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JOURNAL ARTICLE

Androgen receptor levels and androgen contents in the prostate lobes of intact and testosterone-treated Noble rats

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Plasma testosterone (T) levels were correlated with androgen receptors, tissue content of T, and 5 alpha-dihydrotestosterone (DHT) in the three anatomically-discrete prostate lobes of intact and castrated Noble (Nb) rats bearing T-filled silastic capsules.

Differences in androgen receptor content and tissue androgen levels were observed among the three prostatic lobes of intact Nb rats. Total (cytosolic and nuclear) androgen receptor levels were highest in the ventral prostate followed by the dorsolateral and anterior prostate lobes.

In the ventral and anterior prostate, androgen receptors were found to be equally distributed between cytosols and nuclear extracts, whereas in the dorsolateral prostate, androgen receptors were predominantly nuclear (cytosolic: nuclear = 1.5). The ventral prostate had the highest total androgen content and DHT was the major tissue androgen in all three lobes. The ratio of tissue DHT:T varied among the lobes; the highest value was observed in the dorsolateral prostate. The higher proportions of nuclear androgen receptor, as well as the elevated tissue DHT:T found in the dorsolateral prostate compared to other lobes, suggest that differences in the androgen activation process may exist between the dorsolateral prostate and other prostatic lobes. Despite lower plasma and tissue T levels, the DHT content, weight and cytodifferentiation in all lobes of T-treated castrated rats closely approximated the situation found in intact animals. Total androgen receptor levels were, however, elevated in all prostatic lobes of T-treated, castrated rats as compared to intact controls. These increases were primarily attributed to the augmented levels of androgen receptor in the nuclear extracts of the three prostate lobes. Exposure of the prostate to a constant level of T, produced by silastic implantation, might be responsible for the higher total androgen receptor levels and enhanced nuclear androgen receptor retention found in the prostates of T-treated, castrated rats.

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