

Characterization of *Aquimarina hainanensis* isolated from diseased mud crab *Scylla serrata* larvae in a hatchery

ABSTRACT

Mass mortality due to necrosis signs occurred in hatchery-reared zoea stage larvae of the mud crab *Scylla serrata* in Okinawa, Japan, and a causative bacterium was isolated. In this study, we identified and characterized the bacterium by genome analysis, biochemical properties and pathogenicity. The bacterium was a Gram-negative, non-motile, long rod, forming yellow colonies on a marine agar plate. It grew at 20–33°C (not at 37°C) and degraded chitin and gelatin. Phylogenetic analysis of the 16S rRNA gene sequence identified the bacterium as *Aquimarina hainanensis*. Genome sequence data obtained from Illumina MiSeq generated 29 contigs with 3.56 Mbp in total length and a G + C content of 32.5%. The predicted 16 chitinase genes, as putative virulence factors, had certain homologies with those of genus *Aquimarina*. Experimental infection with the bacterium conducted on larvae of four crustacean species, brine shrimp *Artemia franciscana*, freshwater shrimp *Caridina multidentata*, swimming crab *Portunus trituberculatus* and mud crab *S. serrata*, revealed that this bacterium was highly virulent to these species. The present study suggests that the bacterium caused mass mortality in mud crab seed production was *A. hainanensis* and can be widely pathogenic to crustaceans.