Comparative assessment of Vibrio virulence in marine fish larvae - DTU Orbit (07/10/2019)

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Vibrionaceae infections are a major obstacle for marine larviculture; however, little is known about virulence differences of Vibrio strains. The virulence of Vibrio strains, mostly isolated from vibriosis outbreaks in farmed fish, was tested in larval challenge trials with cod (Gadus morhua), turbot (Scophthalmus maximus) and halibut (Hippoglossus hippoglossus) using a multiwell dish assays with single-egg/larvae cultures. The strains differed significantly in virulence as some caused a high mortality of larva reaching 100% mortality after a few days, while others had no or only marginal effects on survival. Some Vibrio strains were pathogenic in all of the larva species, while some caused disease only in one of the species. Twenty-nine of the Vibrio anguillarum strains increased the mortality of larvae from at least one fish species; however, pathogenicity of the strains differed markedly. Other Vibrio species had no or less pronounced effects on larval mortalities. Iron uptake has been related to V. anguillarum virulence; however, the presence or absence of the plasmid pJM1 encoding anguibactin did not correlate with virulence. The genomes of V. anguillarum were compared (D. Castillo, P.W. D’Alvise, M. Middelboe & L. Gram, unpublished data) and most of the high-virulent strains had acquired virulence genes from other pathogenic Vibrio.

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