

360° **DEFENSE** *For Intestinal Health*



HEALTHY ANIMALS. HEALTHY FOOD. HEALTHY WORLD.®

Behind every healthy flock is a comprehensive program.

No matter what the challenge or type of operation, discover our wide range of solutions to support intestinal health.

Phibro
ANIMAL HEALTH CORPORATION



Let's work together to construct a poultry gut health management program that's right for you.

Building an effective poultry gut health management program is vital to raising healthy birds. Gut health management requires balancing program requirements with science-backed effective products to create a long-term rotation strategy for coccidiosis prevention and necrotic enteritis management.

Phibro Animal Health can help you navigate those competing requirements and help you construct a program founded in a portfolio of products with time-tested performance.

No matter which production program guidelines drive your medicated feed additive choice, Phibro provides reliable products to support bird health in your operation.



Product Classifications, Production Programs and Approved Species

		PHIBRO PRODUCT	CONVENTIONAL	NAIHM - FDA	NAIHM - WHO	NAE	SPECIES
MEDICATED FEED ADDITIVES & WATER SOLUBLES	SYNTHETIC ANTICOCCIDIAL	DECCOX®	✓	✓	✓	✓	Broilers
		NICARB®	✓	✓	✓	✓	Broilers
		ROBENZ®	✓	✓	✓	✓	Broilers
		ZOAMIX®	✓	✓	✓	✓	Broilers & Turkeys
	IONOPHORE ANTICOCCIDIAL	AVATEC®	✓	✓	✓		Broilers & Turkeys
	HEALTH MAINTENANCE	AUREOMYCIN®	✓				Broilers, Turkeys & Layers
		BMD®	✓	✓			Broilers, Turkeys & Layers
		BMD® SOLUBLE	✓	✓			Broilers & Turkeys
		LINCOMIX®	✓				Broilers
		NEO-TERRAMYCIN®	✓				Broilers & Turkeys
		STAFAC®	✓				Broilers
		TERRAMYCIN®	✓				Broilers & Turkeys
NUTRITIONAL SPECIALTY PRODUCT	GLYCERIDE BLENDS	EPHICAX® 110	✓	✓	✓	✓	Broilers, Broiler Breeders, Layers & Turkeys <i>Turkey data pending.</i>
	PLANT DERIVED	MAGNI-PHI®	✓	✓	✓	✓	Broilers, Broiler Breeders, Layers & Turkeys
		MAGNI-PHI® ULTRA	✓	✓	✓	✓	Broilers, Broiler Breeders, Layers & Turkeys
	DIRECT-FED MICROBIAL	MICROLIFE® PRIME	✓	✓	✓	✓	Broilers, Broiler Breeders, Layers & Turkeys
		MICROLIFE® PEAK	✓	✓	✓	✓	Broilers, Broiler Breeders, Layers & Turkeys
		MICROLIFE® PACE	✓	✓	✓	✓	Broilers, Broiler Breeders, Layers & Turkeys

CONV = Conventional NAIHM = No Antibiotics Important to Human Medicine
NAE = No Antibiotics Ever WHO = World Health Organization FDA = Food and Drug administration

Synthetic Anticoccidials

Zoamix® (zoalene)

A leading brand backed by technical service and support, Zoamix controls coccidiosis and provides consistent year-round coccidiosis prevention for all gut health programs.

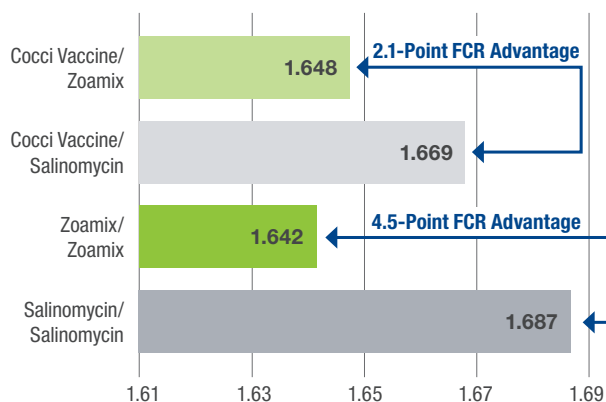
As a synthetic anticoccidial, Zoamix also has characteristics of an ionophore. It provides some “leakage” that helps initiate immunity.¹

Zoamix is compatible with bioshuttle programs and has been shown to help improve feed conversion ratio (FCR) when used at different stages of production and with various rotation strategies.

