Sažetak rada

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ISPITIVANJE BAKTERIJSKE FLORE SEMENA NERASTOVA I PROFILA ANTIMIKROBNE REZISTENCIJE IZOLOVANIH BAKTERIJA

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Kratak sadržaj

Mikrobiološka ispravnost semena ima podjednako veliki značaj za uspešnu koncepciju kao i osnovni parametri kvaliteta ejakulata, uključujući volumen, koncentraciju, pokretljivost i morfologiju spermatozoida. Cilj rada bio je analiza bakterijske flore semena nerastova, kao i utvrđivanje nivoa rezistencije kod izolovanih bakterijskih sojeva u periodu od 2020–2025. godine. Ukupno je analizirano 296 uzoraka, iz kojih su evidentirana 402 bakterijska izolata. Izolacija bakterija urađena je standardnim mikrobiološkim tehnikama na kolumbija agaru sa dodatkom 5% defibrinisane ovčije krvi i na *MacConkey* agaru. Za identifikaciju bakterija do nivoa vrste korišćen je automatizovani biohemijski sistem AUTOMIC-I-600. Ispitivanje osetljivosti prema antibioticima izvedeno je u skladu sa Evropskim komitetom za antimikrobnu rezistenciju (EUCAST). U ispitivanom materijalu dominantno su izolovane Gram-negativne bakterije i to *Escherichia coli* sa 178 izolata (44,3%), zatim *Pseudomonas aeruginosa* sa 150 izolata (37,3%), i *Proteus mirabilis*, sa 51 izolatom (12,7%). Ova tri uzročnika zajedno su činila 94,3% ukupnog bakteriološkog nalaza. U manjem broju su izolovani *Streptococcus beta haemolyticus, Staphylococcus aureus, Klebsiella oxytoca, Klebsiella pneumoniae, Enterobacter* spp. i *Enterococcus* spp. Rezultati antibiograma ukazali su na izražen nivo antimikrobne rezistencije. Najveći broj izolata pokazao je rezistenciju prema penicilinu, amoksicilinu, tetraciklinu, doksiciklinu, flumekvinu i trimetoprim-sulfametoksazolu. Relativno povoljniji rezultati dobijeni su za gentamicin, enrofloksacin i ceftriakson, iako je i kod ovih antibiotika zabeleženo prisustvo rezistentnih izolata. Posebno se izdvaja *Pseudomonas aeruginosa*, koji je pokazao ekstenzivnu, a kod nekih izolata i panrezistenciju (rezistenciju na sve ispitivane antibiotike). Dobijeni rezultati ukazuju na značaj redovnog bakteriološkog ispitivanja semena nerastova, obaveznog izvođenja antibiograma i racionalne primene antibiotika. Pored toga, nalazi naglašavaju potrebu za unapređenjem higijenskih procedura pri uzimanju, obradi, čuvanju i distribuciji semena, kako bi se smanjila bakterijska kontaminacija i rizik od širenja rezistentnih bakterija.

Ključne reči: seme nerastova, izolati, antibakterijska rezistencija

Zahvalnica

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INVESTIGATION OF THE BACTERIAL FLORA OF BOAR SEMEN AND THE ANTIMICROBIAL RESISTANCE PROFILE OF ISOLATED BACTERIA

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Summary

Microbiological quality of semen is equally important for successful conception as the basic parameters of ejaculate quality, including volume, concentration, motility, and sperm morphology. The aim of this study was to analyze the bacterial flora of boar semen, as well as to determine the level of resistance in isolated bacterial strains during the period from 2020 to 2025.A total of 296 samples were analyzed, from which 402 bacterial isolates were recorded. Bacterial isolation was performed using standard microbiological techniques on Columbia agar supplemented with 5% defibrinated sheep blood and on MacConkey agar. For bacterial identification to the species level, the automated biochemical system AUTOMIC-I-600 was used. Antibiotic susceptibility testing was performed in accordance with the European Committee on Antimicrobial Susceptibility Testing (EUCAST).In the examined material, Gram-negative bacteria were predominantly isolated, including *Escherichia coli* with 178 isolates (44.3%), followed by *Pseudomonas aeruginosa* with 150 isolates (37.3%), and *Proteus mirabilis* with 51 isolates (12.7%). Together, these three pathogens accounted for 94.3% of the total bacteriological findings. In smaller numbers, *Streptococcus beta-haemolyticus*, *Staphylococcus aureus*, *Klebsiella oxytoca*, *Klebsiella pneumoniae*, *Enterobacter* spp., and *Enterococcus* spp. were isolated.The results of the antibiogram indicated a high level of antimicrobial resistance. The highest number of isolates showed resistance to penicillin, amoxicillin, tetracycline, doxycycline, flumequine, and trimethoprim-sulfamethoxazole. Relatively more favorable results were obtained for gentamicin, enrofloxacin, and ceftriaxone, although resistant isolates were also detected for these antibiotics. *Pseudomonas aeruginosa* was particularly notable, as it showed extensive resistance, and in some isolates even pan-resistance, meaning resistance to all tested antibiotics. The obtained results indicate the importance of regular bacteriological examination of boar semen, mandatory performance of antibiograms, and rational use of antibiotics. In addition, the findings emphasize the need to improve hygiene procedures during semen collection, processing, storage, and distribution in order to reduce bacterial contamination and the risk of spreading resistant bacteria.

Keywords: boar semen, isolates, antibacterial resistance

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