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COMPARATIVE STUDIES OF PROTEIN BANDS OF HAEMOLYMPH AND FAT BODY OF THE COCKROACH, BLABERUS CRANIIFER (BURMEISTER.) Part IV.—Eggs*

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Egg proteins were recovered by homogenization and extraction of oothecae with distilled water. Water-soluble proteins were separated by paper electrophoresis. The number of well-defined bands varies from one to four. B and I is coincident in eggs, haemolymph and fat body.

Electrophoretic studies of proteins from haemolymph and fat body of a species of rockroach, *Blaberus craniifer*, were undertaken in all the stages. This paper deals with egg extracts. Among earlier studies of this nature papers by Laufer[1,2] alone refer to egg proteins. He compares them with blood proteins of adults.

Materials and Methods

For collection of eggs the females were anaesthetized and their abdomens slightly pressed to expel oothecae. All egg samples were collected at random with regard to age, stage of development or protein content. This procedure had to be adopted because complete embryonic development takes place inside the body of the cockroach and hatching takes place immediately after egg deposition.

Distilled water was used as a solvent. Egg samples were ground in a homogenizer for two to three minutes. As in the case of the fat body three layers resulted: the sediment, supernatant, and a top lipid layer. Supernatant was withdrawn below the lipid layer.

Procedure of electrophoresis was the same as already reported by Cheema and Garthe.[3]

Results and Discussion

The number of well-defined bands varies from one to four, though sometimes a fifth band also has been seen (Figs. 1 and 2).

Bands I and IV have the greatest spread, and least concentration while II and III are the narrowest but most well-defined. In some cases bands III and IV are of the same width and II is the narrowest. Occasionally band IV is the most intense. In all samples examined band I remained the widest. Comparison with female haemolymph shows that band I is comparable in both, but is slightly wider in eggs (Fig. 1).

When the egg is compared with female fat body, and both have five bands, then band V is of the same width and coloration in both (Figure 2). Bands II, III, and IV are all narrow and only two of these coincide. Band I of fat body gives the impression of being split into two.

Variations from the above in major and minor bands are not infrequent. This could be explained as possibly due to different stages of de-

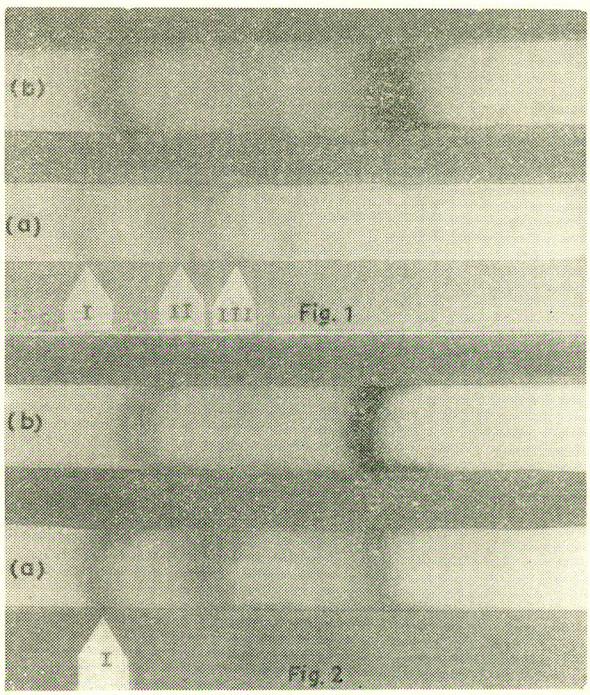

Fig. 1.—Comparative electropherograms of (a) eggs and (b) female haemolymph. Fig. 2.—Comparative electropherograms of (a) eggs) and (b) female fat body.

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velopment and also may be due partly to variations in supply from the mother. But changes in number of bands should certainly be related to stage of development.

Band I being coincident in eggs, haemolymph and fat body of females, though considerably more widened in eggs, indicates that some of its components are synthesized in fat body and reach eggs via haemolymph. Thus it seems that though some of the proteins may have travelled from fat body to egg via haemolymph as indicated in comparative studies, the question of which are the yolk or sex-differential proteins still is not settled.

References

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3. A. A. Cheema and W. A. Garthe, J. Sci. (University of Karachi), **1,** 162 (1971).