Magni-Phi®

For improved intestinal health in poultry production

Composition

- Magni-Phi ® is a 100% natural product made from pure extracts of the Quillaja (key-lie-a) saponaria (Chilean Soapbark tree) and Yucca schidigera (Lily family plant from Mexico) plants.
- Magni-Phi ® is also certified as “Organic” in the USA so it is suitable for use in any “free range” or ABF system.
- Magni-Phi ® is rich in naturally occurring triterpenoid/steroidal saponins and polyphenols e.g. resveratrol and yuccaols.

Quillaja saponaria

Yucca schidigera

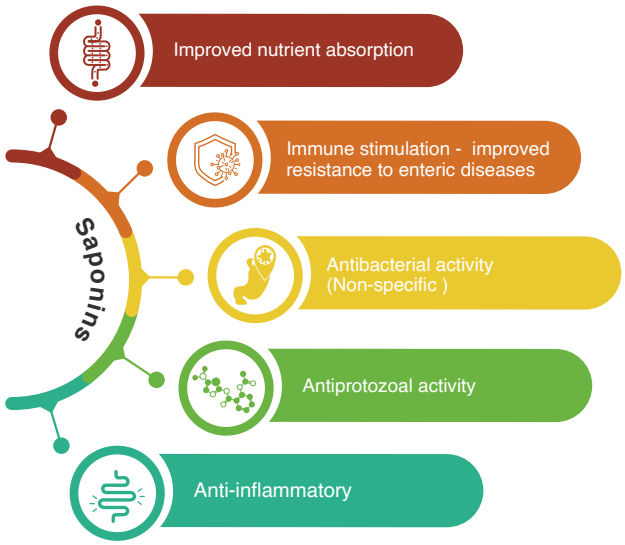
Active Ingredients

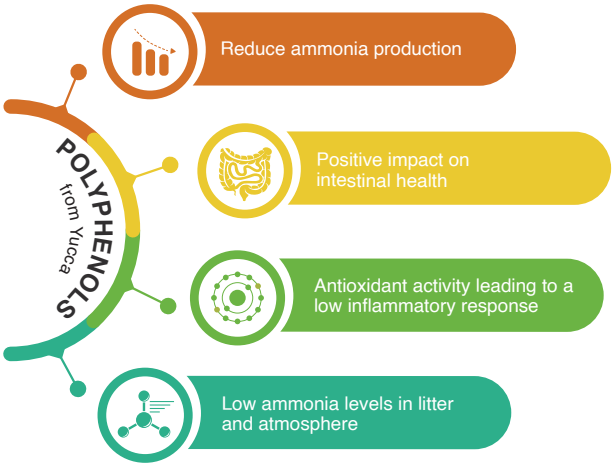
Saponins:
Saponins contain both a lipophyllic nucleus (steroidal or triterpenoid) and one or more hydrophyllic carbohydrate side chains. This structure allows them to have a marked surfactant activity:

- The saponins in the Quillaja extract have a triterpenoid nucleus
- The saponins in the Yucca extract have a steroidal nucleus

Polyphenols:

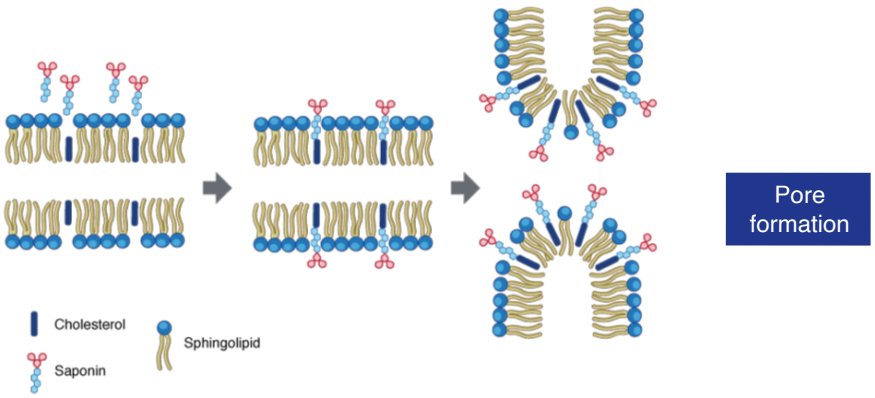
- Resveratrol and Yuccaols A, B, C, D and E





Antiprotozoal Activity

The antiprotozoal activity is related to the ability of saponins (primarily the triterpenoids) to interact with the cholesterol component of the outer protozoal membrane, destabilizing the cell membrane and leading to increased cell permeability. (McAllister et al., 2001; Sparg et al., 2004; Mandal et al., 2005)



The triterpenoid saponins were shown to be effective against Eimeria species by Bafundo et al in 2014 and 2015.

