

Journal of Andrology, Vol 4, Issue 4 272-275, Copyright © 1983 by The American Society of Andrology

JOURNAL ARTICLE

The effect of estrogen administration in vivo on the elemental composition of the intraluminal fluids of the seminiferous tubules, rete testis, and epididymis of the rat

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The maturation of spermatozoa in the epididymis is dependent upon the presence of androgens. This study examined the effects of androgen suppression by estradiol valerate on the elemental composition of the intraluminal fluids of the testis and epididymis. In the fluid from the caput epididymidis, the concentrations of sodium (106.1 +/- 3.4 to 182.8 +/- 16.9 mmol/l, P less than 0.01) and chloride (16.5 +/- 2.2 to 79.3 +/- 10.8 mmol/l, P less than 0.01) rose after treatment with estradiol valerate. By contrast, this treatment reduced the concentrations of phosphorus (63.7 +/- 1.6 to 47.8 +/- 3.2 mmol/l, P less than 0.01), sulfur (18.4 +/- 1.0 to 10.8 +/- 1.0 mmol/l, P less than 0.01), calcium (0.93 +/- 0.09 to 0.50 +/- 0.07 mmol/l, P less than 0.01), and magnesium (2.21 +/- 0.41 to 0.76 +/- 0.16 mmol/l, P less than 0.01). In the distal cauda epididymidis, the concentration of chloride rose after treatment with estradiol valerate (24.4 +/- 1.7 to 54.9 +/- 3.9 mmol/l, P less than 0.01), but the concentrations of the other measured elements (sodium, potassium, phosphorus, calcium, magnesium, and sulfur) were not altered by estrogen treatment. In rete testis fluid the concentration of phosphorus fell (2.00 +/- 0.30 to 0.67 +/- 0.12 mmol/l, P less than 0.01), while that of calcium rose (0.66 +/- 0.15 to 1.55 +/- 0.21 mmol/l, P less than 0.01). Estrogen treatment did not appear to affect the elemental composition of seminiferous tubular fluid or serum. Therefore, estradiol valerate had a marked impact on the elemental composition of luminal fluid only in the caput epididymidis--where sperm maturation is initiated--and a minor effect on that of cauda epididymidal fluid--in which mature spermatozoa are stored.

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