

OCCURRENCE OF VIBRIO PARAHAEMOLYTICUS AND VIBRIO ALGINOLYTICUS IN  
THE BRACKISH LAKE OF GANZIRRI (Messina, Italy)

by V. ALONZO\*, V. BRUNI\*\*, R. LO CURTO\*, and T. MAUGERI\*,

\* Istituto di Microbiologia-Facoltà di Scienze-Università di Messina, Italia.

\*\*Istituto di Idrobiologia-Facoltà di Scienze-Università di Messina, Italia.

---

On rapporte sur les résultats préliminaires sur la présence des vibrions marins dans le lac saumâtre de Ganzirri (Messine). D'après les études sur quelques échantillons d'eau, de sédiments et de moules, pendant une période de 7 mois, on croit que les vibrions peuvent survivre dans les sédiments et/ou chez les moules.

---

Many workers have isolated V. parahaemolyticus and related halophilic vibrios from sea water, sediment, plankton, fishes and shellfishes in different areas of the world, particularly in coastal regions (Horie and Coll., 1967; Miyamoto and Coll., 1962) and more rarely, in open sea (Aoki, 1967a, 1967b).

A great number of biological, physiological and chemical factors can affect the distribution of organisms in the marine environment and an open question is to ascertain where V. parahaemolyticus and related vibrios do really survive over winter and what is their ecological role in nature.

It seemed of particular interest to ascertain the presence of marine vibrios particularly V. alginolyticus and V. parahaemolyticus in a peculiar environment like the brackish lake of Ganzirri (Messina, Italy). The uncommon characteristics of this lake (fairly constant temperature, low depth, scarce water movement, variable salinity) and the constant occurrence of Copepods and Mussels, the last here cultivated in large amounts, could favour survival as well as multiplication of vibrios.

Water and sediments were taken from 4 sampling stations placed

along the longer axis of the lake; mussels were collected near the station n<sup>o</sup> 3; all samples were processed within 2 hrs. Sediment samples were weighted and inoculated either directly in an enrichment medium or plated for isolation; mussels were homogenized for 5 min. in a Polytron homogenizer at 5,000 rpm in 3% saline. Samples of waters, sediments and mussels homogenate were streaked onto TCBS agar medium. In order to detect vibrios even if present in low amounts, samples of water, sediment and mussel homogenate were also inoculated into VP salt meat broth. After incubation at 42<sup>±</sup> 1°C streaks were made on isolation medium. For the behaviour of the characteristic isolated strains, were used the main biochemical tests for vibrios as reported in WHO Guidelines for Health related monitoring of coastal water quality, 1977.

It has been possible to isolate from all stations V. alginolyticus and few other strains with intermediate characteristics between V. alginolyticus and V. parahaemolyticus only at the station n<sup>o</sup> 4 where there is a channel connecting the lake with the sea. The presence of vibrios falls down, for what is concerned with the water, when temperature drops below 16°C; more constant seems their presence in the sediments, but also in this case the amount is depending from the temperature. The highest values in vibrios in waters have been recorded in stations n<sup>o</sup> 1 and 3 where depth is only 1-4 m and discharge of natural wastes brings up particulate matter on which seems likely vibrios are often associated.

A quite different behaviour has been registered for mussels. These mollusks show a relatively constant vibrio count and no great differences were found at different temperatures. This behaviour could depend from many factors, first of all the large amount of water filtered by these mollusks: it is known that the organic composition of mussels constitutes an excellent substrate for vibrios (De Felip and Coll., 1974) and the shell may exert a protective function against several factors; in the limited environment vibrios can find all the inorganic and organic requirements to survive and multiply.

### References

- AOKI, G.- The incidence of Vibrio parahaemolyticus in the Middle Pacific. In T. Fujino and H. Fukumi, Ed., Vibrio parahaemolyticus, Nayashotan, Tokio, Japan, : 329-331, 1967b.
- AOKI, G.- The incidence of Vibrio parahaemolyticus in the seas of south east Asia. In T. Fujino and H. Fukumi, Vibrio parahaemolyticus, Nayashotan, Tokio, Japan.: 325-327, 1967a.
- DE FELIP, G.; L. TOTI,; A. STACCHINI,; P. RAVAGNAN,.- Messa a punto di un terreno di arricchimento per il "Vibrio parahaemolyticus" ed il "Vibrio alginolyticus". Ann. Sclavo, 16,: 641-654, 1974.
- Guidelines for health related monitoring of coastal water quality. WHO, : 63-67, 1977.
- HORIE, S.; K. SAHEKI,; M. OKOZUMI,.- Quantitative enumeration of Vibrio parahaemolyticus in ocean and estuarine water. Bull. Jap. Soc. Sci. Fish., 33,: 126-130, 1967.
- MIJAMOTO, Y.; K. NAKAMURA,; K. TAKIKAWA,.- Seasonal distribution of Oceanomonas spp. halophilic bacteria in the coastal sea. Its significance in epidemiology and marine industry. Jap. J. Microbiol., 6,: 141-158, 1962.

