19. ANDROGEN CONTROL OF MULTIPLE ACID PHOSPHATASES IN THE RAT PROSTATIC COMPLEX AND SEMINAL VESICLE

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Our previous studies have revealed separate secretory and lysosomal acid phosphatases in the rat ventral prostate after ion exchange chromatography and gel filtration (Vanha-Perttula et al.; Invest. Urol. 9:345, 1972). The present study was aimed at revealing and comparing the pattern of acid phosphatases in various lobes (ventral, VP; lateral, LP; posterior, PP; coagulating gland, CG) of the rat prostate as well as in the seminal vesicles (SV) after chromatofocusing. The changes in the enzyme pattern were recorded 7 and 14 days after castration as well as after testosterone (2 mg/day) treatment of animals for 7 and 14 days following castration. In the ventral prostate seven acid phosphatase peaks were separated differing from each other in pI of elution, pH-optima, substrate specificity and inhibition by fluoride and tartrate. Enzymes with pI of 5.0, 6.4 and 7.1 decreased after castration and were restored after androgen treatment. Enzymes with pI of 7.9, 8.1 and 8.3 showed an initial augmentation at 7 days of castration with a subsequent decline. The latter enzymes were also found in other lobes and in VS and are presumably lysosomal of origin. SV also gave the activity with pI of 6.4. All tissues additionally gave a variable tartrate-resistant activity with pI of 5.8. The androgen-dependent enzymes are apparently suppressed and induced at different time-sequence in VP after castration.

20. INFLUENCE OF ADRENOCORTICAL HORMONES ON PYRIDOXAL-5'-PHOSPHATE (PLP) FORMATION

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The vitamin pyridoxine and its derivatives are normally converted in the body to their phosphorylated forms and finally to PLP and to some extent pyridoxamine-5'-phosphate. It has been observed that in adrenocortical insufficiency there is depletion of total vitamin B_6 and decreased activity of vitamin B_6-dependent enzymes. In order to study the role of adrenocortical hormones in the overall metabolism of vitamin B_6 the following two key enzymes-pyridoxal kinase and pyridoxine-5'-phosphate oxidase-were studied in the adrenalectomized (Adx) rats. In the case of Adx animals there was decrease in the activity of both these enzymes. When the livers of Adx animals were examined 8 days after the operation they showed 22% decrease in kinase and 18% decrease in the oxidase, while in the case of cerebral cortex it was 12% and 31% respectively. This results in significant decrease in total B_6 content of liver (26%) as estimated by using S.carlsbergensis, but only a marginal decrease in cerebral cortex (4%). Thus it is possible in the cerebral cortex kinase helps in the trapping of the vitamin B_6 by phosphorylation, however the conversion of phosphorylated derivatives to PLP is impaired.

21. MODULATION OF HISTONE ACETYLATION IN THE FETAL UTERUS OF GUINEA-PIG BY ESTROGENS, PROGESTERONE AND ANTI-ESTROGENS.

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The fetal uterus of guinea-pig responds very actively to estradiol: uterotrophic effect, stimulation of progesterone receptor, activation of RNA polymerases I and II. Recently it was also demonstrated that estradiol stimulates nuclear histone acetylation in this fetal tissue (Biology Reprod. 25 (1981) 1035). In this work the effect of progesterone in estradiol-treated animals as well as the direct effect of anti-estrogens and other steroid hormones on histone acetylation are described. Fetuses (55-65 days of gestation) were injected with 500 µCi of ^3H acetate (non treated animals), 500µCi of ^3H acetate+10µg of estradiol (E_2 primed animals), 500µCi of ^3H-acetate + 10µg estradiol + 40µg progesterone (E_2+P treated animals). After ten minutes, histones were extracted and fractionnated by electrophoresis in histones H_2+H_3 and H_4. In the non-treated animals, the values expressed in DPM/mg protein were for H_2+H_3: 1652±594 and for H_4: 2219±694, in the E_2primed animals: 19920±5109 and 21498±5212, and in the E_2+P treated animals 3273±1364 and 2064±468, respectively. Tamoxifen (10µg/fetus) provoked a 2-3 fold stimulation in H_2+H_3. Testosterone had no effect. In new born guinea-pigs the effect of estradiol is only 1.5-2 times in relation to non-treated animals. It is concluded that progesterone blocks the effect of estradiol on histone acetylation of the fetal uterus.