

TITLE: OVERVIEW OF VIRULENCE GENES OF BIOFILM-FORMING *E. coli*

AUTHORS: BRONZATO, G.F.; PIMENTA, R.L.; MELO, D.A.; PATRICIO, T.C.C.; COELHO, I.S.; SOUZA, M.M.S.; COELHO, S.M.O

INSTITUTION: UNIVERSIDADE FEDERAL RURAL DO RIO DE JANEIRO, INSTITUTO DE VETERINÁRIA, RODOVIA BR 465, KM 07, S/N ZONA RURAL, SEROPÉDICA - RJ, 23890-000

ABSTRACT:

Regarding the importance of the virulence factors of *E. coli* in the dairy environment, the association of the biofilm with its persistence in different places stands out. Thus, the objective of this work was to evaluate the biofilm production in *E. coli* strains related to the milk production environment. A total of 444 samples were collected within the dairy environment. The identification of *E. coli* was performed by biochemical tests and MALDI TOF MS. The microplate test was used to evaluate the biofilm production. The bacterial DNA was extracted by thermal lysis to evaluate the *fimH*, *csgA* and *flu* genes by PCR. A total of 41.44% (63/152) of *E. coli* strains phenotypically produced the biofilm. The *fimH* gene was highly expressed in the studied strains. The strains presented a total percentage of 92.1% (140/152) for the *fimH* gene being found in the feces 96.8% (91/94) followed by 93.3% (14/15) from the water, 82, 8% (29/35) of the milk and 75% (6/8) of the milking environment. In relation to the *csgA* gene, the strains had 88.8% (135/152) of which 94.6% (89/94) were isolated in feces, 93.3% (14/15) in water, 77.1% (27/35) in milk and 62.5% (5/8) in the milking environment. The total percentage of the presence of the *flu* gene in the studied strains was 29.6% (45/152), being 41.4% (39/94) found in the feces, 25% (2/8) in the milking environment, 20% (3/15) in the water and 2.8% (1/35) in the milk. It can be concluded that the high expression of the genes in fecal strains may have occurred due to the location of *E. coli* in the outermost layer of mucin in the colon, this glycoprotein can stimulate the formation of biofilm, together with the secreted IgA, favoring the *E. coli* biofilm in the intestinal mucosa through type 1 fimbria. This could be the contributing factor for the dispersion of this microorganism in the evaluated production environment.

Keywords: enterobacteria, milk environment, virulence

Development agency: Coordenação de Aperfeiçoamento de Pessoal de Nível Superior and Conselho Nacional de Desenvolvimento Científico e Tecnológico