The anti-coccidial efficacy of Magni-Phi ® has been demonstrated in a number of trials:

1 Determination of Anticoccidial Activity in Cage-Reared Broilers:

Treatment Groups

- Not Infected, Not Treated
- Infected, Not Treated
- Infected, Treated with Magni-Phi ®, 250 ppm, day 1-21

8 replicates of 8 Cobb males each per treatment; Birds infected on day 12 with 50,000 oocysts of *Eimeria acervulina*, *E. maxima* and *E. tenella.*

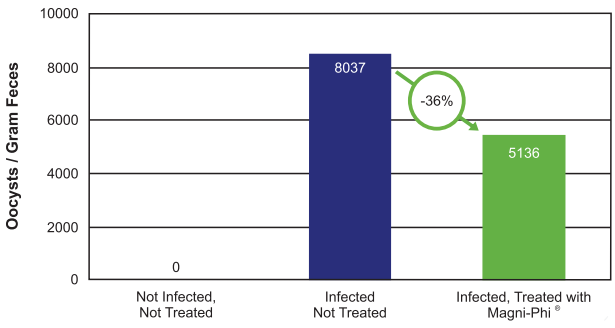
Oocyst production determined from days 5-8 post-infection (18-21 days of age).

3 separate experiments – averaged results reported.

Results:

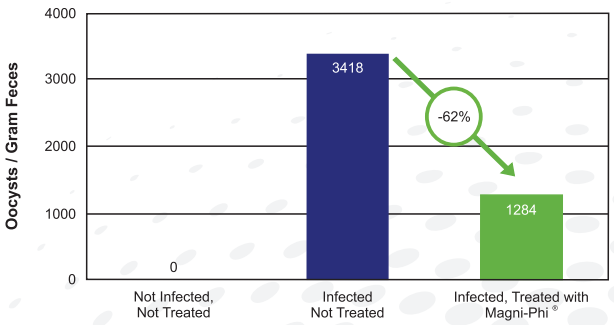
Efficacy against E acervulina:

Birds fed Magni-Phi ® had 36% fewer E. acervulina oocysts per gram compared to controls



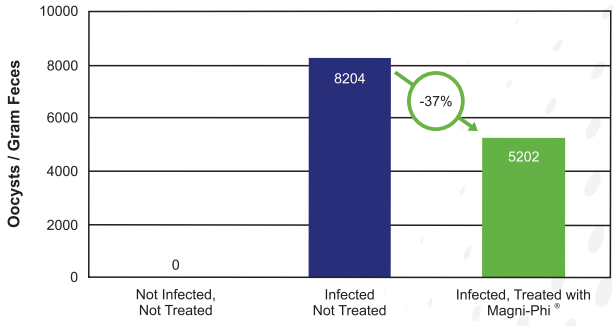
Efficacy against E maxima:

Birds fed Magni-Phi ® had 62% fewer E. maxima oocysts per gram compared to controls



Efficacy against E tenella:

Birds fed Magni-Phi ® had 37% fewer E. tenella oocysts per gram compared to controls



2 *Following on this initial data, a number of follow-up trials were done to determine the impact of Magni-Phi® use in broilers that were vaccinated at Day Old with a Coccidiosis vaccine (Coccivac B) as well as the impact that the duration of treatment with Magni-Phi® might have:*

Treatment Groups

1. Vaccinated with Coccivac-B (day 1)
2. Vaccinated with Coccivac-B (day 1) + Magni-Phi® 250 ppm (days 0-28)
3. Vaccinated with Coccivac-B (day 1) + Magni-Phi® 250 ppm (days 29-42)
4. Vaccinated with Coccivac-B (day 1) + Magni-Phi® 250 ppm (days 0-42)

Coccidia challenge: Used litter introduced at day 1.

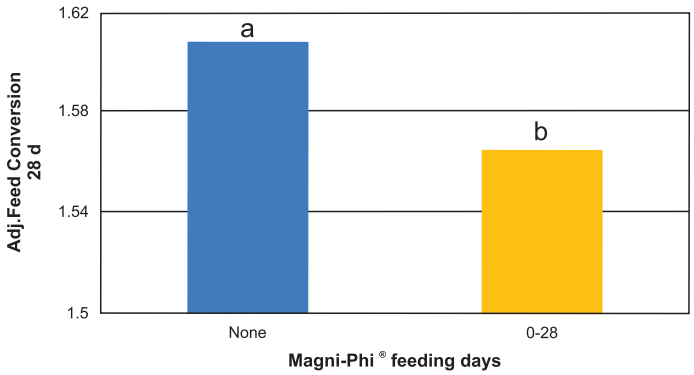
Performance evaluation: Oocyst output after challenge and feed conversion.

