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JOURNAL ARTICLE

Studies on peroxisomes of the adult rat Leydig cell

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The aims of this study were to differentially identify peroxisomes and lysosomes in Leydig cells of the sexually mature rat using cytochemical techniques, to describe the size and shape of peroxisomal profiles, and to localize catalase and sterol carrier protein-2 (SCP2) in Leydig cell peroxisomes. Peroxisome profiles, identified by cytochemical staining for catalase activity using 3,3'-diaminobenzidine tetrahydrochloride (DAB) were categorized according to their longest diameter as small (less than 0.18 microns), intermediate (0.18-0.45 microns), and large (more than 0.45 microns); and according to their shape, which were designated as circular, oval, and dumbbell. Together these peroxisomal profiles occupied 11.2 microns 3/Leydig cell. Lysosomes, identified in the same tissue sections as acid phosphatase positive organelles, occupied 12.9 microns 3/Leydig cell. Negative bodies with morphology identical to cytochemically unstained peroxisomes also were detected. These organelles occupied 14.5 microns 3/Leydig cell. Catalase was immunolocalized exclusively in Leydig cell peroxisomes using AuroProbe EM protein A G10 (ie, 10 nm gold particles). Sterol carrier protein-2 was immunolocalized in Leydig cell peroxisomes by AuroProbe EM protein A G15 (ie, 15 nm gold particles). Immunolocalization of catalase and SCP2 using 10 nm and 15 nm gold particles in the same peroxisomes confirmed that Leydig cell peroxisomes contain SCP2. Taken together, these results show conclusively that adult rat Leydig cell peroxisomal profiles occur in different shapes and sizes, which suggests the existence of a network of peroxisomes, rather than peroxisomes occurring as separate isolated organelles. More importantly, the present study demonstrates for the first time that Leydig cell peroxisomes contain SCP2. (ABSTRACT TRUNCATED AT 250 WORDS)

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