OBSERVATION ON THE CHANGES IN ULTRASTRUCTURE OF FROZEN RABBIT SPERM WITH SCANNING AND FREEZE-ETCHING METHODS

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ABSTRACT

The ultrastructure of rabbit sperm and its changes after freezing were observed and described under scanning electron microscopy. After freezing, the equatorial segment and its vicinity of rabbit sperm became swollen. The plasma membrane and external membrane of acrosome were liably to rupture and detached partly from the head. The swelled acrosome protruded forwards occurred rarely. According to the results of freeze-etching, as shown in pictures, the pF-face of plasma membrane could be divided into three regions: the relatively smooth region of acrosome ridge; the flat centreal region of acrosome particularly rich in particles with uneven density scattered randomly and the post acrosomal cap region with less scattered particles. Surrounding the basal part of sperm head there were numerous striate cords consisting of course particles in parallel or oblique arrangement. Most of chromatine in the nucleus of different etching-surfaces was a parallely arranged cord shaped structure, but near the head basal area the cord shaped structure became irregular. After freezing, the particles increase on the plasma membrane of acrosomal ridge region and in the anterior region of post nucleal cap there occurred the swelled rectangle bulges and the particles increase as well. The cord shaped structure scattered and the particles seemingly migrated towords the post nucleal region. In addition, some parts of the sperm neck and middle piece frequently swelled and the plasma membrane was impaired or ruptured.