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# fish technology newsletter

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# VIBRIO VULNIFICUS - AN EMERGING PATHOGEN

*Vibrio vulnificus* is an emerging pathogen, phenotypically similar to *Vibrio parahaemolyticus* and has been identified as an etiological agent for three syndromes, primary septicemia, skin infection and acute diarrhoea. Infection is known to occur by two portals of entry. Ingestion of raw seafood, primarily oyster, may result in primary septicemia. Septicemia generally leads to secondary cutaneous lesions and necrotic ulcers of the extremities; approximately 60% of the known cases result in fatality. The majority of the victims have some underlying chronic disease, typically involving the liver. A second portal involves wound infections resulting from exposure of skin lesions to *V. vulnificus* in seawater and/or shell fish.

Infection is associated with the consumption of raw seafood, particularly oysters in which this bacterium becomes concentrated through filter feeding. Consequently, the occurrence of this bacterium in aquatic environments is of significant concern for the shellfish industry and public health agencies. This

organism is part of the normal microflora of estuarine and coastal waters and occurs in high numbers in molluscan shellfish.

*V. vulnificus* is a gram-negative, halophilic, oxidase positive, lactose positive, motile and rod-shaped bacterium. The number of *V. vulnificus* cells which must be ingested to produce primary septicemia or gastroenteritis in humans is unknown. All *V. vulnificus* strains, both environmental or clinical, produce a hemolysin that affects human erythrocytes in contrast to *V. parahaemolyticus* in which mainly clinical isolates are haemolytic.

The incidence of *V. vulnificus* in water samples and bivalves of some countries has been reported as about 25 percent and its load was upto 106/100 g in Gulf Coast oysters in summer. The studies have shown that there is strong correlation between temperature, salinity and presence of *V. vulnificus* in water and oyster.

Raw oyster eaten directly from the shells are more frequently associated with *V. vulnificus* infection

than raw oyster taken from commercially packed containers. This suggests that something in the processing reduces or eliminates *V. vulnificus* from the oyster. Ten minute heat treatment at 50°C has been reported to be adequate to reduce *V. vulnificus* to a non-detectable level. Studies conducted on the survival of *V. vulnificus* in oyster homogenate held at 4°C indicated a rapid and dramatic decrease in viability not attributed to either cold shock or the oyster homogenate alone but to a combination of the two. Fish or shellfish kept in ice apparently are not a likely source of *V. vulnificus* infection. Effect of salting and drying on this organism is not known. *V. vulnificus* is closely associated with oyster tissues and is not removed completely by controlled purification method such as UV light assisted depuration.

No effective means currently exist for elimination of this health hazard in oyster, intended for raw consumption. So people with liver disease and other underlying chronic diseases are advised to avoid raw seafood completely.

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