

Quantitative study of *Vibrio parahaemolyticus* in sea water, shellfish and sediments of a marine area affected by a moderately polluted river discharge

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Vibrio parahaemolyticus is considered to be a part of the normal microflora of seawater and sediments of lukewarm seawaters (KANEKO & COLWELL, 1973). This microorganism is a potential pathogen of fish and shellfish and it has been involved in human illness caused by the consumption of raw or lightly cooked seafood (KATO *et al.*, 1970).

The distribution of *V. parahaemolyticus* in seawater, shellfish and sediments, in a marine area affected by the outfall of Guadalhorce river (Malaga, Spain), was studied.

The samples were collected from five sample stations, monthly during a year, and processed following standard procedures (APHA, 1985; FDA, 1978).

The most probable number of *V. parahaemolyticus* per 100 ml of water or 100 g of shellfish and sediments was studied by means of the multiple tube technique (APHA, 1985), using alkaline and saline peptone water, incubated at $36\pm 1^\circ\text{C}$ for 8 h and streaked on TCBS agar plates (DUPRAY & CORMIER, 1983). Presumptive *V. parahaemolyticus* colonies were confirmed according to the protocol described by FDA (1978).

The results, given in Figure 1, show that the annual evolution of the concentrations of the microorganism studied is almost parallel in the three types of samples. The mean concentrations ranged from <3 to 12 MPN/100 ml of seawater, from <3 to 208 MPN/100 g of shellfish and from <3 to 1280 MPN/100 g of sediments. These densities are very similar to those obtained by ABEYTA (1983), but lower than those reported by EL-SAHN *et al.* (1982). The level of accumulation in shellfish and sediments in relation with seawater is evident.

Two peaks of high density of microorganisms can be observed, one in May (15°C in seawater) another in October (18°C). In summer and winter *V. parahaemolyticus* disappears, in coincidence with the highest and lowest water temperatures (22° and 13°C , respectively).

V. parahaemolyticus has never been detected in shellfish in enough number to be considered as a health hazard (10^6 - 10^7 per g), (TWEEDT *et al.*, 1980), but it is demonstrated the high survival ability of this microorganism in shellfish, and its elevated resistance to the depuration (GREENBERG *et al.*, 1982; EYLES & DAVEY, 1984; MARTINEZ-MANZANARES *et al.*, 1991). For these reasons, the presence of this microorganism must be considered as a potential health-hazard associated with seafood consumption.

On the other hand, the role of marine sediments as a reservoir of *V. parahaemolyticus* has been demonstrated, and we consider that the follow up of this microorganism in sediments may provide an additional insight of the microbiological quality of shellfish growing areas.

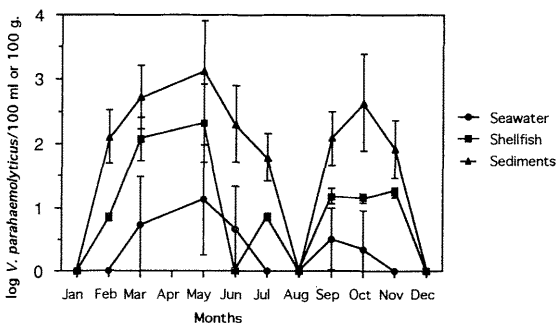


Fig. 1.- Temporal evolution of *V. parahaemolyticus* densities in seawater, shellfish and sediments

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