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Sex Hormone Regulation of Rat Organic Anion Transporter3 (rOAT3) Expression in Rat Kidney

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Sex-related difference in the level of rat organic anion transporter 3 (rOAT3) protein was compared in rat kidney. Immunohistochemical staining indicated that rOAT 3 was expressed in cortex, outer medulla and, to a lesser extent, in inner medulla in male and female rats. rOAT3 was localized in basolateral membrane of tubules in all sections. Essentially the same results were obtained in castrated male rats, castrated male rats that were treated with testosterone, ovariectomized female rats and ovariectomized female rats that were treated with estradiol. Western blot analysis detected both major 130-kDa and minor 64-kDa proteins in kidney homogenates. 130-kDa protein was increased in ovariectomized female rats and treatment of ovariectomized female rats with estradiol reduced to normal level. These changes were observed in cytosolic fraction but not in plasma membrane fraction. These results suggest that cellular level of rOAT3 protein is regulated by, at least in part, estradiol, but in plasma membrane where it functions rOAT3 level is not altered by sex hormones.