TITLE: GENETIC DIVERSITY IN INTEGRON POSITIVE *Escherichia coli* ISOLATED FROM CALVES AND FLIES FROM TWO DAIRY FARMS IN SÃO PAULO STATE

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ABSTRACT:

The spread of antimicrobial resistance genes in environmental is usually associated with the propagation of clonal strains and genetic elements mobilization. The horizontal gene transfer between bacterial cells occurs by transformation, conjugation or transduction mechanisms, but the transposition of mobile genetic elements (MGEs) have been shown in the genomic context change (chromosomal DNA or plasmids). Resistance integrons are MGEs associated with the spread of antimicrobial resistance genes. Therefore, we aimed to investigate the genetic profile from class 1 integron positive Escherichia coli isolated from calves' feces and from external surfaces flies. The samples were collected in two dairy farms (A and B) in Botucatu, São Paulo State, Brazil. Antimicrobial resistance of integron positive E. coli was analyzed using disk diffusion test and PCR. Plasmid incompatibility groups (Inc) were assigned by PCR-based replicon typing. Strains' clonal profile was assayed by Pulsed-Field Gel Electrophoresis (PFGE). The gene cassettes sequences within class 1 integron were obtained using the Sanger method and sequences alignment by MAFFT software. Conjugation assay also was performed using tetracycline as a selection agent. All integron-positive strains from farm A (eight from flies and 12 from calves) were multidrug-resistant (MDR, resistant to \geq 3 antimicrobial classes), but E. coli from farm B (ten from calves) showed resistance to tetracycline only. After conjugation assay five strains did not show integron transfer. We observed different resistant determinants profiles and plasmids among to strains from the same pulsotype within the farm A. Different pulsotypes also showed different profiles of the resistance genes and plasmids. Strains isolated from farm B followed the same pattern of genetic diversity. PFGE fingerprints analysis showed the clustering (genomic similarity > 80%) of the strains from flies, and calves from farm A and calves from farm B. The integrons from E. coli from farm A have harbored one copy of dfrA7 gene while E. coli from farm B showed one copy of aadA1 cassette gene. The results suggest that dissemination of antimicrobial resistance genes from integron are independent of the clonal strains propagation as well as plasmids transfer. Integrons dissemination seems to be more related to recombination events due to transposons.

Keywords: PFGE, plasmids, transposons, *dfrA7*, *aadA1* **Development Agency:** FAPESP (2015/15425-2).