Identification of Vibrio harveyi isolated from diseased Asian seabass Lates calcarifer by use of 16S ribosomal DNA sequencing

Abstract

The grow out of Asian seabass Lates calcarifer in marine net-cages is a popular aquaculture activity in Malaysia. Production of this species is greatly affected by the occurrence of vibriosis, which causes heavy mortality. Generally, young fish are more susceptible; they exhibit anorexia and skin darkening, followed by heavy mortality. The acutely affected older fish may also exhibit bloody lesions around the anus and the base of the fins. Twenty-one bacterial isolates obtained from internal organs (kidney, heart, spleen and liver) of the affected specimens were subjected to phenotypic characterization, testing for antibiotic susceptibility, and 16S ribosomal DNA sequencing. The sequencing result showed that all of the bacterial isolates belonged to Vibrio harveyi. The phenotypic characterization, however, identified 4 of the bacterial isolates as V. harveyi, 16 as V. parahaemolyticus, and 1 as V. alginolyticus. These findings suggest that biochemical features alone cannot be reliably used to identify bacterial pathogens, including V. harveyi, in aquaculture. Antibiotic susceptibility assays showed that some antibiotics, including oxytetracycline, nitrofurantoin, furazolidone, streptomycin, sulfamethoxazole, chloramphenicol, nalidixic acid, and oxolinic acid were effective against V. harveyi. Considering the side effects of these antibiotics, however, their use is not recommended in the aquaculture of Asian seabass.