Comparative Study between the Effect of Finasteride & Castration on Rat Ventral Prostate

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Purpose: Prostate growth and development require the intraprostatic conversion of testosterone to dihydrotestosterone (DHT) by the enzyme 5 α -reductase. Therefore, 5 α -reductase inhibitors shrink prostate by decreasing the intraprostatic DHT. The objectives of this study were to compare changes in the ventral prostate of adult Sprague Dawley rats at each time point after treatment with finasteride, a potent 5 α -reductase inhibitor, with those caused by castration.

Method: Rats were divided into two groups: finasteride-treated and castration ones. Finasteride treated rats were given 1mg/kg a day orally. The rats were sacrificed on day 0, 1, 3, 5, 7, 10, 14 and 21. The prostate were immediately removed, weighed and either prepared for histological examination or frozen in liquid nitrogen for determination of androgen concentration and DNA content.

Results: Finasteride and castration decreased prostate weight and DNA content; however, these processes occurred

to an greater extent with castration. Both castration and finasteride caused a decrease in intraprostatic DHT concentration; however, these processes occurred to an more rapid and greater extent in finasteride-treated group. By 3 days of finasteride treatment, the intraprostatic DHT concentration decreased to a greater extent with no significant change thereafter. But castration caused a decrease gradually in intraprostatic DHT concentration up to day 10, with no further significant decrease thereafter. In the pattern of cell loss determined by hematoxylin and eosin staining, apoptotic bodies were observed typically in castration group but not in finasteride-treated one.

Conclusion: Castration induces a more profound involution of the rat ventral prostate than does 5 α -reductase inhibition. The degree of the reduction of intraprostatic DHT concentration does not correlated with the degree of the prostate involution. And the pattern of cell loss in finasteride was somewhat different from that of castration.