At Day 35, looking at starter/grower programs, a study showed Zoamix in a bioshuttle program had a 2.1-point FCR advantage compared with a bioshuttle program using salinomycin. The straight Zoamix program had a 4.5-point FCR advantage compared with a straight salinomycin program (see Figure 1a).²

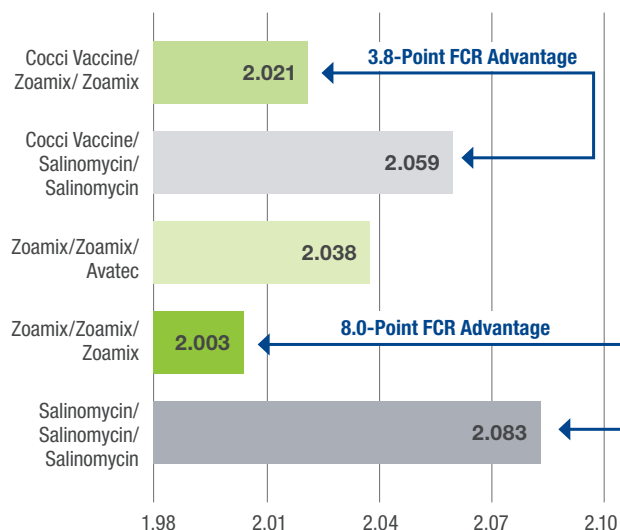
At day 60, looking at starter/grower/finisher programs, a

Figure 1a. Zoamix FCR Advantage in Various Programs, Day 35. An FCR comparison at day 35 of birds in various rotation programs, incorporating Zoamix in starter/grower diet or grower diet in a bioshuttle program.²



study showed birds fed Zoamix in grower/finisher feed in a bioshuttle program had a 3.8-point FCR advantage compared with a bioshuttle program using salinomycin in the grower/finisher feed. The straight Zoamix program had an 8.0-point FCR advantage compared with a straight salinomycin program. Comparing a program with Avatec in the finisher diet after Zoamix in the starter/grower feed also performed better than the straight salinomycin program, with a 4.5-point FCR advantage (see Figure 1b).²

Figure 1b. Zoamix FCR Advantage in Various Programs, Day 60. An FCR comparison at day 60 of birds in various rotation programs, incorporating Zoamix in starter/grower/finisher diet, grower/finisher diet in a bioshuttle program and in a starter/grower diet with Avatec® in the finisher diet. No anticoccidials in withdrawal feed, Days 50-60.²



Zoamix is approved for use in broiler and replacement chickens and turkeys.

Indications for use: For prevention and control of coccidiosis in broiler chickens and growing turkeys. In replacement chickens use for the development of active immunity to coccidiosis. Feed continuously as sole ration.

Approved for use in combination with: BMD, Flavomycin, Lincomix.

Do not use Zoamix in laying birds.





Deccox® (decoquinat)

A coccidiosis management tool for program diversification in rotation strategies, Deccox is compatible with bioshuttle programs and kills coccidia early.^{3,4}

Deccox is approved for use in broiler chickens.

Indications for use: For the prevention of coccidiosis in broiler chickens caused by *Eimeria tenella*, *E. necatrix*, *E. acervulina*, *E. mivati*, *E. maxima* and *E. brunetti*.

Approved for use in combination with: Aureomycin, BMD, Lincomix.

Do not use Deccox in laying chickens.

Robenz® (robenidine)

A broad-spectrum anticoccidial, with coccidiostatic and coccidiocidal activity, Robenz provides coccidiosis management program diversification,³⁻⁵ and is compatible with bioshuttle programs. When used in grower/finisher feeds after vaccination for coccidiosis at hatch, birds showed significant improvement in FCR, reduced necrotic enteritis (NE) lesions and reduced mortality compared with the control.⁵

Robenz is approved for use in broiler chickens.

Indications for use: For the prevention of coccidiosis in broiler chickens caused by *Eimeria tenella*, *E. necatrix*, *E. acervulina*, *E. mivati*, *E. maxima* and *E. brunetti*.

