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Virulence Genes among *Enterococcus faecalis* and *Enterococcus faecium* Isolated from Coastal Beaches and Human and Nonhuman Sources in Southern California and Puerto Rico

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ABSTRACT

Most *Enterococcus faecalis* and *E. faecium* are harmless to humans; however, strains harboring virulence genes, including *esp*, *gelE*, *cylA*, *asa1*, and *hyl*, have been associated with human infections. *E. faecalis* and *E. faecium* are present in beach waters worldwide, yet little is known about their virulence potential. Here, multiplex PCR was used to compare the distribution of virulence genes among *E. faecalis* and *E. faecium* isolated from beaches in Southern California and Puerto Rico to isolates from potential sources including humans, animals, birds, and plants. All five virulence genes were found in *E. faecalis* and *E. faecium* from beach water, mostly among *E. faecalis*. *gelE* was the most common among isolates from all source types. There was a lower incidence of *asa1*, *esp*, *cylA*, and *hyl* genes among isolates from beach water, sewage, septage, urban runoff, sea wrack, and eelgrass as compared to human isolates, indicating that virulent strains of *E. faecalis* and *E. faecium* may not be widely disseminated at beaches. A higher frequency of *asa1* and *esp* among *E. faecalis* from dogs and of *asa1* among birds (mostly seagull) suggests that further studies on the distribution and virulence potential of strains carrying these genes may be warranted.

Full Text

http://ftp.sccwrp.org/pub/download/DOCUMENTS/JournalArticles/919_EnterococcusVirulenceGenes.pdf