

STUDIES ON THE RELATIONSHIP BETWEEN THE Na⁺ AND K⁺ CONCENTRATIONS IN
THE EPIDIDYMAL FLUID AND SPERM FERTILIZING CAPACITY
IN THE RAT

By

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ABSTRACT

Studies have been made on the relationship between Na⁺ and K⁺ concentrations in the cauda epididymal fluid and fertility in the male rat after castration and after administrations of ouabain (10, 15, 20 mg/kg, for 14 days), α -chlorohydrin (90 mg/kg, for 2 and 4 days) and cyproterone acetate (10 mg/day, for 21 days).

Reduction in the percentage fertility was noted on the second day after castration and it was rapidly decreased to 30% on the fifth day and 0% on the eighth day. Meanwhile, Na⁺ concentration was decreased on the first day of castration but increased on the later days ($P < .05$) whereas K⁺ concentration was decreased on the second day of castration and did not change in the other days. After intraperitoneal injection of ouabain, both the percentage fertility and Na⁺ concentration were not different from the saline control group, but K⁺ concentration in the groups which were treated with doses of 15 and 20 mg/kg were increased.

Intraperitoneal injection of α -chlorohydrin caused no change in Na^+ concentration but significantly increased K^+ concentration. On the other hand, Na^+ concentration was increased while K^+ concentration was not altered by subcutaneous injection of cyproterone acetate.

These results showed that there were no consistent relationship between changes in Na^+ and K^+ concentrations in the luminal plasma of cauda epididymidis and fertility. It is concluded that the reabsorption of Na^+ and secretion of K^+ in the cauda epididymidis are not the determining factors for the fertilizing capacity of rat spermatozoa.

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