Results:

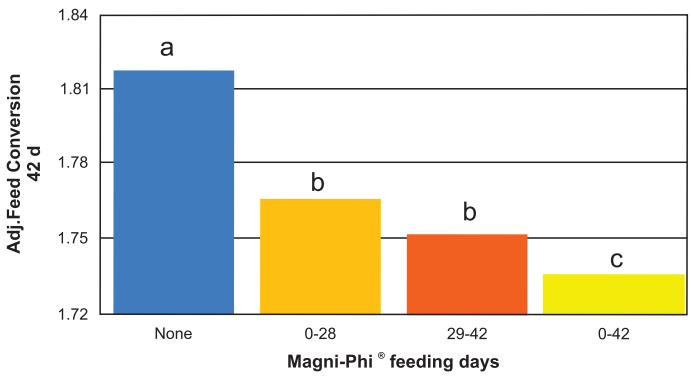
Oocyst output: There was a statistically significant reduction in oocysts in the Magni-Phi® treated groups.

Feed conversion:

Feed conversion at 28 days of age:



Feed conversion at 42 days of age:



3 *Further trials were done to compare the efficacy of Magni-Phi® with that of a range of other phytobiotics:*

Treatment groups

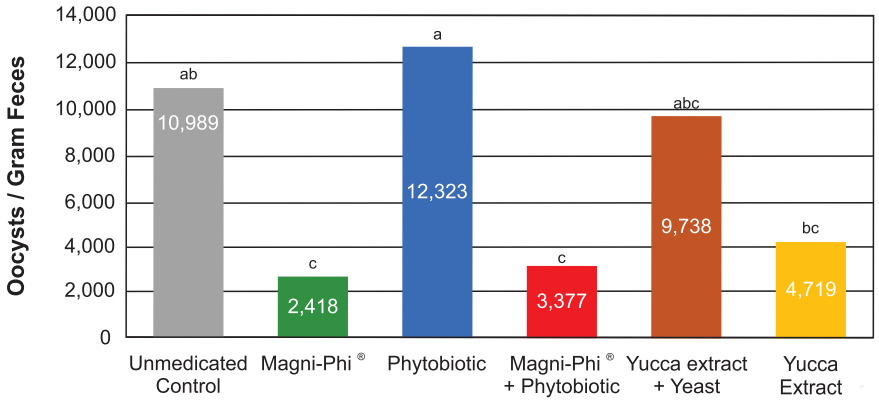
- Control, no additive
- Magni-Phi® 250 ppm
- Phytobiotic 60 ppm
- Yucca extract plus yeast 454 g/ton
- Yucca extract 250 ppm
- Magni-Phi® 250 ppm + Phytobiotic 60 ppm

Vaccinated for coccidiosis on day 1

Results:

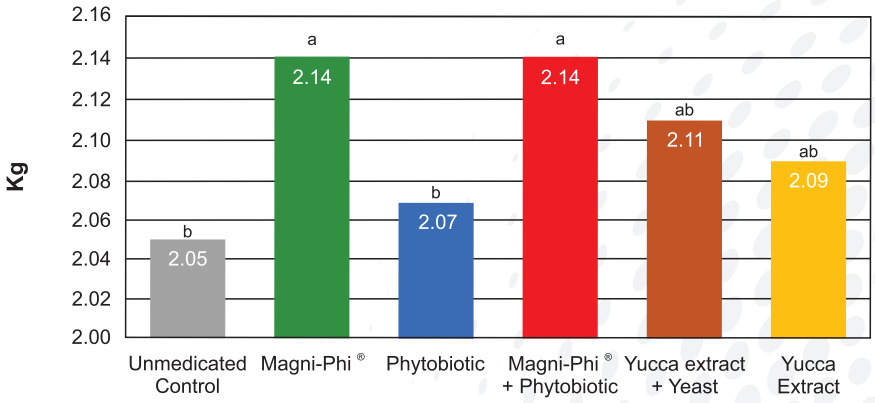
Oocyst per grams at Day 21:

Both Magni-Phi® groups had the lowest number of Eimeria oocysts per gram which were statistically significantly lower than the controls



Bodyweights at 42 days of age:

Both Magni-Phi® groups had the highest body weights at day 42 and a statistically significant difference compared to the controls



4 Impact of Magni-Phi® on Salmonella and Clostridium levels in the intestine:

Following indications from the field that lower counts of Salmonella and Clostridium were being seen in birds being fed with Magni-Phi®, some floor pen studies were done to confirm these observations. The study also included Magni-Phi® at two inclusion levels to see if this would have any impact on the results.

