NEW INSIGHTS INTO THE USE OF MITE COUNTS FOR MONITORING OF DRUG EFFICACY AGAINST *PSOROPTES OVIS* MANGE IN CATTLE

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INTRODUCTION. To assess drug efficacy against *Psoroptes ovis* in cattle, WAAVP recommends to perform mite counts following treatment, using 6 animals and 6 samples/animal. To investigate whether this is the best design, this study assessed the impact of mite numbers, number of animals and samples/animals on the detection of (reduced) drug efficacy.

METHODOLOGY. A simulation study was conducted in which pre- and post-treatment mite count data were generated for different scenarios of true drug efficacies (TDE; 50%-99%), mean mite counts at farm level (6, 15 and 31 mites), number of animals (5-20) and samples/animal (3-30). For each combination, the range of TDE that allows for correct classification of normal (TDE ≥90% or TDE ≥95%) or reduced efficacy (TDE <90% or TDE <95%) was determined with a probability of ≥80%. The simulation was based on the mite counts observed across 16 Belgian Blue Cattle farms, and the variation in mite counts assessed between (n=154) and within (n=15) animals.

RESULTS. When reduced efficacy was defined as TDE <90%, the currently recommended study design only allows a reliable classification of drug efficacy as normal or reduced when the TDE is ≥81.25% and ≥97.50%, respectively. When reduced efficacy was defined as TDE <95%, these values were ≥88.75% and ≥98.75%. To narrow the range of TDE for which results remain inconclusive, it is recommended to examine ≥ 20 animals and ≥9 samples/animal (15 samples for 95%-threshold).

CONCLUSION. The study design currently recommended by WAAVP will only allow to detect severe cases of reduced efficacy (TDE ≤83.75%). Examination of more animals and samples/animal reduces the range of TDE for which results remain inconclusive. In follow-up studies, we will explore the impact of sampling strategy (lesions *vs.* non-lesions; same *vs.* different location pre- and pos-treatment) and size of sampling area on the detection of reduced efficacy.