Importance of processing clinical field data to evaluate product efficacy

The efficacy of a product is often determined under the most ideal circumstances in a randomised control trial. The effects seen in such trials can be regarded as the maximal performance of the product under investigation. However, in field circumstances, a lot of influencing, uncontrollable factors can interact with the effect.

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Hence the effect in these 'realistic' field conditions, known as the effectiveness of the product, can be largely deviating from those seen in controlled trials.

To be able to evaluate this effectiveness, monitoring the field situation with sufficient detail, is of vital importance.

To this regard, Aviapp, the Huvepharma health platform, can be a useful tool to address such questions.

In this article data collected using Aviapp is used to explore the effectiveness towards coccidiosis lesion score reduction under amprolium (Amproline) treatment and the reduction of dysbacteriosis with different antimicrobial treatments.

The data used for the analysis originates from commercial Belgian broiler farms, monitored between January 2019 and February 2020. The available information included lesions scorings for coccidiosis according to the system of Johnson and Reid (1970), dysbacteriosis scorings collected in Aviapp as well as information about the medication use and its indications.

In total, information was available from 1,103 flocks. This dataset was used as a starting point to address the questions of interest.

Treatment	Flocks
None	191
Amoxicillin	107
Penicillin	37
Tylosin (Pharmasin)	46

Table 1. Number of flocks included for different treatments.

Reduction of coccidiosis scores by amprolium (Amproline)

Out of the 1,103 flock, 83 flocks were selected that were scored twice. For the treatment group (53), an extra condition was first scoring done at the first day of the treatment. The field effectiveness of amprolium (Amproline) treatment was evaluated by comparing the evolution of the total mean lesion scoring (TMLS) of the treated flocks (83) and the untreated groups (30).

The majority of the amprolium treated flocks show a decrease of the TMLS. In contrast, flocks which were not treated by any compound showed an increase in the same age window. The evolution of TMLS in function of age for amprolium treated flocks and for untreated flocks is shown in Fig. 1.

Each flock is represented by a black line connecting the monitoring moments. The purple line indicates the average trend in the TMLS evolution.

The evolution of the TMLS score between first monitoring and last monitoring showed a reduction of 65% in the treated group, whereas the untreated group showed an increase of 38%.

These data confirm the field efficacy of amprolium (Amproline) as a treatment for coccidiosis.

Dysbacteriosis evolution in flocks receiving different antibiotics

In total 381 flocks were monitored, of which 190 flocks received a treatment for enteritis/dysbacteriosis. For each of these flocks at least one scoring report with a dysbacteriosis score was available in Aviapp.

The evolution of the dysbacteriosis score in the different groups (illustrated in Fig. 3) show that flocks which were treated with penicillin or tylosin (Pharmasin) show a steeper increase in dysbacteriosis score compared to the flocks which received no treatment and those who received

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Fig. 1. Evolution of the TMLS score in function of age for amprolium (Amproline) treated flocks and untreated flocks. The purple line indicates the average trend in the TMLS evolution.

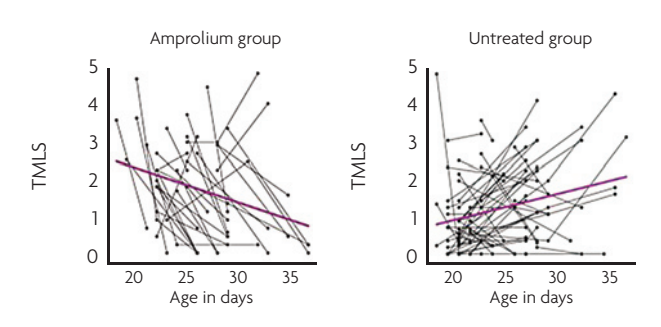
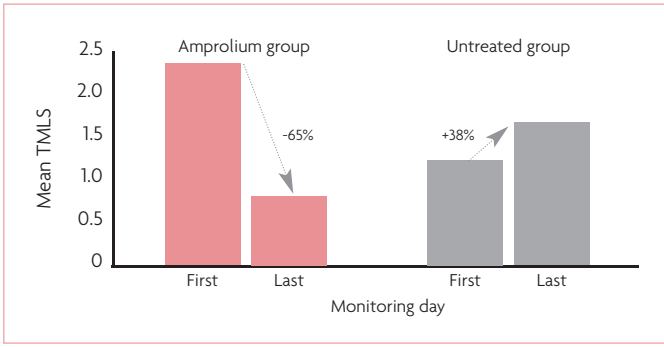


Fig. 2. Evolution of the TMLS score between the first and last monitoring day for amprolium (Amproline) treated flocks and untreated flocks.



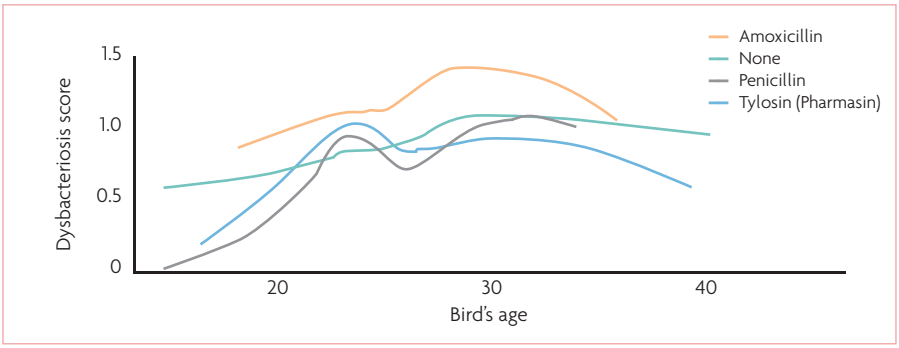


Fig. 3. Evolution of the dysbacteriosis score in flocks which received different treatments.

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amoxicillin. Treatment is often initiated based upon sudden clinical signs of dysbacteriosis (like faeces consistency/feed: water ratio), which explains the more pronounced increase for the tylosin and penicillin group. The untreated groups, seem to already have a higher dysbacteriosis score at a younger age, and no sudden increase. So probably the more subtle changes in, for example, feed: water ratio are less remarked and consequently not treated.

Amoxicillin seems to be used in more early severe cases of dysbacteriosis. However, the rapid increasing scores is more stabilised with penicillin and tylosin (Pharmasin) compared to amoxicillin. In addition, dysbacteriosis scores in general are higher in amoxicillin treated groups.

All patterns show a first peak around 22-24 days of age, with a secondary peak appearing around 30 days.

The secondary peaks are more pronounced for the amoxicillin and penicillin treated flocks compared to the non-treated and tylosin (Pharmasin) treated groups.

This suggests that relapse of enteritis/dysbacteriosis is less pronounced when dysbacteriosis is treated with tylosin (Pharmasin).

An objective evaluation of field data is essential to evaluate or compare the effectiveness of certain products under field circumstances. This is complementary to the (more subjective) field experience of the veterinary practitioners. Gathering such field data is not always easy. Aviapp, the Huvepharma health platform, can be of help in gathering this information. ■

Aviapp

Aviapp is the global health platform from Huvepharma to structurally improve the health status, welfare and performance of broilers. It is intuitive and easy to use and allows you to collect important data of your broiler flocks:

- Treatment data.
- Health monitoring – a choice of 49 reference parameters.
- House management – litter score, climate.
- Technical data – water and feed intake, mortality.
- Anticoccidial programmes and others, such as feed.

Aviapp gives you the possibility to compare this data in a structured and standardised way over time and share with other users on the Platform in a specific region, country or at a global level. It can help you to make the critical decisions needed to optimise performance.

For more information please visit:
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