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CARTA AL EDITOR

Glycogen Content in the Tissues of *Mytilus edulis*, L *

It has been indicated previously (5, 6) that the sea mussel (*Mytilus edulis*, L) contains large amounts of glycogen, subjected to intense seasonal variations. This glycogen frees considerable amounts of maltooligosaccharides and glucose (6) due to the action of α-amylases (1). It is intended here to show a typical glycogen content analysis of different organs of this animal species in the peak of its maturation process.

Mussels came from Galicia (NW Spain); they were adult specimens without any apparent illness or malformation. They were vivisected, and their organs: digestive gland, gonadal eminence, mantle, mantle border, main abductor muscle, gills, foot and oral palpi were separated and weighed. Their dry weight was determined and their glycogen content was estimated using the modification of FRAGA (4) to the anthrone method (7) after extracting it according to SOMOGYI (8) with minor modifications. Soluble sugars were determined as the difference between glycogen and total glucids in the deproteinized alkaline digest. These other sugars include mainly glucose, maltose and maltotriose, and are expressed as glucose equivalents.

A comment about gills and oral palpi must be done. The values (table I) shown for glycogen and soluble sugars in these organs do not correspond completely to glycogen and lower maltooligosaccharides but also to mucopolisaccharides used in their food gathering system. It is readily apparent that the maximum glycogen content corresponds to the gonadal system (gonadal eminence and mantle) followed by the digestive gland. Maximum «soluble» sugars are found too in gonadal tissue. The content in foot and mantle-border are considerably low, showing a wide variability.

Glycogen from the three main sources in the animal, gonadal tissue, digestive gland and main abductor muscle, was carefully extracted according to SOMOGYI (8) with minor modifications (dissolution in cold 7 % TCA instead of warm water in order to eliminate residual protein). Samples were used to determine their branching index by means of a periodate end group oxidation by the method of FALES (3). Triplicate determinations agreed closely, giving mean values of 9.70 units of glucose per 1-6 bond for gonadal tissue; 9.85 for main abductor muscle and 4.75 for digestive gland.

These results show that the carbohydrate

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Table I. *Water, glycogen and sugar content in different tissues of the sea mussel* (Mytilus edulis, *L*).
All data are mean±s.e.m. of 5-8 determinations.

	Weight g	Water Content %*	Glycogen %*	Other Saccharides %*
Mantle border	1.564±0.256	86.73±1.15	0.17±0.03	0.17±0.04
Mantle	2.181±0.486	76.73±1.22	5.53±0.82	2.03±0.58
Gonadal eminence	0.510±0.087	77.10±2.51	7.05±0.25	1.50±0.18
Main abductor muscule	0.586±0.139	75.55±0.85	2.50±0.38	1.00±0.15
Foot	0.240±0.034	78.57±1.12	0.09±0.05	0.29±0.12
Digestive gland	0.740±0.191	75.10±1.40	5.32±1.40	0.90±0.42
Gills	1.303±0.158	88.87±0.49	2.33±0.27	0.32±0.06
Oral palpi	0.247±0.071	83.63±0.68	4.07±0.62	2.35±0.35

* Expressed as percent of fresh weight.

reserves in these animals are noticeably high, especially if we look at the mass of gonadal tissue. The role of digestive gland glycogen, with regard to the muscle and gonads, can be similar to that in mammalian liver and muscle, as shown by their branching index. It is interesting to point out that glycogen synthetase activity is higher in gonadal eminence and muscle than in the digestive gland (2) but α-amylases show a completely reversed pattern (1) suggesting a more rapid mobilization of glucidic energy from the digestive gland than in gonads and muscle.

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