

# Technical Bulletin

## Information from Phibro Technical Services

### Trial Confirms Compatibility of Magni-Phi® and Live Coccidiosis Vaccines

Studies have consistently demonstrated Magni-Phi improves gut health which leads to better nutrient utilization and enhanced performance in broilers. Magni-Phi contains two saponin ingredients which have been demonstrated to offer improved intestinal health and immunity when used in combination with anticoccidials and live coccidiosis vaccines. A trial was designed to evaluate the effects of Magni-Phi on oocyst production and the ability of birds fed Magni-Phi to develop a protective immunity after day-of-age coccidiosis vaccination. The trial also evaluated the effect of Magni-Phi on three different types of coccidiosis vaccines: those containing attenuated, virulent, or a mixture of attenuated and virulent coccidia. The complete trial was published in Poultry Science and details can be found at: <https://pubmed.ncbi.nlm.nih.gov/33518338/>.

#### This Trial Demonstrated

- Beginning at 14 days of age, Magni-Phi fed at 250 ppm reduced oocyst production.
- However, despite lower oocyst counts during that initial period, immunity offered by the vaccines was not compromised. Following a severe challenge at day 28, coccidia lesion scores were not significantly different between vaccinated birds fed diets either with or without Magni-Phi.
- Vaccinated birds fed Magni-Phi had significantly improved feed conversions at both 28 and 42 days of age.

#### Trial Design

Male commercial broilers were raised in floor pens of 52 birds each organized in a random block design until 42 days of age. Six treatment groups were tested with six replicates per treatment. Three commercial coccidiosis vaccines were each given to two treatment groups, one with vaccine alone and one with vaccine and Magni-Phi. The three vaccines used in the trial contained either all attenuated or all virulent coccidia, and a third vaccine containing a mixture of both attenuated and virulent Eimeria was also evaluated. The birds were vaccinated and held in a well-lighted area for 30 minutes to allow for preening to help ensure optimum vaccine uptake. The three groups fed Magni-Phi were fed the product at a 250 ppm inclusion level throughout the trial.

All birds were reared on built-up litter originating from previous floor pen trials utilizing coccidiosis challenges. The litter was gathered and mixed prior to being redistributed to the pens used in the trial. On Day 14 and every week thereafter, 10 fresh fecal samples were gathered per pen and pooled for an oocyst per gram (OPG) evaluation.

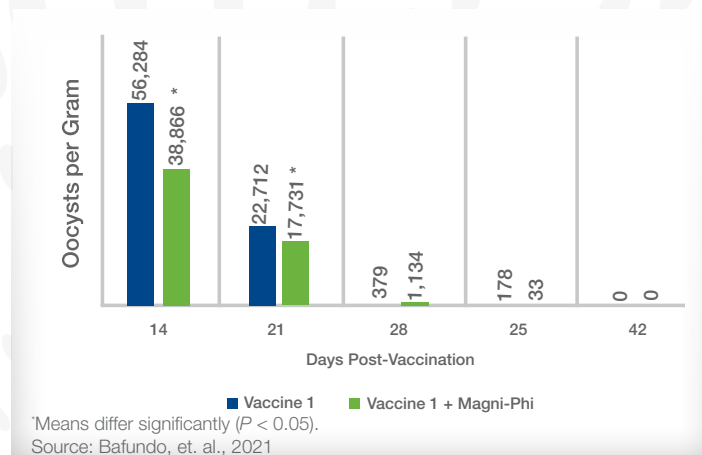
A subset of birds was used to complete a coccidiosis challenge trial. At Day 28 five birds from each pen were removed and housed by their respective treatment groups in cages. Along with untreated controls, all birds were challenged with a combination of three coccidiosis species: *Eimeria acervulina*, *E. maxima* and *E. tenella*. Magni-Phi was withdrawn from the feed of those treatment groups. Six days after the challenge (day 34), all birds were scored for lesions in the appropriate intestinal region for each species. Results are reported as mean total lesion scores using the Johnson and Reid scoring method (Johnson and Reid, 1970).

Statistical analysis was done using an Anova model using vaccines and Magni-Phi as the variables. When statistically significant differences were noted, a least significant difference of  $P < 0.05$  was used.

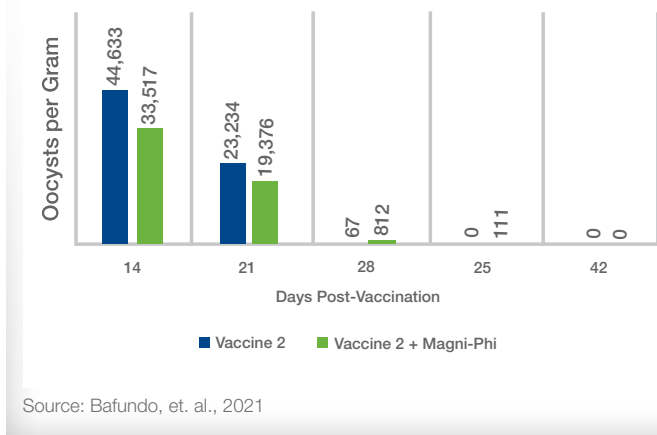
#### Results

Coccidiosis vaccines have been shown to perform optimally when oocyst production peaks around 14 days of age and then declines as birds develop immunity from the combined effects of the vaccine and field exposure (Jenkins et al., 2017). Beginning at 14 days-of-age, Magni-Phi reduced OPG values in each of the vaccines tested. As shown in Figures 1 and 3, significant differences in OPG values were observed during the early cycling period and similar trends were noted with vaccine 2 (Figure 2).

