

Iron transport and the virulence of *Vibrio anguillarum* for salmonids and other fishes

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Vibrio anguillarum serotype O1 is part of the natural flora in the aquatic habitat, but under certain circumstances it can cause terminal haemorrhagic septicemia in marine and fresh water fish due to the action of the anguibactin iron uptake system encoded by the virulence plasmid pJM1. This plasmid harbors the genes for the biosynthesis of the siderophore anguibactin and the cognate ferric anguibactin transport proteins encoded in the iron transport operon.

A chromosomal gene cluster encoding vanchrobactin biosynthesis and transport genes was also identified in the *Vibrio anguillarum* serotype O1 strain, 775(pJM1), however one of the vanchrobactin biosynthetic genes was found to be mutated with an insertion sequence that is also found in other sites on pJM1 with the result that the strain cannot produce vanchrobactin. Since anguibactin is a stronger iron chelator than vanchrobactin it is possible that during evolution the biosynthesis of vanchrobactin was no longer necessary and thus it was silenced by the insertion event from one of the plasmid insertion sequences, resulting in the conservation of the more efficient anguibactin iron transport system as an important factor of virulence for *V. anguillarum* 775 during the infection of the host fish