viz., digestive gland, mantle and foot were isolaed in cold and a 2% homogenate of each tissue was prepared in 0·25 M sucrose. The homogenate was centrifuged at 3000 rpm for 10 min to remove the cell debris and 0·5 ml of this was used for the enzyme assay.

Alkaline phosphatase (orthophosphoric monoester phosphorylase EC 3.1.3.1) was estimated by the method of Bodansky[9] and the liberated phosphate was estimated by the method of Fiske and Subbarow[10].

The results show that the activity of alkaline phosphatase in the three tissues of the active snail was in the order digestive gland> mantle> foot. The predominance of the enzyme activity in the digestive gland shows the active role played by the enzyme in cleaving most of the orthophosphoric monoesters like glycerophosphate, phenyl phosphate, etc.[5], in the tissue. The high level of enzyme activity in the mantle might be attributed to the active role played by the mantle tissue in calcification-decalcification[6,11] process. Since foot muscle is involved in neither of these functions, the enzyme might be present in relatively low quantity in this tissue.

TABLE I

Alkaline phosphatase activity in the tissues of active and aestivated Pila globosa

	Digestive gland		Mantle		Foot	
	Active	Aest.	Active	Aest.	Active	Aest.
Mean	14·99	5·18	2·19	2·45	1·45	1·78
S.D.	± 3·3	±1·6	±0·21	±1·04	±1·57	±0·15
% difference		−65·37		+11·88		+25·35
Student '*t*'		P < 0·001		N.S.		P < 0·001

Note : N.S. — not significant at 5% level.

In the aestivated snail, alkaline phosphatase decreased by 65% in digestive gland showing a substantial reduction in the enzyme activity. The snail would be in a state of suspended animation during aestivation wherein the locomotor, reproductive and digestive functions cease to operate. Consequently, the energy demands are minimised and a decrease in many enzymes of Krebs cycle[12,13], transaminases[14], etc., were reported resulting in the decreased production of orthophosphoric monoesters, which are the substrates for alkaline phosphatase. There was nearly 12% increase in alkaline phosphatase activity (which was statisrically insignificant) in the mantle tissue of aestivated snail. The total retention of activity in the mantle tissue of aestivated snail might aid decalcification process reported in the snail. The increase of alkaline phosphatase in the foot muscle of aestivated snail was 25% which was significant statistically. Foot muscle is involved in maintaining the muscle tone to keep the operculum tight to the shell[13] during aestivation. Ca^{++} has a significant role in muscle contraction[15] and the increased alkaline phosphatase activity might be helpful in mobilisation of Ca^{++} resources. Increased calcium content reported in the foot muscle[14] of aestivated *Pila globosa* supports the above contention. The concentrations as well as the amounts of calcium required for activation of the enzyme in the rabbit are quite similar to those in molluscs suggesting the same mode of regulation in both animals[16].

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