

ETIOLOGICAL COMPOSITION OF HOOF DISEASES IN COWS: A COMPARATIVE ANALYSIS USING THE EXAMPLES OF “PROMEAT AGRO” AND “KHORAZM GOLD” FARMS

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Introduction. In large-scale dairy farms, the health of cows, particularly the health of their hooves, is a crucial factor in ensuring high productivity. Hoof diseases reduce cows' mobility, negatively affecting their nutrition and milk production efficiency. Moreover, these conditions lead to decreased overall production performance and economic indicators. Therefore, it is essential to conduct an in-depth scientific study of the etiology, pathogenesis, diagnosis, and treatment methods of these diseases. This article is dedicated to a comparative analysis of the etiological composition of hoof diseases based on the examples of the “PROMEAT AGRO” (large-scale) and “KHORAZM GOLD” (medium-scale) farms. Through this study, important data were collected on the distribution patterns of pathogenic microorganisms and the epidemiology of related diseases.

Materials and Methods. The objects of the study were the farms “PROMEAT AGRO” (330 milking cows) and “KHORAZM GOLD” (150 milking cows) located in the Tashkent region. Samples were collected from 14 cows exhibiting clear clinical signs of hoof disease, including lameness, swelling, and exudate discharge: 6 cows from the “PROMEAT AGRO” farm and 8 cows from the “KHORAZM GOLD” farm.

Sample Collection Method: Samples were collected aseptically from the inflamed areas using sterile cotton swabs, placed into special transport media, and delivered to the laboratory within 2 hours without delay. Laboratory analyses included the following: Bacteriological Examination: Growth and hemolysis indicators were observed on blood agar. Gram-negative enterobacteria were isolated using MacConkey agar. Selective differential media such as XLD (Xylose Lysine Deoxycholate) and Mannitol agar were employed. Microscopic Examination: Bacterial morphology and Gram reaction were determined based on Gram staining. Biochemical Tests: Pathogens were identified using catalase, oxidase, indole, and urease tests.

Results. Analysis of 6 samples collected from the “PROMEAT AGRO” farm:

Type of Pathogen	Number of Cases	Percentage
Fusobacterium necrophorum	2	33.2 %
Dichelobacter nodosus	1	16.6 %
Staphylococcus aureus	1	16.6 %
Trueperella pyogenes	1	16.6 %
Mixed flora	1	16.6 %
Sterile	0	0 %

Analysis of 8 samples collected from the “KHORAZM GOLD” farm:

Type of Pathogen	Number of Cases	Percentage
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Type of Pathogen	Number of Cases	Percentage
Fusobacterium necrophorum	3	37.5 %
Dichelobacter nodosus	2	25 %
Staphylococcus aureus	2	25 %
Sterile	1	12.5 %

Microscopic Observation Results: Fusobacterium necrophorum — Gram-negative rod-shaped bacteria, active in anaerobic environments, and associated with inflammation and necrosis. Staphylococcus aureus — Gram-positive cocci arranged in clusters, linked to purulent (pus-forming) processes. Dichelobacter nodosus — Gram-negative rod-shaped bacteria, associated with cases of interdigital phlegmon. No fungal infections were detected.

Discussion: The conducted analyses indicate that anaerobic gram-negative microorganisms, particularly Fusobacterium necrophorum, predominate in the etiology of hoof diseases. In both farms, this pathogen was the most frequently detected microorganism, highlighting its significance as the primary causative agent of the disease. Additionally, microorganisms such as Dichelobacter nodosus and Staphylococcus aureus also play a significant role in disease development. In the "PROMEAT AGRO" farm, Trueperella pyogenes and mixed flora were also identified, indicating issues related to hygiene and monitoring systems in large-scale farms. Furthermore, factors such as the quality of farm management, the systematic implementation of veterinary-sanitary measures, monitoring, and nutrition considerably influence the spectrum of pathogens and their prevalence. For example, in the "KHORAZM GOLD" farm, despite a relatively low disease incidence due to the small number of cattle, favorable housing conditions, and high-quality care, insufficient laboratory testing limits the ability to consider the situation there as stable on a long-term basis.

Conclusions and Recommendations: Based on the conducted research, it can be stated that various etiological factors contribute to the development of hoof diseases in cattle. The primary pathogen identified through bacteriological and microscopic analyses was Fusobacterium necrophorum, which was the most frequently detected microorganism in both farms. This finding confirms the high invasiveness of this bacterium, its active development under anaerobic conditions, and its role in inducing inflammatory processes. The results of the study also demonstrated that the etiological composition of hoof diseases is directly influenced by the quality of farm management, the status of veterinary-sanitary conditions, adherence to hygiene standards, regularity of care activities, and the presence or absence of individual monitoring systems. Specifically, in the large-scale "PROMEAT AGRO" farm, a more diverse and complex pathogenic microflora was identified, which corresponded with weak individual disease control and occasionally inconsistent hygienic conditions. Conversely, in the medium-scale "KHORAZM GOLD" farm, despite a relatively lower disease prevalence due to fewer animals, favorable housing conditions, and systematic care, this situation does not guarantee long-term epidemiological stability. The presence of mixed microflora primarily in the large farm indicates that, in the absence of adequate control and monitoring, multiple pathogens may simultaneously participate in the infectious process. Additionally, factors such as water quality, nutritional balance, and adequate provision of microelements directly affect the immune status and infection resistance of cattle. Based on the above conclusions, the following recommendations are proposed: It is advisable to implement a continuous individual monitoring system in farms, especially in large-scale cattle enterprises, to enable early detection and effective treatment of hoof diseases. This system should provide separate health surveillance for each animal and facilitate disease identification at an early stage. The quality of drinking water consumed by cattle and the balance of their nutrition should be regularly monitored through laboratory analyses. Particular attention must be paid to ensuring adequate supply of energy-rich feeds and

mineral supplements during lactation. The efficacy of prophylactic antibiotics, antiseptic agents, and disinfection methods used in combating hoof diseases should be evaluated based on laboratory tests and subsequently applied through individualized approaches. Systematic implementation of veterinary-sanitary measures on farms—including hoof care, disinfection procedures, and preventive vaccinations according to clear schedules—is a crucial factor in preventing disease spread.

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