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Regulation of adiponectin secretion by soy isoflavones has implication for endocrine function of the testis.

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Source

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Abstract

Testicular Leydig cells are the predominant source of the male sex steroid hormone testosterone (T), which is required to maintain male fertility. There is now growing evidence that environmental stressors, including chemicals present in food, air and water, may affect energy balance. A relationship between energy balance and reproductive capacity has been proposed for a long time. In the present study, developmental exposures of male rats to soy isoflavones in the maternal diet from gestational day 12 to day 21 post-partum enhanced adiponectin expression in adipose tissue and increased serum adiponectin concentrations in adulthood. However, exposure to soy isoflavones caused a decrease in T production and expression of adiponectin and its receptors (adipoR2) in Leydig cells. In separate experiments, incubation of Leydig cells with recombinant adiponectin in the absence of isoflavones caused a decrease in T biosynthesis associated with diminished expression of the cholesterol transporter steroidogenic acute regulatory protein (StAR). Thus, chemical-induced alterations in serum adiponectin concentrations have implication for steroid hormone secretion. The results also imply that changes in adipose tissue metabolism occasioned by exposure to dietary estrogens, and perhaps other estrogenic agents, possibly contribute to deficiencies in reproductive capacity attributed to these compounds.

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