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HUMAN EPIDIDYMAL SECRETOME AND PROTEOME: COMPARATIVE ANALYSIS WITH OTHER MAMMALS.

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In all mammals studied, testicular spermatozoa do not develop the ability to fertilize an ovum until they transit the epididymis. In this organ, several successive differentiations occur to the gametes, particularly in the lipid and protein composition of their plasma membrane inducing important changes in the characteristics of the sperm surface. These sperm modifications occur always in the epididymal environment which regulated continuously, particularly in protein composition. Synchrony between changes in sperm and the epididymal milieu indicate that they are associated.

We present a comparative analysis, of human and several other mammals, in the sequential changes in the protein composition of the epididymal luminal fluid and in the synthetic activity of the epididymal epithelium.

The secreted proteins were determined by incubating tubules in vitro and the luminal proteins were determined using luminal fluid collected by flushing lengths of tubules, and the preparations were analysed by two dimensional electrophoresis and nano LC MS/MS.

In most species, such as in porcine, bovine, equine and rodent, epididymal activity is highly regionalized both in the secretory activity of the epithelium and the protein composition of the luminal fluid. However, in humans, this regionalization is present, but the number of sequential changes along the epididymis is reduced. Several proteins are found in all the species studied but their concentrations along the tubule are species specific.

In conclusion, in all the species studied, the protein composition of the luminal fluid changed significantly according to the region of the epididymis. However in humans, there were only minor changes in the major proteins secreted. It is suggested that specificity of protein secretion could be related to the difference between species in the location in the epididymis where the sperm become fertile.