Transsulfurase Activity In Digestive Glands Of Gastropods

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An improved assay procedure for the enzyme has been worked out, which more closely corresponds to the optimal substrate conditions. The extreme cyanide sensitivity of the enzyme calls for conditions favoring a complex-binding to the sulfur source. Also the buffer capacity of the test has been increased. Introduction of formaldehyde for stopping the reaction, also stabilizes and enhances the extinction at 460 mu of the iron-complex used for optical assay.

The use of a detergent, cetyltrimethylammonium bromide, in low concentrations considerably facilitates the extraction of the enzyme from the mitochondria, increasing the yield by 50%. --- The pH optimum of the enzyme activity was found to be different in different animals: *Pecten* 8.6 - 8.8, *Littorina* 9.0 - 9.1, *Mytilus* above 10.0. --- Freezing of the enzyme homogenate (*Littorina*) in presence of thiosulfate and storage at low temperature, increases the enzyme yield progressively over the next 5-7 days up to a maximum of 3 times the yield of the untreated preparation. Lyophilization achieves a similar mitochondrial leakage, with an even more spectacular increase in enzyme yield in presence of thiosulfate. The lyophilized preparations lose their activity only slowly; 20 days after preparation the activity is still maximal. The *Littorina* preparations are entirely dependent on the protective function of added thiosulfate; *Buccinum* and *Thais* do not need it.

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Properties Of Thiosulfate Transsulfurase From Marine Invertebrates

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The pH-optima of thiosulfate transsulfurase from midgut glands of various marine molusks show this enzyme to occur in two main variants, one with a broad optimum between pH 8.8 - 9.2, the other with a sharp activity peak around pH 10.0 - 10.2. *Littorina* and *Pecten* belong to the former group, whose characteristics are very similar to those of mammalian liver transsulfurase. In the latter group are found *Mytilus* and *Anodonta*. This group shows only ca. 50% activity at the pH of the optimum of the first group (pH 9), whereas the first group is still less active at pH 10. No other principal enzymatic differences are found between the two groups. It is thought that the found difference in pH-dependency rather reflects structural properties of the total enzyme molecule than specific differences in the active site.

The highly active thiosulfate transsulfurase of the hepatic caeca of