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JOURNAL ARTICLE

Intracellular pathways of endocytosed tracers in Leydig cells of the rat

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The endocytic activity of Leydig cells was examined by electron microscopy following the injection, into the interstitial space, of tracers used to examine fluid-phase endocytosis, ie, native ferritin and horseradish peroxidase-colloidal gold (horseradish peroxidase-gold), and adsorptive endocytosis, ie, cationic ferritin. At 5 minutes after injection, native ferritin or horseradish peroxidase-gold was present in the interstitial space and free in the lumen of large endocytic vesicles forming at the cell surface. At 15 minutes, these tracers appeared in the matrix of pale multivesicular bodies, while at 30 minutes and 1 hour, the matrix of dense multivesicular bodies became labeled. Beginning at 1 hour, dense membrane-delimited bodies identified cytochemically as lysosomes were labeled. In the case of cationic ferritin, two distinct pathways were taken. In one pathway, cationic ferritin was observed 5 minutes after injection bound to the plasma membrane of Leydig cells and to the membrane of small and large endocytic vesicles. At subsequent time intervals, cationic ferritin appeared consecutively in pale, dense multivesicular bodies and lysosomes. In a second pathway, cationic ferritin was observed at 5, 15, and 30 minutes bound to the membrane of vesicles of intermediate size seen near the cell surface. At 1, 1 1/2 and 2 hours, cationic ferritin-containing intermediate vesicles appeared in increasing number in the Golgi region. However, cationic ferritin was never observed in the Golgi saccules themselves. At later time intervals (3-6 hours), intermediate vesicles labeled with cationic ferritin progressively disappeared from the Golgi region and the cell. Thus in Leydig cells, while fluid-phase tracers reached lysosomes exclusively, cationic ferritin, a tracer of adsorptive endocytosis, not only reached the lysosomes, but was also carried by the intermediate vesicles to the Golgi region of the cell.

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