

HHM-OP-04 - STABILITY OF ANTIMICROBIALS IN CONTACT WITH DISINFECTANTS IN DRINKING WATER FOR PIGS

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Background & Objectives

In farms, when antimicrobials are administered through drinking water, they may be in contact with a disinfectant used to improve the bacteriological quality. The objective of this study is to evaluate the stability of antimicrobials in contact with a disinfectant.

Material & Methods

Six antimicrobials (amoxicillin, colistin, doxycycline, tylosin, trimethoprim and sulfadiazine) and three disinfectants (sodium hypochlorite, hydrogen peroxide and electrolyzed water) were tested. Each antimicrobial was tested as an active ingredient and as a veterinary medicinal product to assess the potential effect of the formulation. In a first step, antimicrobial assay was performed by high performance liquid chromatography in a stock solution with and without disinfectant, at T0, T12 and T24 hours, which is the usual storage period in farms. In a second step, the same assay was performed after neutralization of the disinfectant by sodium thiosulfate or sodium bisulfite. In a third step, the stock solution was incorporated at 5 % into disinfected water, to simulate a treatment administered by a dosing pump.

Results

All antimicrobials were stable with sodium hypochlorite. With hydrogen peroxide, amoxicillin was deteriorated by 13 % in step 1, but not in step 2 with sodium bisulfite. This disinfectant also impacted tylosin in step 3 (-11 %). With electrolyzed water, colistin and sulfadiazine were rapidly deteriorated in step 1 (respectively -20 % and -11 %), but not in step 2 with sodium thiosulfate. However, with the exception of trimethoprim, no antimicrobial was stable in step 3. This implies to connect the dosing pump to a circuit without electrolyzed water.

Discussion & Conclusion

This study contributes to know the stability of antimicrobials in contact with disinfectants in the drinking water, which is a very usual situation. Precautions should be taken with hydrogen peroxide and above all electrolyzed water that can deteriorate some antimicrobials.