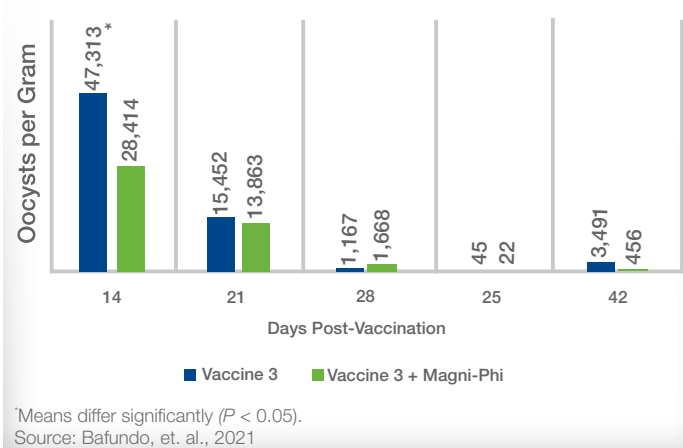
Figure 1. Vaccine 1 Oocyst Counts With and Without Magni-Phi



**Figure 2. Vaccine 2 Oocyst Counts With and Without Magni-Phi**

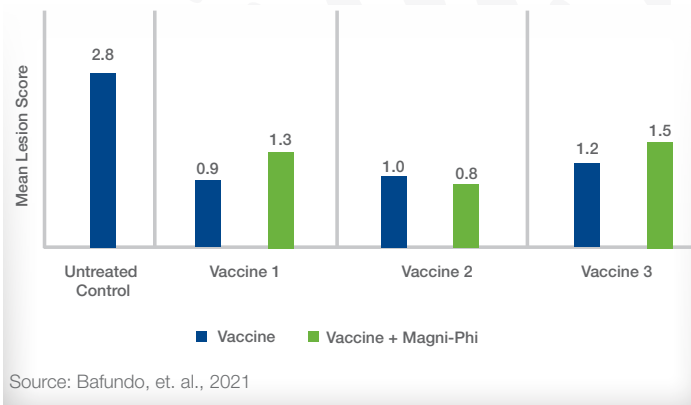


**Figure 3. Vaccine 3 Oocyst Counts With and Without Magni-Phi**



Despite the decrease in OPG values shown in the figures above, evaluation of protective immunity following coccidial challenge at day 28 demonstrated no statistical differences in lesion scores when vaccinated birds fed Magni-Phi were compared to birds that received the vaccine(s) alone. Moreover, Figure 5 shows that Magni-Phi significantly improved feed conversion at day 42 for each vaccine tested.

**Figure 4. Coccidiosis Lesion Scores on Day 34**



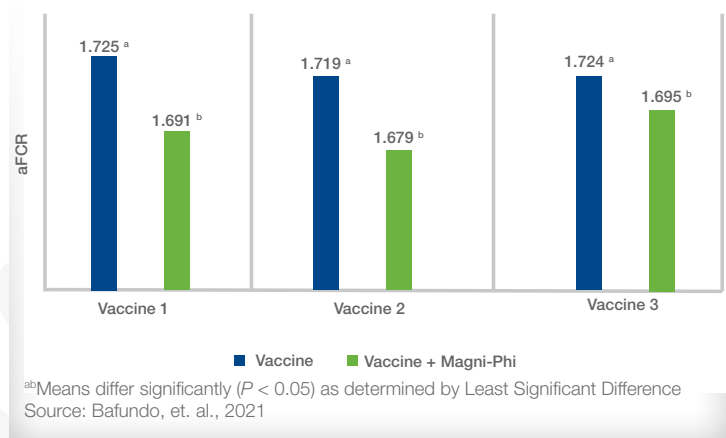
**References**

Bafundo, et al. 2021. Poultry Science 100:1-7.; Jenkins, et al. 2017. Avian Diseases 61: 214-220.; Johnson and Reid. 1970. Exp. Parasitol. 28:30-36.; Mathis, et al. 2014. J. Appl. Poult. Res. 23:577-585.

These results are consistent with other reports (Mathis et al., 2014) demonstrating that utilizing certain anticoccidials for the reduction of coccidial cycling during the late starter and grower periods generally does not compromise developing coccidial immunity. In addition, reduced cycling improves performance as birds approach market weight. In fact, the work by Mathis et al. (2014) is now applied in many commercial situations and is routinely used to achieve maximal performance of coccidiosis vaccines. By reducing coccidial cycling, the current work (Bafundo et al., 2021) demonstrates that Magni-Phi performs in a manner similar to the products described in previous trials (Mathis et al., 2014).

Data from the current work also demonstrate that Magni-Phi performs similarly when three different types of coccidiosis vaccines (attenuated, virulent or a mixture) are used. Magni-Phi produced similar effects on oocyst production following vaccination and significant improvements in feed conversion values were recorded for each of the vaccines that were evaluated.

**Figure 5. Adjusted Feed Conversion at Day 42**



**Conclusion**

These studies confirm the beneficial effects of Magni-Phi when fed concurrently with coccidiosis vaccines. Magni-Phi produced a reduction in oocyst counts after vaccination, but these changes did not negatively affect immunity from each of the vaccines. All birds vaccinated with a coccidiosis vaccine and fed Magni-Phi had statistically similar lesion scores as groups with vaccine only after a coccidiosis challenge containing three different species. Most importantly, feed conversion ratios were significantly improved when Magni-Phi was combined with each of the vaccines tested.

To learn more about Magni-Phi, talk with a Phibro expert at 800.677.4623 or [www.pahc.com](http://www.pahc.com).

This information has been prepared for industry professionals.