



ISOLATION OF *Escherichia coli* IN MARE VAGINAL SECRETION

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ABSTRACT

The study investigated the colonization of *E. coli* in the vaginal secretion of a competition mare, identifying its presence through cultures on MacConkey agar and evaluating its sensitivity to antibiotics by the Kirby-Bauer method. Of the 12 antimicrobials tested, 58.3% were effective, while 33.3% showed resistance, highlighting the importance of accurate diagnoses for the management of metritis. The research reinforces the need for appropriate therapeutic strategies in mare athletes, whose reproductive health impacts equidoculture.

Keywords: *E. coli*. Antibiotic resistance.

INTRODUCTION

Bacterial infection in the reproductive tract is a significant concern in Veterinary Medicine, especially in competition mares, as it can affect reproductive health, performance, and fertility. Several microorganisms can colonize the genital tract, such as *Streptococcus β -hemolytic*, *Escherichia coli*, *Pseudomonas aeruginosa*, and *Klebsiella pneumoniae* (RUA et al., 2016).

Metritis is the pathology that leads to the greatest economic loss in equideoculture. It can affect mares of any age and in any reproductive category. Some mares are more susceptible to situations that lead to a higher rate of occurrence of the pathology. The competition sector, such as equestrian competition, has developed rapidly and demands solutions that increase efficiency in the use of reproductive biotechnologies. The increase in intrauterine arterial resistance in mares results in impairment of local vasodilation, and thus there is difficulty in migrating neutrophils to the uterine lumen (FERREIRA et al., 2015).

This study aimed to investigate the colonization of *E. coli* in the vaginal secretion of a competition mare, to analyze the behavior of this agent and to evaluate its resistance to antibiotics frequently used in veterinary therapies. The accurate identification of *E. coli* and the evaluation of its sensitivity to antibiotics are fundamental steps for the control and

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management of reproductive infections in mares, in addition to providing valuable information for veterinary clinical practice.

OBJECTIVE

This study aimed to investigate the colonization of *E. coli* in the vaginal secretion of a competition mare, to analyze the behavior of this agent and to evaluate its resistance to antibiotics frequently used in veterinary therapies. The accurate identification of *E. coli* and the evaluation of its sensitivity to antibiotics are fundamental steps for the control and management of reproductive infections in mares, in addition to providing valuable information for veterinary clinical practice.

METHODOLOGY

The patient studied was a four-year-old mare of the Brazilian Equestrian breed with promising performance in jumping events at the Equestrian Society of Paraná and selected for breeding. In October 2024, she started to have a viscous purulent white vaginal discharge. Samples of vaginal discharge and uterine lavage were collected using a swab with Cary-Blair medium and sterile probes, and immediately taken to the Microbiology Laboratory of the Universidade Santa Cruz in Curitiba.

The samples were seeded in three culture media: MacConkey Agar, Mannitol Agar, and Nutrient Agar, in triplicate, and then incubated at 37°C for 18 hours. After this period, the colonies were identified by their morphology, coloration, and biochemical characteristics.

The analysis of antimicrobial susceptibility was performed using the Kirby-Bauer method, using Muller-Hinton Agar. Discs with the following active ingredients were used: amikacin (AMI 30), amoxicillin + clavulonic acid (AMC 20 + 10), ampicillin (AMP 10), ceftriaxone (CRO 30), ciprofloxacin (CIP 5), doxycycline (DOX 30), gentamicin (GEN 10), levofloxacin (LVX 5), norfloxacin (NOR 10), penicillin G (PEN 10), sulfonamides (SUL 300) and vancomycin (VAN 30).

DEVELOPMENT

Lactose fermentation and the formation of pink colonies were observed in MacConkey agar plates, confirming that it was *E. coli*, according to Quinn et al.. (2005). The isolation of *E. coli* in vaginal secretion of mares is of great clinical importance, as it can result in septicemia, infertility, reproductive failures, miscarriages, and permanent infertility.

Of the 12 active ingredients studied, 7 showed sensitivity (58.3%), 1 was



intermediate (8.3%), and 4 was resistant (33.3%). The sensitivity criteria followed the standards of the Clinical and Laboratory Standards Institute (CLSI, 2024), and thus, the antimicrobials that demonstrated sensitivity were amikacin, amoxicillin + clavulonic acid, ceftriaxone, doxycycline, gentamicin, levofloxacin, and norfloxacin. The following were resistant: ampicillin, penicillin G, sulfonamides, and vancomycin. Ciprofloxacin demonstrated intermediate behavior.

FINAL CONSIDERATIONS

The study demonstrated the need to conduct strategies for the treatment of metritis in mares with laboratory diagnoses, the choice of appropriate drugs, and environmental management. Because it is an opportunistic agent, *E. coli* benefits from the postcoital moment, when the mare presents marked relaxation of the cervix, to colonize the tissues of the endometrium, especially in athlete mares that have failures in the uterine defense mechanism. High-performance mares, with athletic conditioning, show loss of body fat in the perineal area, resulting in cranial displacement of the rectum and tilt of the vulva, allowing the entry of fecal contaminants. During the exercise period, muscle fatigue together with estrus contributes to perineal relaxation with aspiration of air and fecal content to the vestibule and vaginal cavity (HURTGEN, 2006).

Resistance to certain antimicrobials is a concern in clinical areas. There are acquired resistance mechanisms, such as the production of enzymes that inactivate these drugs, the modification of the antibiotic target, or the alteration of the bacterial cell wall, making it less susceptible to the agent's action (MARQUES et al., 2023).

The high prevalence of antibiotics without efficacy in the treatment of *E. coli* infections demonstrates the need for greater rigor in the criteria for the choice of therapeutic agents, as well as their dosage and treatment period.



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