

**TITLE:** TETRACYCLINE RESISTANCE LINKED TO CLASS 1 INTEGRON IN *Escherichia coli* CONJUGATIVE ELEMENT FROM ANIMAL RESERVOIR

**AUTHORS:** ALVES, T.S.<sup>1</sup>; VIEIRA, T.B.<sup>1</sup>; LARA, G.H.B.<sup>2</sup>; RIBEIRO, M.G.<sup>2</sup>; LEITE, D.S.<sup>1</sup>

**INSTITUTION:** <sup>1</sup>INSTITUTO DE BIOLOGIA, UNIVERSIDADE ESTADUAL DE CAMPINAS - UNICAMP, CAMPINAS, SP (CAIXA POSTAL 6109, CEP 13083-862).

<sup>2</sup>FACULDADE DE MEDICINA VETERINÁRIA E ZOOTECNIA, UNIVERSIDADE ESTADUAL PAULISTA “JÚLIO DE MESQUITA FILHO” – UNESP, BOTUCATU, SP (CAIXA POSTAL 560, CEP 18618-681).

**ABSTRACT:**

Tetracycline is one of the most common antimicrobials used in livestock and its resistance is an emergent concern. Tetracycline resistance genes are not found in gene cassettes, but they may be associated to integrons by the presence of both within the same conjugative element, such as plasmids. In order to verify the co-transfer of integron and resistance to tetracycline, we performed conjugation assays using eight strains of *Escherichia coli* get from flies collected on a dairy farm, as donors. The strains were tetracycline resistant and carriers of class 1 integron (*intI1* gene and region 5'CS-3'CS). For the selection of the transconjugant strains culture medium with tetracycline (100µg/mL) was used. The donor and transconjugant strains were characterized by PCR for the presence of genes *intI1*, *dfrA7* (gene cassette present in the strains), *sul1*, *qacEΔ1*, *tetA*, *bla<sub>CTX-M</sub>*, and *bla<sub>TEM</sub>*. In addition, plasmid incompatibility groups Inc in donor strains were typed by PCR-based replicon typing (PBRT). PCR results for the transconjugant strains showed that three strains transferred all genes. Five strains showed not transfer of the *bla<sub>TEM</sub>* gene by conjugation tetracycline-associated. The Inc/replicons groups found in seven strains were I, HI1, HI2, FIA, FIB, P, K, F and one presented another I, N, FIA, FIB, P, K, F profile. The results demonstrate that class 1 integron may dissemination under the tetracycline selection pressure. The Inc groups found (I, HI2, N, K, and P) are known to be associated with class 1 integron dissemination and tetracycline resistance genes (IncP), and extended spectrum β-lactamases - ESBLs (I, HI2, N, and K). In this context, we infer that the tetracycline administration in production animals can cause selective pressures to other antimicrobial resistance genes not chemically related to tetracycline, also contributing to the dissemination and persistence of multidrug resistant *E. coli* strains in animal hosts.

**Keywords:** dairy farm, flies, PBRT, conjugation

**Development Agency:** FAPESP (2015/15425-2).