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JOURNAL ARTICLE

Immunobiology of a synthetic luteinizing hormone receptor peptide 21-41

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Immunization of adult male rabbits with a synthetic luteinizing hormone-receptor peptide (LH-RP; representing amino-acids 21-41 of the extracellular domain of the rat LH receptor) resulted in production of high-titer antibodies capable of interacting with particulate and cell-based LH receptors. The antibody produced was able to inhibit binding of ¹²⁵I-labeled human chorionic gonadotropin (hCG) to a particulate sheep luteal LH receptor preparation by 40%-50%. Maximal inhibitory activity was correlated with high antibody titer. Immunocytochemistry revealed that the antibody could directly bind to cells having LH receptors, such as rat granulosa and Leydig cells. The antibodies recognized a 77-kilodalton membrane protein in Western blots of mouse testicular extracts. Interaction of endogenous Leydig cell LH receptor with the LH-RP antibody resulted in both hormone agonist and antagonistic activities. The hormone-mimicking activity (increase in serum testosterone over control) was confined only to the early phase of immunization when the antibody titer was low. Blockade of LH receptor during the later part of immunization resulted in a significant reduction in serum testosterone over controls and inhibition of spermatogenesis. DNA flow cytometry showed that a specific and significant inhibition of meiosis (transformation of primary spermatocytes to round and elongated spermatids $P < .01$) and spermiogenesis (transformation of round spermatids to elongated spermatids $P < .0001$) occurred following blockade of LH function.

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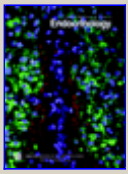
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