Approved for use in combination with: Aureomycin, BMD, Lincomix.

Do not feed to chickens producing eggs for human consumption.

Nicarb® (nicarbazin)

A highly effective chemical anticoccidial for the prevention of coccidiosis in broiler chickens. Preferred by customers for use in starter feeds, but could be used until 28 days of age. Nicarb prevents damaging cecal and intestinal species of *Eimeria* and results in improved gut health.

Nicarb is approved for use in broiler chickens.

Indications for use: As an aid in preventing outbreaks of cecal (*Eimeria tenella*) and intestinal (*E. acervulina*, *E. maxima*, *E. necatrix*, and *E. brunetti*) coccidiosis in chickens.

Approved for use in combination with: BMD and Baciferm.

Do not feed Nicarb to laying hens in production.

Help Bolster Bioshuttle Programs in NAE Production Systems

Vaccinating against coccidiosis is a popular management approach, especially for a NAE production system. Adding an anticoccidial into rotation for bioshuttle programs can help enhance results. Zoamix, Robenz and Deccox have all been shown to help improve feed conversion ratio, reduce mortality and reduce necrotic enteritis lesions associated with vaccination for coccidiosis.⁶

Ionophore Anticoccidials

Avatec® (lasalocid)

As the only divalent ionophore in the U.S. poultry market, Avatec offers a unique mode of action and can be used year-round with nonseasonal efficacy.

Avatec is compatible with bioshuttle programs and has demonstrated up to a 5-point improvement in FCR compared with the control when used in grower/ finisher feeds for birds vaccinated for coccidiosis at hatch (see Figure 2).⁷

Avatec is approved for broiler chickens, growing turkeys and chukar partridges.

Indications for use: For the prevention of coccidiosis in broiler or fryer chickens caused by *Eimeria tenella*, *E. necatrix*, *E. acervulina*, *E. brunetti*, *E. mivati* and *E. maxima*. For the prevention of coccidiosis in growing turkeys caused by *E. meleagritidis*, *E. gallopavonis*, and *E. adenoeides*.

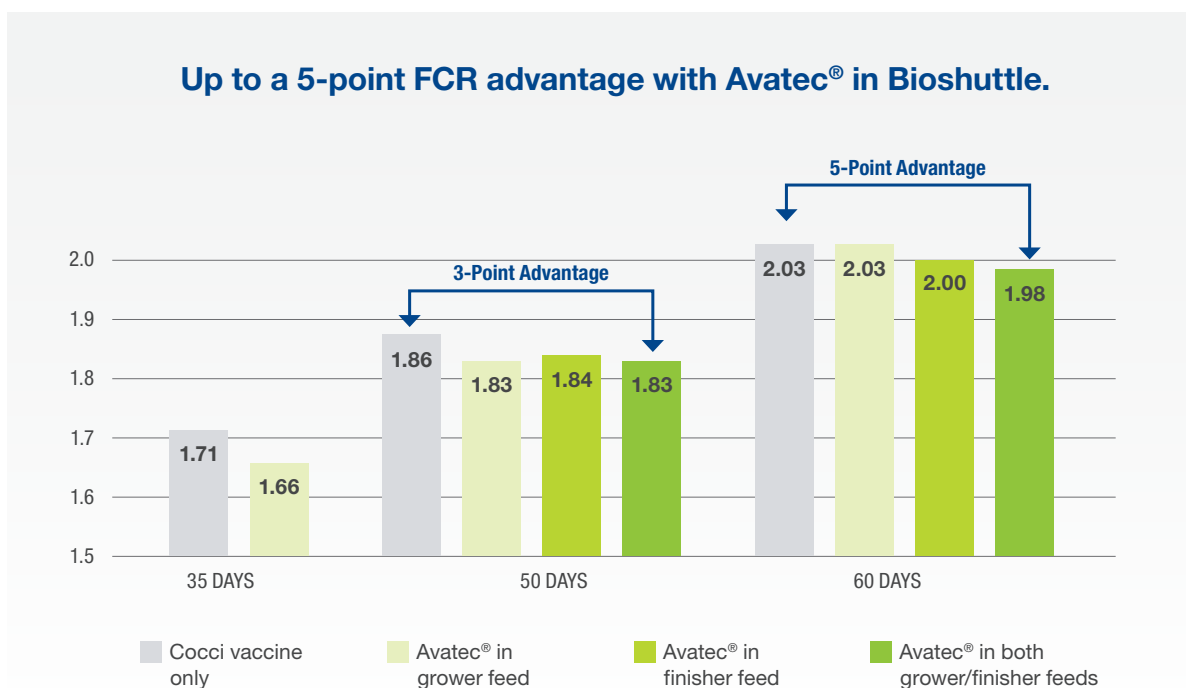
Approved for use in combination with:

