THE EFFECT OF SALINITY ON THE OSMOTIC AND IONIC REGULATION IN *MYTILUS GALLOPROVINCIALIS* AND *MODIOLUS AURICULATUS*.

Dureid MAHASNEH[+] and Eugen PORA[++]
+ Marine Science Center. Aqaba, Jordan.
++ University of Cluj, Romania.

SUMMARY :

Salinity variations between 6-42 ‰ on *Mytilus galloprovincialis* of the Black Sea and of the Mediterranean, and *Modiolus auriculatus* of the Red Sea, show that all three mussels studied were osmoconformers. A tendency towards osmo- and calcium regulation was better seen in *Mytilus* of the Black Sea at low salinities between 6-10 ‰ than in the other two mussels.

RESUME :

Les solutions de salinités comprises entre 6 et 42 ‰ produisent des modifications dans la pression osmotique et dans la concentration des ions de l'hémolymphe chez *Mytilus galloprovincialis* de la mer Noire et de la Méditerranée et chez *Modiolus auriculatus* de la mer Rouge (golfe d'Aqaba). Les animaux sont des "osmoconformers" avec une tendance vers osmo- et calcium-régulation, phénomène qui est plus évident aux plus basses salinités. Le potassium se trouve en quantité toujours plus grande dans l'hémolymphe de tous ces Mytilidae, que dans le milieu extérieur.

RESULTS :

Our results show that the two species were osmoconformers, although Black Sea *Mytilus* is more subjected to salinity variations specially lower ones due to the fresh water influx of the Danube river.

Calcium behaved in a more regulatory way than Na^+, Mg^{++} and K^+ in all mussels studied. This is due to the role calcium do plays in the stabilization of proteins and due to the calcium-protein binding phenomenon.

Potassium had higher values in all mussels hemolymph than in the surrounding medium. It is still not well known if this phenomenon has anything to do with the osmoregulation process or not.

Magnesium remained more concentrated in the hemolymph than in the external medium at low salinities. The situation was inversed at salinities above normal (hyperconditions) where Mg^{++} was less concentrated in hemolymph than in the external sea water. Nevertheless the ions concentrations were at equal values at normal salinities.

Sodium in the hemolymph, only reflected the external sodium concentration.

We thus conclude that the mussels studied have an internal medium dependent on the external one in its osmolarity and its ionic constituents, although at low salinities mussels have the possibilities to keep a more ionic concentration (Ca^{++}, Mg^{++}, and K^+) in their body

fluids than in the external medium. One of these possibilities is the shell- closure mechanism (HOYAUX *et al.*, 1976, and GILLES, 1975). This didn't happen in our case, since mussels opened their valves 8-12 hours after being exposed to waters of hypo- or hypersalinities, in a 72 hours period experiments.

REFERENCES :

GILLES R. (1975) : Mechanism of iono and osmotic-regulation. *In* : Marine Ecology, vol. II, part I, p. 259-347. Wiley, New York.

HOYAUX T., R. GILLES and C. JEUNIAUX (1976) : Osmoregulation in Molluscs of the intertidal zone. *Comp. Biochem. Physiol.*, vol. 53A, p. 361-365.

SPAARGAREN D.H. (1978) : A comparasion of the blood osmotic composition of various marine and brackish water animals. *Comp. Biochem. Physiol.*, vol. 60, p. 327-333.