body, enterochromaffin cells, the cells of Adams-Ray and Nordenstam[8]), the cells observed had granules, which after treatment with bichromate–chromate–formalin, stained red within a minute with the nuclear fast red solution used and thus showed up well in the tissues.

That the cells are quite different from the enterochromaffin cells, now generally believed to contain 5-hydroxytryptamine, is evident from the following observations. They show the chromaffin reaction after treatment with bichromate without formalin, but the reaction is negative after fixation in formalin. Furthermore, the formalin-fixed cells do not give any diazo reaction (diazotized safranin[9]).

The cells have so far been observed in tissues from cow, sheep and goat; but not from pig, cat, rabbit, guinea pig or rat. Their distribution does not bear any relation to that of the autonomic nerves. In both these respects they are clearly different from the 'common' chromaffin cells of the sympathetic system and the recently discovered cells of Adams-Ray and Nordenstam.

The distribution of the cells follows closely the content of dopamine in the various tissues. Since this will be described in detail elsewhere, only two illustrative examples are mentioned. In the bovine lung the chromaffin cells are abundant in the connective tissue of the visceral pleura but rather scarce in the intrapulmonary tissue. Such cells are likewise relatively abundant in the cow liver capsule but practically absent in the parenchyma. Dopamine determinations (Carlsson and co-workers) showed that the amine content is substantially higher in the pleura than in the intrapulmonary tissue and that it is high in the liver capsule but very low in the parenchyma.

The presence of a new type of chromaffin cells showing a distribution in close accordance with that of dopamine suggests that the cells are storage structures for this amine.

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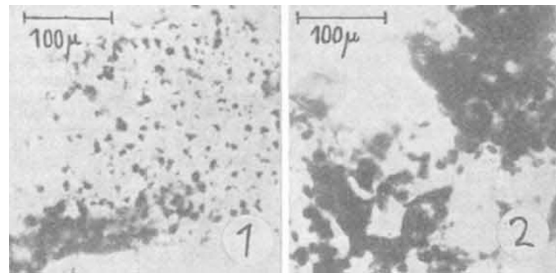
Histochemical Demonstration of Lipase and Alkaline Phosphatase Activity in the Fat Body of the Desert Locust

IN recent years several workers have studied by histochemical as well as quantitative methods the various metabolites and enzymes of the fat body of the locust. However, no information is available on lipase and alkaline phosphatase activity in this tissue. Here we report the results of a histochemical study undertaken to demonstrate lipase and alkaline phosphatase activity in the fat body of the desert locust (*Schistocerca gregaria*).



Fat body was removed from the abdominal region, after decapitation. The more readily dissected fat bodies thus taken consist mainly, if not solely, of true fat cells, the oenocytes being abundant towards the periphery, adjacent to the body wall[1]. Fresh frozen sections of this tissue was used throughout. For the demonstration of lipase, Gomori's 'Tween' method using 'Tween 80' as substrate was employed. 'Tween 80' is specifically acted upon by 'true lipase'[2]. Alkaline phosphatase was demonstrated employing the revised method of Gomori using sodium glycerophosphate as substrate. The procedures were the same as employed by us in our earlier work[3].

Figs. 1 and 2 present the photomicrographs of sections of the fat body of the locust treated respectively for lipase and alkaline phosphatase activity. Both the enzymes appear to be present in appreciable concentrations. In the case of the sections treated for alkaline phosphatase, there were present numerous round or ovoid bodies which stained intensely for the enzyme. These appeared to be the nuclei. The activity of these enzymes in the fat body is of special interest because this animal is known to utilize chiefly fat for muscular energy[4]. A high lipase activity in its flight muscles has also been recently demonstrated[5]. Similarly, high concentrations of lipase[6] and alkaline phosphatase[7] have been shown to be present in the fat-loaded fibres unlike the glycogen-loaded ones in the pigeon breast muscle, which is also known to utilize mainly fat for energy during sustained muscular activity[8]. Fat bodies of insects are often compared with mammalian liver since a number of metabolic reactions are known to be occurring in them. But more information is essential in order fully to justify such a comparison and the present study is an attempt in that direction.

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