Chickens: BMD, Flavomycin, Lincomix, Stafac

Turkeys: BMD, Lincomix.



Figure 2. FCR comparison of birds given a coccidiosis vaccine and supplemented with Avatec® in the grower diet (18-35 days) and/or finisher diet (35-50 days) and raised to 60 days. No anticoccidials in withdrawal feed, Days 50-60.⁷



Health Maintenance and Necrotic Enteritis Prevention

BMD®

(bacitracin methylenedisalicylate)

Known for reliable, consistent performance with the flexibility of broad cross-clearance approvals and a therapeutic claim, BMD aids in the control of necrotic enteritis. It is shown to reduce subclinical and clinical disease, resulting in greater efficiency with decreased morbidity and mortality.⁸ BMD helps preserve the integrity of the gut wall.

BMD is approved for use in broiler and replacement chickens, laying hens, growing turkeys, pheasants and quail.

BMD indications for use: For the control and prevention of necrotic enteritis in broilers and replacement chickens, as an aid in the control of transmissible enteritis in growing turkeys, and for increased egg production and improved feed efficiency during the first seven months of production in layers.

BMD is approved for use in combination with: Amprol, Aureomycin, Avatec, Bio-Cox, Clinacox, Coban, Coyden, Deccox, Maxiban, Monteban, Nicarb, Pennchlor, Robenz, Zoamix, ZoaShield.

Aureomycin®**

(chlortetracycline)

A broad-spectrum antimicrobial, Aureomycin provides protection against a wide range of respiratory and enteric diseases. Aureomycin is approved for broiler chickens, turkeys, ducks and psittacine birds.

Indications for use: For control of infectious synovitis caused by *Mycoplasma synoviae*, chronic respiratory disease and air sac infection caused by *Mycoplasma gallisepticum* and *Escherichia coli* and reduction of mortality due to *E. coli* in chickens. For control of infectious synovitis caused by *Mycoplasma synoviae*, hexamitiasis caused by *Hexamita meleagridis* susceptible to chlortetracycline in turkeys. Reduction of mortality due to paratyphoid caused by *salmonella typhimurium* susceptible to chlortetracycline in turkey poults not over 4 weeks of age.

Approved for use in combination with: Amprol, Bio-Cox, Coban, Coyden, Deccox, Robenz.

Do not feed to ducks or turkeys producing eggs for human consumption.

Lincomix®**

(lincomycin hydrochloride)

Provides consistent disease control.

Lincomix is approved for broiler chickens.

Indications for use: For the control of necrotic enteritis caused or complicated by *Clostridium spp.* in broilers.

Approved for use in combination with: Avatec, Bio-Cox, Coban, Coyden, Deccox, Robenz, Zoamix.

Do not use Lincomix in feeds for layers, breeders, or turkeys. Do not allow unapproved species access to feeds containing lincomycin.

Neo-Terramycin®**

(oxytetracycline + neomycin sulfate)

A highly effective broad-spectrum product containing two powerful antimicrobials. Oxytetracycline is effective against a variety of infectious diseases caused by susceptible Gram-positive and Gram-negative bacteria such as *Mycoplasma synoviae* and *Pasteurella multocida*. Neomycin, the other component, is primarily effective against intestinal Gram-negative bacteria, including *E. coli* and Salmonella.

Neo-Terramycin Type A Medicated Article can be used for preventing and controlling disease in both chickens and turkeys.

Indications for use:

In chickens, for the control of infectious synovitis caused by *Mycoplasma synoviae*; fowl cholera caused by *Pasteurella multocida*; chronic respiratory disease (CRD) and air sac infection caused by *Mycoplasma gallisepticum* and *E. coli* and reduction of mortality due to air sacculitis (air sac infection) caused by *E. coli* susceptible to oxytetracycline.

