Graphosoma lineatum (Linneaus, 1758) is a species belongs to Pentatomidae family and feeds on cultivated plants belong to Apiaceae family and anise, cotton, tobacco, rice, fruit trees which grow in Turkey. Its nymphs and adults prefer the generative organs of the host plants and damage to immature or mature seeds. This damage causes a decrease in quality and quantity of seeds. Due to the economic importance it is necessary to know the ultrastructure of this species. To this respect, ultrastructure of rectum of G. lineatum was examined using light microscope, scanning electron microscope (SEM) and transmission electron microscope (TEM). An important function of the rectum in insects is the reabsorption of water from the faeces. Reabsorbed water is recycled and added to the contents of the midgut. In this species, rectum is a wide elongated sac located at the end of hindgut. Its outer surface is surrounded by well developed trachea and muscle. Its wall is covered with monolayer cubic-cylindrical epithelium in which intense infoldings are observed. The thickness of the epithelial layer increases in the region of the nucleus. Rectum inner surface is lined by a cuticular intima that is sharp or angled protrusions. Apical membranes of epithelial cells under the cuticula, involve a small number of microvillus in different height and thickness. There are many basement membrane invaginations into cells and there is a basal lamina layer under them. Lateral membranes make folds between cells. Mitochondria with dense matrices are the most abundant organelles in the cell cytoplasm. In SEM micrographs, crystals of various sizes are seen in the lumen of the rectum.
Fig. 1: The general view of the rectum of Graphosoma lineatum-SEM

Fig. 2: The inner surface of the rectum of Graphosoma lineatum-SEM

Fig. 3: Semi-thin section of the rectum of Graphosoma lineatum

Fig. 4: Thin section of the rectum of Graphosoma lineatum-TEM