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Author:

Title: Identification of *(papC*) virulent gen and quinolones resistant genes in *Escherichia coli* isolated from cattle's mastitis milk in Ardebil region

Summary:

Mastitis caused by *Escherichia coli* remains a significant issue in the animal husbandry industry, despite substantial progress. The primary aim of this study is to identify the virulence gene (*papC*) and quinolone resistance genes (*qnrA*, *qnrB*, and *qnrS*) in *E. coli* isolated from bovine mastitis milk samples in the Ardabil region. A total of 100 milk samples were collected from cows suffering from mastitis in the Ardabil province and were transferred to the Bacteriology Laboratory of Urmia Veterinary Faculty for further analysis. The samples were cultured using EMB agar medium. After purifying the bacteria, they were used for DNA extraction. The boiling method was employed to extract nucleic acid from the colony obtained from the fresh culture. The quality and quantity of the extracted DNA were assessed using a nanodrop device. Subsequently, this DNA was utilized to detect the presence of *papC* virulence genes and resistance genes through the PCR method. The PCR products underwent electrophoresis, and the nucleic acid bands were captured using a gel documentation system. The results of the culture of samples on EMB agar medium revealed that 15 out of 100 samples (15%) were infected with E. coli. From the results obtained in the molecular investigation, it was discovered that out of the 15 *E. coli* positive samples, 12 harbored the *papC* virulence gene, and 6 carried the *qnrA* resistance gene. It should be noted that none of the samples possessed the *qnrB* and *qnrS* genes; these genes tested negative. Finally, the outcomes indicated that the infection rate of mastitis caused by *E. coli* bacteria in cows from the Ardabil region is relatively high. Furthermore, the isolated *E. coli* bacteria were found to carry genes resistant to quinolones, rendering them resistant to these antibiotics. This issue may be attributed to the excessive use of these antibiotics in the treatment of mastitis and other livestock diseases. Another factor contributing to fluoroquinolone resistance could be the limited diversity of this class of antibiotics in veterinary medicine.

Keywords: Ardabil, cattle, mastitis, *Escherichia coli*, quinolone resistance gene, *papC* virulence gene.