

TITLE: ANTIBIOFILM ACTION OF NEW PYRAZOLINES HYDROCHLORIDES AGAINST SALMONELLA STRAINS ISOLATED FROM CHICKEN CARCASS.

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ABSTRACT:

Salmonella spp. is an important pathogenic microorganism that causes enteric diseases in humans and animals and its ability to form biofilm on different abiotic surfaces is a major challenge for the food industry (food handling) and the breeding of commercial poultry (contamination of carcasses and eggs). In the search for alternatives against this pathogen, the present work evaluated the antibiofilm action of two hydrochloride compounds of 3-(2-hydroxyphenyl)-5-(4-(trifluoromethyl)phenyl)-4,5-dihydro-1*H*-pyrazole-1-carboximidamide (4a) and 5-(4-bromophenyl)-3-(2-hydroxyphenyl)-4,5-dihydro-1*H*-pyrazole-1-carboximidamide (4b), against two standard strains: *S. Enteritidis* ATCC 13076 and *S. Typhimurium* ATCC 14028, in addition to four strains isolated from chicken carcasses, identified by: *S. Enteritidis*, *S. Braenderup*, *S. Infantis* and *S. Worthington*. The microorganisms were cultured in Müller Hinton agar and adjusted to a concentration of 1.5×10^8 CFU/mL, using spectrophotometer. The concentrations of the compounds tested were: 250, 125, 62.5 and 31.25 µg/mL, diluted in 5% DMSO. The biofilm viability percentage (%) was determined after treating the compounds in 96-well micro plates and the data obtained were evaluated by ANOVA and the Tukey post-test. Compound 4a at 125 µg/mL showed a 28% reduction in biofilm formation for *S. Braenderup*, 52% for *S. Enteritidis* and 43% for *S. Worthington*. With *S. Infantis*, *S. Typhimurium* 14028 and *S. Enteritidis* 13076, at the concentration of 250 µg/mL, the compound 4a reduced 49%, 31% and 32%, respectively. Compound 4b showed a significant reduction at the concentration of 125 µg/mL for *S. Braenderup*, *S. Enteritidis*, *S. Worthington* and *S. Infantis*, 56%, 38%, 52% and 53% respectively. For *S. Typhimurium* 14028 and *S. Enteritidis* 13076, the most significant reduction of compound 4b was 250 µg/mL, which are 47% and 46%. The results showed that the two compounds have potential of antibiofilm activity against *Salmonella* spp., compared to the untreated control. Compound 4b presented the best action, since it inhibited the formation of biofilms for most microorganisms in a lower concentration when compared to compound 4a and in higher percentages. This study presents promising results of the compounds action at the reduction of *Salmonella* spp. biofilms and may be an alternative for the control of this pathogen in the poultry sector and in the food industry.

Keywords: *Salmonella* spp. Antimicrobials. Pyrazolines. Antibiofilm.

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