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Heterogeneity of adult mouse Leydig cells with different buoyant densities

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The authors investigated the morphologic characteristics and human chorionic gonadotrophin (hCG)-stimulated testosterone production of adult mouse Leydig cells in vitro, which have different buoyant densities. Leydig cells from five testes of Swiss outbred male mice (15 weeks old) were isolated and purified by mechanical dispersion followed by density gradient centrifugation using Percoll. Two groups of Leydig cells were obtained with different buoyant densities: group 1 had densities of 1.0667 to 1.0515 g/cm³ and group 2 had densities of 1.0514 to 1.0366 g/cm³. In vitro testosterone production of these Leydig cells, in response to different doses of hCG (0, 5, 25, 125, 625, and 3125 pg/mL), was determined by radioimmunoassay. Leydig cells were fixed and processed for electron microscopic stereology to quantify the organelles by volumes and surface area. In Leydig cells of Group 1, testosterone production per cell in vitro in response to 0 and 5 pg/mL hCG was not significantly different (P greater than 0.05). Increases in the dose up to 25 pg/mL produced a significant increase (P less than 0.05) in testosterone production, although hCG doses of 125 and 625 pg/mL did not produce further increases in testosterone levels. However, 3125 pg/mL hCG further elevated the testosterone production by those Leydig cells with high buoyant density. In Leydig cells in group 2, the patterns of testosterone production in response to hCG doses of 0, 5, and 25 pg/mL were similar to those of Leydig cells in group 1. Those Leydig cells with low buoyant density, however, were unable to stimulate further testosterone production by an hCG dose of 3125 pg/mL. (ABSTRACT TRUNCATED AT 250 WORDS)

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