

## NOTES TO ULTRASTRUCTURE OF MAYFLY FAT BODY

F. Weyda

Institute of Entomology, Czechoslovak Academy of Sciences,  
Na sádkách 702, 370 05 České Budějovice, Czechoslovakia

Summary. "The most obvious function of the fat body is the storage of reserve materials" /Wigglesworth 1972/. The role of the fat body is especially important in short living insects in adult stage, e.g. in Ephemeroptera. While older female undoubtedly utilize the fat body reserves mainly for egg maturation, subimagos and adults, which do not receive any food, utilize these reserves especially for mating and compensatory flight. We studied the fat body younger nymphs and subimagos of Leptophlebia marginata /L./ and adults after mating flight of Ecdyonurus venosus /Fabr./ by means of light /semithin sections/ and electron microscopy. Specimens collected at Central Bohemian localities were fixed in osmium tetroxide vapour, dehydrated by dimethoxypropane and embedded in epon-araldite. Ultrathin sections were observed in Philips EM 300 electron microscope.

The fat body cells of the younger nymphs of L. marginata contains nuclei, rough endoplasmatic reticulum, mitochondria, clusters of free ribosomes, areas of glycogen and little dense vacuoles representing most likely proteins. Light vacuoles of various size are numerous and contain probably precursors of lipids.

The fat body cells of the subimago of L. marginata contains large nuclei, rough endoplasmatic reticulum, mitochondria, clusters of free ribosomes and areas of glycogen. Stored lipids in vacuoles are extremely abundant and leave little space for the cytoplasmatic matrix. Protein vacuoles seem to be absent.

The fat body cells of E. venosus adults after mating flight were studied only on semithin sections. Contrary to the L. marginata subimagos, the reserves are evidently more exhausted /vacuoles originally containing lipids are now nearly empty/.

Ultrastructural changes of fat body during nymphal development and adult life fully correspond to those apparent from anatomical and morphological study. Enlarging of fat body tissue occurs in younger nymphs /synthesis of lipids and growth of lipid containing vacuoles/. Fat body tissue in older nymphs shows maximal size and volume. Nymphs of last instars and mature nymphs /ready to emergence/ manifests first changes connected with egg maturation /transport of lipids and proteins to eggs/. Relatively large fat body of subimagos change rapidly in adult stage. Fat body tissue of adults after mating contain only rests of lipids in nearly empty vacuoles. In general, differences between fat body of younger nymphs and that of adult stage /subimago and imago/ are manifested by different degree of synthetic activity in fat body cells. Moreover, protein vacuoles are present solely in nymphs.