Trial design: The trial was designed to determine the benefits of Magni-Phi® in a high challenge environment

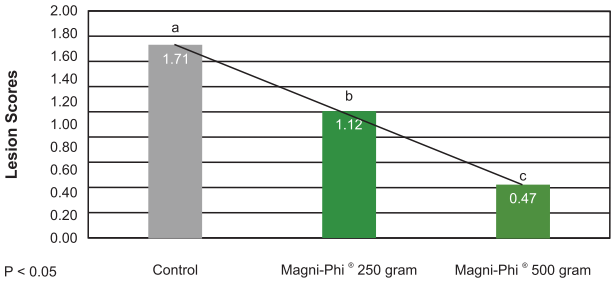
Treatment groups
- Controls
- Magni-Phi® 250 gram per ton (days 1 - 42) – in 4 trials
- Magni-Phi® 500 gram per ton (days 1 - 42) – in 3 trials

Performance evaluation:
- Coccidiosis lesion score
- *Clostridium perfringens* and Salmonella (multiple strains) counts
- Performance parameters: feed conversion; body weight; mortality and processing yields

Results:

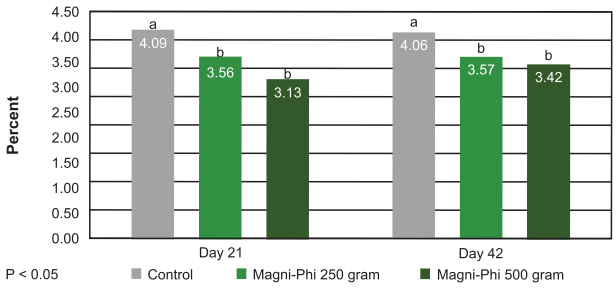
Average coccidiosis lesion scores at Day 21:

Both Magni-Phi® groups had statistically significant lower coccidiosis lesion scores with a significant linear effect (each level of Magni-Phi® provided improvements compared to lower levels)



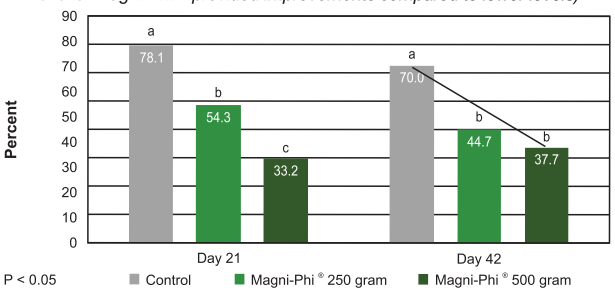
Clostridial counts at Day 21 and 42:

Both Magni-Phi® groups had statistically significant lower clostridia counts at both time points with a significant linear effect (each level of Magni-Phi® provided improvements compared to lower levels)



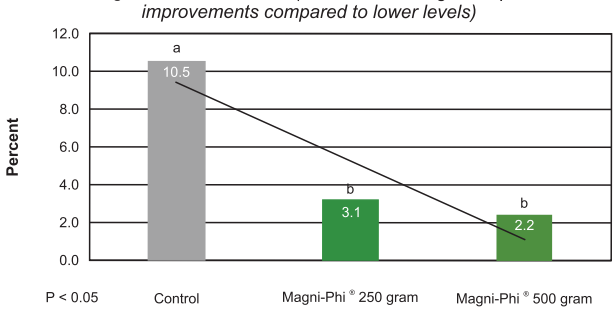
Salmonella - % birds positive for any Salmonella at Day 21 and 42:

Both Magni-Phi® groups had statistically significant lower percentage of birds positive for Salmonella at both time points with a significant linear effect (each level of Magni-Phi® provided improvements compared to lower levels)



Overall % mortality:

Both Magni-Phi® groups had statistically significant lower mortality with a significant linear effect (each level of Magni-Phi provided improvements compared to lower levels)



Conclusions:

Both levels of Magni-Phi® resulted in statistically significant improvements of -
- lower coccidiosis lesion scores
- lower isolations of clostridium and Salmonella at 21 and 42 days
- lower feed conversion and mortality
- higher body weights

5 Impact of Magni-Phi® on digestibility and nutrient absorption:

Recent studies performed in Germany have shown a positive impact on digestibility and nutrient absorption with the inclusion of Magni-Phi ® in the diet.

