

Title: DETECTION OF VIRULENCE GENES IN *Escherichia coli* ISOLATED FROM MILK PRODUCTION LINE

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Abstract:

Bovine mastitis is an endemic disease that causes great damage to milk production. The *Escherichia coli* have been described as prevalent and highly pathogenic in environmental mastitis etiology. Some strains can produce enterotoxin, codified by the *stx1* and *stx2* genes and may also express the intimin protein, encoded by the *eae* gene responsible for intimate adherence of the bacteria to the epithelial cells altering microvilli of intestinal epithelium. The objective of this study was to detect these genes in *E. coli* isolated from milk production line in a property located in Barra do Pirai-RJ. A total of 93 milk samples were collected from 31 lactating cows in three consecutive weeks. Also 31 samples of fecal material of these animals and water samples from five different points related to the milk production line were collected. Phenotypic analysis of milk and fecal material also Most Probable Number (MPN) of water was performed in the LABAC-VET/ UFRRJ. Phenotypic identification provided 18.27% (17/93) belonging to the Enterobacteriaceae family, confirming the presence of *E. coli* in 76.47% (13/17). The presence of *E. coli* was detected in 22.22% (2/9) of water samples from the stream which runs through the property and as expected, also in all fecal samples. *E. coli* isolates were taken to the Enterobacteriaceae Laboratory of FIOCRUZ, to carry out the polymerase chain reaction assays in the search for the following virulence genes: *eaeA*, *stxI* and *stxII* yielding fragments of 570 pb, 388 pb, 807 bp respectively. Among the isolates from milk, a total of 38.46% (5/13) amplified gene *eaeA*. No strain was positive for *stxI* and *stxII*. In the fecal samples *eaeA* gene could be detected in 36,36% (12/33) and *stxI* gene in only 6.06% (2/33). The *sxt II* gene was not found in these isolates. None of the *E. coli* isolates from water samples amplified any *eaeA*, *sxtI* and *sxtII* genes. The detection of virulence genes in pathogenic isolates of *E. coli* from bovine mastitis is worrying because it may represent the synthesis of bacterial toxins potentially important in public health issues for both humans and herd animals. The understanding of the molecular basis of bacterial virulence of *E. coli* can light up the mechanisms of pathogenesis associated with this group of bacteria.

Keywords: bovine mastitis, *enterobacteria*, virulence factor

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