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REDUCTION OF CARRY-OVER BY MICROGRANULATION

L. Claerhout, W. Depondt, A. Kanora.

Huvepharma, Antwerp, Belgium.

Introduction

The extent of carry-over and the following risk of cross-contamination of medicated premixes depend on the feedmill installation and the product formulation. The relative wall adhesion factor is closely correlated with this extent of carry-over. Through this factor, the number of flushing batches that is minimally required to remain under a defined residue content can be predicted. To illustrate, three premixes of the benzimidazole group of anthelmintics for pigs were tested.

Materials and methods

The relative wall adhesion factor was determined based upon the final concentration of the active ingredient in a flushing batch after application of a fixed concentration in a first batch. Cobaltchloride was used as reference (assumed wall adhesion factor 1).Triplicate tests were carried out on a standard pig feed with a moisture content of 122g/ kg. Two formulations were powders based upon simple mixtures; a 40 mg/ g fenbendazole premix and a 50 mg/ g flubendazole premix. The third formulation was Pigfen® 40 mg/ g fenbendazole premix (Huvepharma®), developed by a unique microgranulation technology. This ensures that fenbendazole is captured in microgranules which are in turn encapsulated in bigger and more homogenous particles. To not exceed a predetermined residue level, the Belgian feed chain alliance (Ovocom AT-08) stipulates that for premixes showing a relative wall adhesion factor lower than 1 only one flushing batch is required. Two flushing batches are needed if the factor is 1 or higher.

Results

The relative wall adhesion factor of the flubendazole and fenbendazole powder premixes were respectively 1.6 and 1.4. On the other hand, for the microgranulated premix a factor of 0.7 was calculated.

Discussion and conclusion

The formulation of a premix plays a crucial role in the risk for carry-over and cross-contamination. Compared to simple mixtures, microgranulated premixes reduce significantly the risk of carry-over and ensure maximal safety.