In turkeys, for the control of hexamitiasis caused by *Hexamita meleagridis*; infectious synovitis caused by *Mycoplasma synoviae* and for control of complicating bacterial organisms associated with bluecomb (transmissible enteritis, coronaviral enteritis) susceptible to oxytetracycline.

**Caution for use of Aureomycin, Lincomix, Stafac, Neo-Terramycin and Terramycin: Federal law restricts medicated feeds containing this veterinary feed directive (VFD) drug to use by or on the order of a licensed veterinarian. Combinations that include a VFD drug also require a VFD prescription.



Health Maintenance and Necrotic Enteritis Prevention Cont'd.

Stafac^{®}** (virginiamycin)

A medicated feed additive anti-infective approved for use in broiler feed for the prevention of necrotic enteritis caused by *Clostridium perfringens* susceptible to virginiamycin. By preventing the adverse effects of necrotic enteritis on the digestive tract, it improves gut health and bird performance.

Indications for use: For use in broiler chickens for the prevention of necrotic enteritis caused by *Clostridium perfringens* susceptible to virginiamycin.

Approved for use in combination with: Avatec, Bio-Cox, Clicacox Maxiban, Monteban.

Do not use Stafac in laying chickens.

***Caution for use of Aureomycin, Lincomix, Stafac, Neo-Terramycin and Terramycin: Federal law restricts medicated feed containing this veterinary feed directive (VFD) drug to use by or on the order of a licensed veterinarian. Combinations that include a VFD drug also require a VFD.*

Terramycin^{®}** (oxytetracycline)

A broad-spectrum anti-infective that has been proven effective against a wide variety of infectious diseases caused by susceptible Gram-positive and Gram-negative bacteria. It can be fed to chickens and turkeys. Terramycin is safe, stable and highly effective; it works in both the bloodstream and in the gastrointestinal tract.

Indications for use:

In chickens for the control of infectious synovitis caused by *Mycoplasma synoviae*; fowl cholera caused by *Pasteurella multocida*; chronic respiratory disease (CRD) and air sac infection caused by *Mycoplasma gallisepticum* and *E. coli* and reduction of mortality due to airsacculitis (air sac infection) caused by *E. coli* susceptible to oxytetracycline.

In turkeys for the control of hexamitiasis caused by *Hexamita meleagridis*; infectious synovitis caused by *Mycoplasma synoviae* and for control of complicating bacterial organisms associated with bluecomb (transmissible enteritis, coronaviral enteritis) susceptible to oxytetracycline.

Approved for use in combination with: Robenz, Biocox, Coban.

Water Solubles

BMD[®] Soluble (bacitracin methylenedisalicylate soluble powder)

For use in drinking water, BMD Soluble is approved for use in broiler, replacement chickens, growing turkeys and growing quail.

Indications for use: An aid in prevention and control of necrotic enteritis caused by *Clostridium perfringens* susceptible to bacitracin methylenedisalicylate in broiler and replacement chickens. In growing turkeys as an aid in control of transmissible enteritis (bluecomb, mud fever) complicated by organisms susceptible to bacitracin methylenedisalicylate. Use in growing quail, for the prevention of ulcerative enteritis due to *Clostridium colinum* susceptible to bacitracin methylenedisalicylate.



Nutritional Specialty Products for Intestinal Health

Ephicax® 110 (glyceride blend)

A nutritional specialty product that is a distinctive blend of short and medium-chain monoglycerides (S/MCMG) that support intestinal health through unique modes of action, to help bolster the animal's defense against enteric challenges. Studies have shown that using Ephicax nutritional specialty product can help balance the complete gastrointestinal (GI) tract environment. A balanced intestinal tract may lead to improved food safety and reduced pathogen challenges.

Indications for use: Broilers, Broiler Breeders and Layers. Data in turkeys pending.

Magni-Phi® & Magni-Phi® Ultra (plant derived)

A nutritional specialty product that is a natural, proprietary blend of saponins. Literature and laboratory research have shown that saponins can help improve immune response in poultry which may lead to: better nutrient utilization, improved gut health and condition, and improved performance. The original version of Magni-Phi contains approximately 4% total saponins. The new version, called Magni-Phi Ultra, is more concentrated and has an 8% total saponin content. Since Magni-Phi Ultra contains twice the saponin content as Magni-Phi, one-half of the standard amount is needed to achieve the desired level per ton of feed.

