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JOURNAL ARTICLE

Increased plasma and pituitary prolactin concentrations in adult male rats with selective elevation of FSH levels may be explained by reduced testosterone and increased estradiol production

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The roles of testosterone and estradiol in regulating prolactin concentrations were studied in acutely castrated adult male rats receiving subcutaneous Silastic implants of the sex steroids.

Testosterone was administered in increasing doses, from subphysiologic to intact levels, both alone and in combination with a small, single dose of estradiol. The study was designed to assess whether a change in the relative rates of sex steroid production could account for an increase in PRL release in the absence of other testicular factors. At very low levels of plasma testosterone, FSH and LH levels were indistinguishable from castrate controls. As plasma testosterone concentration increased, both plasma FSH and LH levels were suppressed progressively to intact levels. When a subphysiologic dose of testosterone was coadministered with a small dose of estradiol, the combined effects produced a midcastrate level of FSH but maintained a normal level of LH similar to the selective increase in FSH concentration observed in men with germinal aplasia. Although PRL levels were indistinguishable in intact and castrate controls, testosterone replacement by capsule increased prolactin in a dose-related manner so that, at the physiologic level of testosterone, prolactin was elevated two-fold (P less than 0.01), similar to the level achieved with estradiol replacement alone. Pituitary prolactin levels also increased with increasing doses of testosterone but values remained within the range measured in intact controls. When estradiol was coadministered with testosterone, the combination produced different effects depending on the testosterone dose. (ABSTRACT TRUNCATED AT 250 WORDS)

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