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JOURNAL ARTICLE

Regional differences in luminal fluid polypeptides of the rat testis and epididymis revealed by two-dimensional gel electrophoresis

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Luminal fluid samples were collected by micropuncture of the seminiferous tubule, rete testis, and defined levels of the epididymal tubule. After removal of spermatozoa by centrifugation, the supernatant fluids were analyzed by two-dimensional polyacrylamide gel electrophoresis (2-D PAGE) and an ultrasensitive silver staining procedure to define the sequential change in protein composition along the excurrent duct system. Fluid from each segment displayed a characteristic 2-D PAGE map composed of numerous polypeptides. Seminiferous tubule fluid contained a wide array of polypeptides, with most concentrated in the 45 Kd to 90 Kd range, but, in contrast, rete testis fluid lacked most of these polypeptides. The major complex of rete testis fluid comigrated with serum albumin and was present in all distal segments. Other major rete testis components were not noted distally. Fluid from the caput was characterized by new major components of 30 to 37 Kd, 28 to 30 Kd, 24 Kd, and 23 Kd, each of which consisted of multiple spots of apparent isoelectric variants; all except the 30 to 37 Kd complex were present in the fluid from more distal segments. Proceeding distally, there was a temporal appearance of new polypeptides, especially in the molecular weight range below 30 Kd. Two-dimensional PAGE analysis of detergent extracts of washed spermatozoa indicate that a specific subset of these fluid polypeptides are sperm associated.