Indications for use: Broilers, Broiler Breeders, Layers and Turkeys.

MicroLife® Prime (direct-fed microbial)

Bacillus amyloliquefaciens, Bacillus subtilis, Bacillus licheniformis and Bacillus coagulans

A probiotic product that offers a unique combination of four *Bacillus* strains to help optimize a bird's gut microbiome, promoting better health in poultry production. A healthy gut environment can result in reduced lesions from pathogens, lower mortality rates and increased meat yield.

Indications for use: Broilers, Broiler Breeders, Layers and Turkeys.

MicroLife® Peak (direct-fed microbial)

Bacillus pumilus, Bacillus subtilis and Bacillus licheniformis

MicroLife Peak direct-fed microbial contains three specifically selected *Bacillus* strains to help optimize poultry's gut microbiome. Leveraging the positive aspects of each individual *Bacillus* species to help improve gut health, allowing the producer to capture the benefits of each. The effects of a healthy gastrointestinal tract may help optimize body weight gain, feed conversion and the reduction of lesions from pathogens.

Indications for use: Broilers, Broiler Breeders, Layers and Turkeys.

MicroLife® Pace (direct-fed microbial)

MicroLife Pace direct-fed microbial offers a combination of two microbial strains of *Bacillus subtilis* and *Bacillus licheniformis*, chosen for their demonstrated effects. MicroLife Pace helps support a healthy gut environment, which may lead to optimal feed utilization, growth and poultry performance.

Indications for use: Broilers, Broiler Breeders, Layers and Turkeys.



Consult Phibro Technical Support for Rotation Program Guidance

Phibro provides technical resources and tools to allow you to create and follow an effective rotation program. To evaluate product efficacy under real-world conditions, Phibro provides routine health evaluations and anticoccidial sensitivity testing (AST). These tangible data-backed insights help you manage coccidiosis.



Rotation Program Best Practices

- ✓ Routinely monitor product effectiveness.
- ✓ Rest products if there is increased or heavy coccidiosis cycling.
- ✓ Rotate among products of different classes.



Better Data, Better Decisions

INTEGRITAS™ Capture is a secure app from Phibro Animal Health that streamlines health data collection, helping you make timely, informed decisions about flock performance, welfare and safety. Data securely stored for your privacy.

¹ Reid WM, Womack HE, Johnson J. Coccidiosis Susceptibility in Layer Flock Replacement Programs. Poultry Sci. 1968;47(3):892-899.

² Schaeffer JL, Cookson K, Dickson J, Mathis G, Davis SW. Evaluation of Zoamix® in Broiler Anticoccidial Programs, AAAP 2015.

³ McDougald LR. Chemotherapy of coccidiosis. In: Long PL, ed. The Biology of the Coccidia. Baltimore: University Park Press, 1982;373-427.

⁴ McDougald LR, Roberson EL. Antiprotozoan drugs. In: Booth NH, McDonald LE, eds. Veterinary Pharmacology and Therapeutics. Ames, Iowa: Iowa State Press, 1988;950-968.

⁵ Conway DP, McKenzie ME. Poultry Coccidiosis. Diagnostic and Testing Procedures. Third Edition. Blackwell Publishing, 2007;128.

⁶ Data on file, Study Report No. 01-16-7AMVG, Zoetis Inc.

⁷ Mathis G, Schaeffer JL, Cookson K, Dickson J, LaVorgna M, Waldrip D. Effect of lasalocid or salinomycin administration on performance and immunity following coccidia vaccination of commercial broilers. J Appl Poultry Res. 2014; 23:577-585.

⁸ Skinner J, Bauer S, Young V, Pauling G, Wilson J. An Economic Analysis of the Impact of Subclinical (Mild) Necrotic Enteritis in Broiler Chickens. Avian Dis. 2010; 54(4):1237-1240.



Learn how we can help optimize your poultry gut health management program with the Phibro portfolio of Medicated Feed Additives, Water Solubles and Nutritional Specialty Products.

Contact your Phibro representative or visit pahc.com





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