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JOURNAL ARTICLE

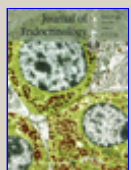
17 beta-estradiol inhibition of Leydig cell regeneration in the ethane dimethyl sul fonate-treated mature rat

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This study was designed to determine the effects of 17 beta-estradiol (E2) on Leydig cell development in the rat. Mature (60 to 65 days old) male rats received a single intraperitoneal injection of ethane dimethyl sul fonate (EDS, 100 mg/kg body weight); untreated rats served as controls. In one series of experiments, groups of EDS-treated rats also received daily injections of either E2 (25 micrograms/100 g body weight), human chorionic gonadotropin (hCG, 20 IU/day), a combination of the two, or vehicle only (EDS controls). Animals were killed on days 2, 4, 10, 16, 24, 30, and 36 after EDS treatment. In another series of experiments, groups of EDS-treated rats received daily injections of hCG and E2 during days 0 through 5, 5 through 30, or 16 through 30 after EDS treatment, and were killed on day 30. In both series of experiments, the steroidogenic capacity and hCG binding capacity of the Leydig cells were examined in short-term in vitro incubations using collagenase-dispersed interstitial cells. Testes were also prepared and examined histologically by light and electron microscopy. E2 treatment of animals during the initial 5 days after EDS administration had no effect on the regeneration of interstitial cells and Leydig cells. Treatment with E2 during days 5 to 30 post-EDS blocked the regeneration of Leydig cells and thereby significantly reduced the increase in interstitial cell numbers. Finally, when E2 treatment was delayed until 16 days post-EDS, there was no significant reduction in the regeneration of interstitial or Leydig cells. These data suggest that an important developmental process that is necessary for Leydig cell regeneration occurs between days 5 and 16 post-EDS. (ABSTRACT TRUNCATED AT 250 WORDS)

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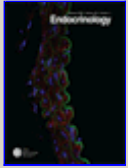


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Development and Function of the Adult Generation of Leydig Cells in Mice with Sertoli Cell-Selective or Total Ablation of the Androgen Receptor

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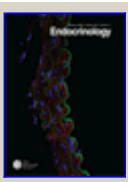


B. T. Akingbemi, C. M. Sottas, A. I. Koulova, G. R. Klinefelter, and M. P. Hardy

Inhibition of Testicular Steroidogenesis by the Xenoestrogen Bisphenol A Is Associated with Reduced Pituitary Luteinizing Hormone Secretion and Decreased Steroidogenic Enzyme Gene Expression in Rat Leydig Cells

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B. T. Akingbemi, R. Ge, C. S. Rosenfeld, L. G. Newton, D. O. Hardy, J. F. Catterall, D. B. Lubahn, K. S. Korach, and M. P. Hardy
Estrogen Receptor- α Gene Deficiency Enhances Androgen Biosynthesis in the Mouse Leydig Cell
Endocrinology, January 1, 2003; 144(1): 84 - 93.
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S.M.L. Chamindrani Mendis-Handagama and H.B. Siril Ariyaratne
Differentiation of the Adult Leydig Cell Population in the Postnatal Testis
Biol Reprod, September 1, 2001; 65(3): 660 - 671.
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L. O'Donnell, K. M. Robertson, M. E. Jones, and E. R. Simpson
Estrogen and Spermatogenesis
Endocr. Rev., June 1, 2001; 22(3): 289 - 318.
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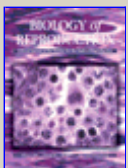
M. Tena-Sempere, L. Pinilla, F.-P. Zhang, L. C. González, I. Huhtaniemi, F. F. Casanueva, C. Dieguez, and E. Aguilar
Developmental and Hormonal Regulation of Leptin Receptor (Ob-R) Messenger Ribonucleic Acid Expression in Rat Testis
Biol Reprod, February 1, 2001; 64(2): 634 - 643.
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B. T. Akingbemi, R.-S. Ge, G. R. Klinefelter, G. L. Gunsalus, and M. P. Hardy
A Metabolite of Methoxychlor, 2,2-Bis(p-Hydroxyphenyl)-1,1,1-Trichloroethane, Reduces Testosterone Biosynthesis in Rat Leydig Cells Through Suppression of Steady-State Messenger Ribonucleic Acid Levels of the Cholesterol Side-Chain Cleavage Enzyme
Biol Reprod, March 1, 2000; 62(3): 571 - 578.
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R.M. Sharpe, N. Atanassova, C. McKinnell, P. Parte, K.J. Turner, J.S. Fisher, J.B. Kerr, N.P. Groome, S. Macpherson, M.R. Millar, *et al.*
Abnormalities in Functional Development of the Sertoli Cells in Rats Treated Neonatally with Diethylstilbestrol: A Possible Role for Estrogens in Sertoli Cell Development
Biol Reprod, November 1, 1998; 59(5): 1084 - 1094.
[\[Abstract\]](#) [\[Full Text\]](#)



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R.-s. Ge and M. P. Hardy
Decreased Cyclin A2 and Increased Cyclin G1 Levels Coincide with Loss of Proliferative Capacity in Rat Leydig Cells During Pubertal Development
Endocrinology, September 1, 1997; 138(9): 3719 - 3726.
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