Trial design:

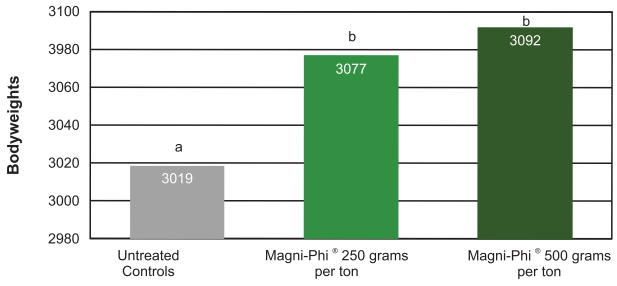
Standard Floor Pen Model:
- Treatments: 250 and 500 ppm of Magni-Phi ®

Parameters measured:
- Apparent Digestibility
  - 2 birds/pen in metabolism cages: day 21
  - Titanium feed marker on day 21
- Digestibility measured: day 21 to 26
  - Apparent Digestibility: Protein, Fat, Ash

Results:

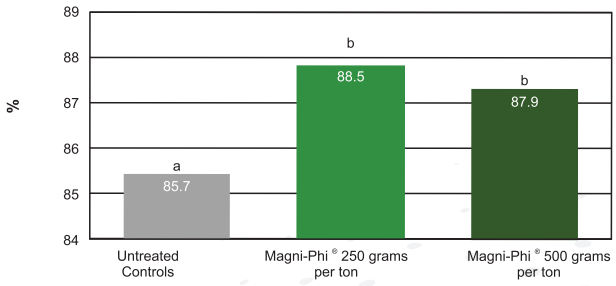
Bodyweights at 42 days:

Both Magni-Phi ® groups had statistically significant higher body weights than the untreated control group

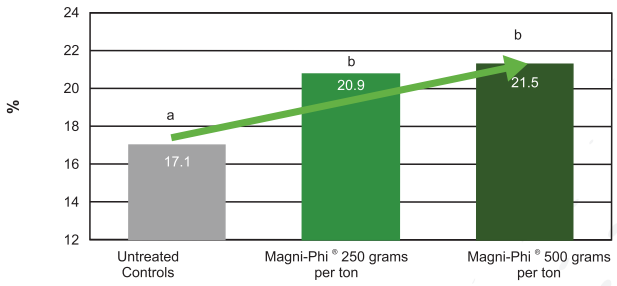


Crude fat absorption:

Both Magni-Phi ® groups had statistically significant improvements in crude fat absorption



Crude ash:



Conclusions:
- Both levels of Magni-Phi ® resulted in statistically significant improved body weights.
- Both Magni-Phi ® groups had statistically significant improvements in crude protein, fat and ash absorption.

Suggested periods and inclusion levels for Magni-Phi ®:

Based on all the studies and the results obtained, we recommend a general inclusion level in the feed of 250 grams per ton of final feed under most production systems. If birds are exposed to higher levels of coccidiosis or Salmonella and Clostridial challenges, it may be beneficial to use the higher level of 500 grams per ton of feed.

- In Free-range/ABF broiler production systems:
  - Include Magni-Phi ® in feed either from Day Old or from 2 weeks of age (grower ration) until slaughter *
- Breeder birds:
  - Limit coccidiosis challenges: Day Old or post 10 days of age to 12 – 14 weeks (or later if challenge is later)
  - Improve coccidiosis control and improve overall gut health and uniformity: Day Old or post 10 days of age to the transfer or point of lay *
- Free-range layers:
  - Same protocol as Breeders
- Cage layers with manure belts:
  - Include Magni-Phi ® for at least 6 to 8 weeks from point of initial contact with manure belts

** In general, the inclusion of Magni-Phi® in the feed from Day Old in coccidiosis vaccinated birds has not had any significant impact on the development of immunity in the birds. If there is a concern that the cycling of the coccidiosis vaccine is very low, the inclusion of Magni-Phi® in the feed can delayed for about two weeks*

Magni-Phi ®: Contains Quillaja saponaria and Yucca schidigera powder in a powder formulation for mixing into feed.
Reg. no.: V29926 (Act 36 of 1947).

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