

Study of the Change in Human Prostatic Tissue Made by Dutasteride in Super SCID Mice

Introduction and Objective: Chronological change and other effects of human prostate tissue caused by dutasteride remain marginally elucidated. We investigated the effect of dutasteride on human prostate tissue using transplantation model with the improved severe combined immunodeficient mice (super-SCID mice), in which even normal human tissues are generally well maintained in morphology and function for a long period.

Materials and Methods: In the present study, human prostate tissue obtained by transurethral resection was transplanted into the super SCID mice. After the transplantation, mice were divided into dutasteride group, in which dutasteride was administered every day and the control group without dutasteride administration. In the biopsy at 2 months after the transplantation, all tissues were examined by immunohistochemical staining with antibody of prostate specific antigen (PSA), androgen receptor (AR), Ki67 and cyclooxygenase 2 (cox2), as well as TdT-mediated dUTP Nick-End Labeling (TUNEL).

Results: Gross and histological features of human prostate tissues both with and without dutasteride were well maintained in the super-SCID mice for 2 months. PSA and AR were expressed in all tissues of the dutasteride and the control groups. Expression of Ki67 in the dutasteride group was lower in the control group and positive cell number of TUNEL was higher in the dutasteride group than that in the control group. These findings were found both in the epithelial cells and the interstitial cells. Conversely, expression of cox2 was lower in the dutasteride group than that in the control group.

Conclusions: Normal human prostatic tissues are well maintained in morphology and function for 2 months in the super SCID mice. Inhibitory of cell growth and enhancement of apoptosis by dutasteride are shown in human prostate tissue. In addition, suppression of cox2 production may be considered an early effect of dutasteride on prostate tissue to improve the lower urinary tract symptoms.