

MICROBIOLOGICAL ASSESSMENT OF BACTERIAL CONTAMINATION IN BOAR SEMEN FROM PIETRAIN AND DUROC BREEDS

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Background: Boar semen used for artificial insemination must meet strict microbiological quality standards because bacterial contamination can negatively affect sperm viability, fertility, and biosafety in pig breeding systems.

The aim of this study was to evaluate the presence of selected bacterial contaminants in semen collected from breeding boars.

Materials and methods: Semen samples were collected from two boars belonging to different breeds (Pietrain No. 88730 and Duroc No. 39631) and microbiologically analyzed using selective culture media. Bacteriological examinations were performed by inoculating semen dilutions on Bile-Esculin Azide Agar for detection of *Enterococcus* spp., Endo Agar for identification of *Escherichia coli*, and Salmonella–Shigella agar for isolation of *Salmonella* spp.

Results: The microbiological analysis demonstrated that *Escherichia coli*, *Enterococcus* spp., and *Salmonella* spp. were detected only up to the third dilution of semen samples, with no bacterial growth observed in higher dilutions. Quantitative assessment indicated that the concentration of *Escherichia coli* reached 1.8×10^2 CFU/ml in Duroc semen and 4.0×10^3 CFU/ml in Pietrain semen, while *Enterococcus* spp. were present at levels of 3.3×10^2 CFU/ml and 5.6×10^2 CFU/ml, respectively. In addition, *Salmonella* spp. were identified at concentrations of 1.5×10^2 CFU/ml and 2.2×10^2 CFU/ml, respectively.

The occurrence of microorganisms only in the initial dilution suggests superficial contamination of semen, most likely originating from the preputial microflora or environmental sources during semen collection. In contrast, the persistence of *Escherichia* spp. in higher dilutions, together with their relatively high concentration, may indicate a higher initial bacterial load or an increased capacity of these bacteria to survive in the seminal environment.

Conclusions: These findings highlight the importance of strict hygienic conditions during semen collection and handling in order to minimize bacterial contamination and to ensure the microbiological safety and reproductive quality of boar semen used for artificial insemination.

Keywords: boar semen, *Enterococcus* spp., *Escherichia coli*, *Salmonella* spp.