorganism.

**Key message**

- Keywords: Vibrio parahaemolyticus, bivalve mollusks, TDH, TRH