Evidence for the existence of distinct populations of vibrio-anguillarum serogroup o1 based on plasmid contents and ribotypes - DTU Orbit (22/12/2018)

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A total of 103 Vibrio anguillarum serogroup O1 strains displaying 15 different plasmid profiles were characterized with respect to biochemical properties and ribotypes. The results confirmed that V. anguillarum O1 is a biochemically homogeneous group. The 103 strains could be allocated to three main clusters with high similarity coefficients. None of the biochemical properties were connected with the presence of plasmids. In total, 12 different ribotypes were demonstrated, with HindIII being used as the restriction enzyme. Forty of the strains were isolated from the same Danish fish farm, some from the kidneys of diseased fish and some from the environment, and some strains were isolated from the mucus, gills, and feces of healthy fish. Nineteen of these isolates possessed the 67-kb virulence plasmid alone or in combination with other plasmids, while 21 had no plasmids. All strains isolated from the kidneys of diseased fish on this farm had plasmids, irrespective of their origin (kidneys, gills, or mucus), all 19 strains carrying the 67-kb virulence plasmid had the same ribotype, profile 1, while isolates without plasmids belonged to five different profiles, all different from profile 1. These results suggest that pathogenic V. anguillarum O1 strains possessing a virulence plasmid and nonpathogenic strains without plasmids from a small geographical area and even from the same fish may constitute two essentially distinct populations. Thus, it may be suggested that an exchange of virulence plasmids among strains is unlikely to occur in vivo.

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