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JOURNAL ARTICLE

Comparative study of boar sperm coming from the caput, corpus, and cauda regions of the epididymis

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Sperm quality in the caput, corpus, and cauda regions of the epididymis of healthy and sexually mature Landrace boars was studied. Epididymal sperm characteristics were examined by light microscopy (LM), scanning electron microscopy (SEM), and transmission electron microscopy (TEM). Sperm vitality decreased very slightly although progressively with the transport of sperm through the epididymis.

Osmotic resistance of acrosomes was very low in the sperm from the caput and approximately 100% in the corpus and cauda. The incidence of spermatozoa with the head detached from the tail remained stable in the first two regions of the epididymis, increasing notably in the cauda. Sperm agglutination increased progressively as sperm progressed along the epididymal duct. The percent of mature spermatozoa and aberrant spermatozoa increased from the caput to the cauda, whereas the percent of immature spermatozoa decreased. In the caput and corpus the percent of immature spermatozoa was similar, although in the caput they were characterized by the presence of a proximal cytoplasmic droplet; in the corpus the cytoplasmic droplet was distal. The acrosomal protuberance was highly developed in spermatozoa from the epididymal caput, but its volume was considerably reduced in those from the epididymal cauda. The electron density of the acrosomal content was lower in spermatozoa from the caput than in those from the epididymal cauda. The mitochondrial sheath of spermatozoa from the caput was made of voluminous mitochondria of unequal size, with a low electron-dense matrix. In the cauda region, the mitochondria were smaller in diameter, homogeneous in size, and with greater matrix electron density. This last fact is related to the loss of the capacity of spermatozoa to fold their tail by the midpiece as they progress along the epididymal duct. The complex epididymal maturation process of the sperm results in quantitative and qualitative changes that can be characterized in each of the three epididymal regions. The presence in the ejaculate of one or more gamete forms belonging to the epididymal caput, corpus, or cauda will allow workers to better establish the intensity of stress produced by a high frequency of semen collection.

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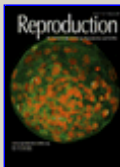
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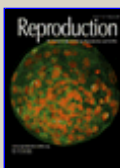
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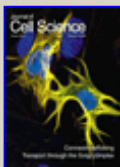
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