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STUDY ON THE DETECTION OF THE F-BODY
IN HUMAN AND BOVINE SPERMATOZOA AND LYMPHOCYTES

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This study was conducted to investigate the effects of smearing, enzyme-treatment and fixation on the detection of the F-body in human and bovine spermatozoa and lymphocytes. The characteristics of the F-body, including its morphology, position in the cell and length of fluorescence, were also studied.

Dispase was the enzyme used in this study. As for fixatives, ethanol and glutaraldehyde were used for smears and suspensions, respectively. The quinacrine mustard fluorescence technique was used to identify the F-body.

The frequency of the human F-body in both spermatozoa and interphase nuclei was influenced neither by enzyme-treatment nor fixation. The percentage of human spermatozoa in suspension containing F-bodies was $7.1 \pm 3.3\%$. However, smears made from the suspension showed a significant increase in the frequency of F-body-bearing spermatozoa ($45.4 \pm 2.8\%$; $p < 0.01$). The percentages of F-body-positive male interphase lymphocytes in suspensions and smears were 1.5 ± 3.2 and $92.5 \pm 4.2\%$, respectively, with a statistically significant difference between them ($p < 0.01$). All male metaphase cells showed F-bodies as chromosomes with strongly fluorescent regions. However, female lymphocytes had no F-bodies regardless of the period in the cell cycle.

F-bodies in human spermatozoa were morphologically classified as round or club-like. The percentage of the former was 77.8%. About 80% of the F-bodies in the spermatozoa were observed to be located at the boundary between the dense and lesser fluorescent regions of the sperm head. In interphase nuclei, approximately 70% of the F-bodies were observed to be club-like and most of them were located peripherally. The others were round and found inside the outline of the nucleus.

The FT_{50} (the time when half of the F-body-bearing cells lost their F-body fluorescence) of human spermatozoa in suspensions and smears was 3.8 and 8.4 minutes, respectively. The FT_{50} of interphase lymphocytes was 11.7 minutes, and it was 16.3 minutes for metaphase lymphocytes.

The F-body of the bovine spermatozoon was smaller than that of the human and its outline was very clear. F-bodies were detected in $2.1 \pm 0.9\%$ of the spermatozoa suspensions treated with the enzyme, and 65% of these F-bodies were located near the equatorial plane of the sperm head. In bovine spermatozoa, fluorescence of the F-bodies faded as rapidly as the particles found around the sperm. No fluorescent body was detected in interphase nuclei or smeared spermatozoa.