VARIATION OF AMYLASIC ACTIVITY IN *MYTILUS GALLOPROVINCIALIS* LMK. AS A FUNCTION OF SALINITY AND GLYCOGEN CONTENT OF THE TISSUES

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Dans cet ouvrage on présente l'activité α-amylasique du hépatopancréas, du manteau, des branchies et de la hémolymphe chez la moule, en fonction de la teneur en glycogène dans ces tissus et de la salinité du milieu (6 ‰, 16 ‰ et 26 ‰). L'activité amylasique dans les tissus de la moule sont en rapport direct avec la teneur en glycogène, étant étroitement liée au rythme biologique interne de la moule en train d'osmoréglage.

Experiments were carried out in August-September 1979 on *Mytilus galloprovincialis* Lmk. collected at Agigea. A hundred of 4 to 5 cm long mussel specimens were kept for adaptation in laboratory conditions at 20°C for 48 hours since collection, being fed with a mixture of the algae *Platymonas*, *Monocrysis* and *Tetraselmis*. After adaptation, they were transferred into aquaria at salinities of 6 ‰, 16 ‰ (the normal salinity along the Romanian coast of the Black Sea) and 26 ‰, where they were maintained for 72 hours. The experiments were repeated four times, each time having determined the amylasic activity, the protein concentration and the glycogen content in the hepatopancreas, mantle, branchiae and hemolymph.

Dosing of the amylasic activity was performed by two methods, using as substrate BDH starch or Merck glycogen, adapted to the conditions of optimum activity of the amylase from mussel (ROSOIU, 1976; ROSOIU et al., 1980). The amylasic activity was expressed in mU/mg protein/minute when using starch as substrate and in mg maltose/mg protein/minute when using glycogen and starch as substrate. The protein concentration was determined by the method of LOWRY et al. and the glycogen in the tissues by VAN der KLEIJ's method, being expressed in mg % fresh tissue.

RESULTS

Our determinations point out important variations of the amylolitic activity and the glycogen content of the tissues in the mussel as a function of salinity.

Thus, as comparing to the control (S=16 %o), the α-amylasic activity increases in the hepatopancreas and hemolymph to sensibly higher values in both hypo- and hypersalinity. The variations of the amylasic activity in the branchiae and mantle are less pronounced under stress conditions, although higher values are found S=6 %o and lower values at S= 26 %o, as compared to the control (Table 1).

Table 1

Tissue and salinity	Amylasic activity		
	mU/mg prot./min.	mg maltose/mg protein/minute	
	starch substrate	starch substrate	glycogen substrate
Hepatoprancreas 6 %o	120	0.45	0.28
16 %o	26	0.40	0.23
26 %o	124	0.48	0.38
Mantle 6 %o	29	0.43	0.48
16 %o	15	0.27	0.26
26 %o	4	0.26	0.17
Branchiae 6 %o	90	0.54	0.71
16 %o	52	0.40	0.29
26 %o	22	0.36	0.25
Hemolymph 6 %o	53	0.43	0.23
16 %o	7.5	0.22	0.17
26 %o	124	0.50	0.33

The glycogen content in the hepatopancreas and mantle decreases in hypo- and increases in hypersalinity conditions, the following values having been recorded: 43 mg % fresh tissue at S=6 %o; 54 mg % f.t. at S=16%o and 72 mg % f.t. at S=26 %o and respectively, 36 mg % f.t. at S=6 %o; 42 mg % f.t. at S=16 %o and 72 mg % f.t. at S=26 %o. The glycogen content of the branchiae decreases under stress conditions as compared to the control; thus, the following values have been recorded: 27 mg % f.t. in hyposalimity, 34 mg % f.t. in normal and only 22 mg % f.t. in hypersalinity conditions.

Consequently, it is found that the amylasic activity in the mussel tissues is in direct relation with the glycogen content and in close con-

nection with the inner biological rhythm of the mussel within the osmoregulation process.

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