Prevalence and antimicrobial susceptibility of Vibrio parahaemolyticus isolated from short mackerels (Rastrelliger brachysoma) in Malaysia

ABSTRACT

Numerous prevalence studies and outbreaks of Vibrio parahaemolyticus infection have been extensively reported in shellfish and crustaceans. Information on the quantitative detection of V. parahaemolyticus in finfish species is limited. In this study, short mackerels (Rastrelliger brachysoma) obtained from different retail marketplaces were monitored with the presence of total and pathogenic strains of V. parahaemolyticus. Out of 130 short mackerel samples, 116 (89.2%) were detected with the presence of total V. parahaemolyticus and microbial loads of total V. parahaemolyticus ranging from <3 to >105 MPN/g. Prevalence of total V. parahaemolyticus was found highest in wet markets (95.2%) followed by minimarkets (89.1%) and hypermarkets (83.3%). Pathogenic V. parahaemolyticus strains (tdh+ and/or trh+) were detected in 16.2% (21 of 130) of short mackerel samples. The density of tdh+ V. parahaemolyticus strains were examined ranging from 3.6 to >105 MPN/g and microbial loads of V. parahaemolyticus strains positive for both tdh and trh were found ranging from 300 to 740 MPN/g. On the other hand, antibiotic susceptibility profiles of V. parahaemolyticus strains isolated from short mackerels were determined through disc diffusion method in this study. Assessment of antimicrobial susceptibility profile of V. parahaemolyticus revealed majority of the isolates were highly susceptible to ampicillin sulbactam, meropenem, ceftazidime, and imipenem, but resistant to penicillin G and ampicillin. Two isolates (2.99%) exhibited the highest multiple antibiotic resistance (MAR) index value of 0.41 which shown resistance to 7 antibiotics. Results of the present study demonstrated that the occurrence of pathogenic V. parahaemolyticus strains in short mackerels and multidrug resistance of V. parahaemolyticus isolates could be a potential public health concerns to the consumer. Furthermore, prevalence data attained from the current study can be further used to develop a microbial risk assessment model to estimate health risks associated with the consumption of short mackerels contaminated with pathogenic V. parahaemolyticus.

Keyword: MAR; MPN; Vibrio parahaemolyticus; Antibiotic susceptibility; Finfish