

Effect of the frequency of morphological changes in sperm on ejaculate characteristics and the dimensions and shape of sperm of Polish Landrace boars

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Summary

The study was carried out on 30 ejaculates collected from 15 Polish Landrace boars and subjected to macro- and microscopic examination. In each ejaculate the morphology of 500 sperm was evaluated, indicating the number of sperm with normal structure and with morphological changes. Forms with major and minor defects were distinguished according to Blom's classification. According to the criterion of frequency of morphological changes, two groups of ejaculates were distinguished: group I – ejaculates with a low frequency of sperm with morphological changes, i.e. not exceeding 1%, and group II – ejaculates with a high frequency of morphological changes, i.e. 9% or higher. Morphometric measurements of the heads of 15 randomly selected sperm from each ejaculate were made automatically using the CASA system, determining the length, width, perimeter, and surface area of the sperm head. Statistical analysis of the material was performed by analysis of variance. The significance of differences between groups was determined with Tukey's test. The frequency of morphological changes in sperm was shown to influence ejaculate traits and the percentage of sperm with normal structure. In the group of ejaculates with low frequency of morphological changes in the sperm, sperm motility was 2.77% higher than in group II. In ejaculates with a high frequency of morphological changes, the sperm dimensions, including head length, width, area, and perimeter, were somewhat greater than in ejaculates with a low frequency of morphological changes. On the other hand, the frequency of morphological changes in sperm had a negligible influence on the shape indices of the sperm heads (elongation, ellipticity, regularity and roughness).

KEY WORDS: ejaculate, sperm, Polish Landrace boars