



# AVIATOR™

**Sequential approach to  
improved productivity  
and health.**



#ScienceHearted

At ARM & HAMMER™ we think big on a microscopic level to deliver safe feed and food solutions that drive business forward. We're your #ScienceHearted, local-and-global, animal and food production team.

# Times are changing.

In a perfect poultry grower's world, combining a balanced diet, good vaccination protocols, and a sound management program with biosecurity and welfare efforts should lead to efficient bird growth. But the world is far from perfect, with new regulations taking away some of your most trusted tools and emerging challenges threatening your bird's health and productivity. As you know, many of the challenges facing commercial poultry start in the gut of bird.



## What if you could address challenges early?



### HEALTHY GUT.

A balanced and healthy gut microbiota contributes to a healthy gut morphology.



### BETTER DIGESTION AND ABSORPTION.

That healthy gut structure, in turn, results in better nutrient digestion and absorption.



### IMPROVED FCR AND ROI.

This could also mean better feed conversion ratio (FCR), savings in dietary energy and a better return on investment (ROI).

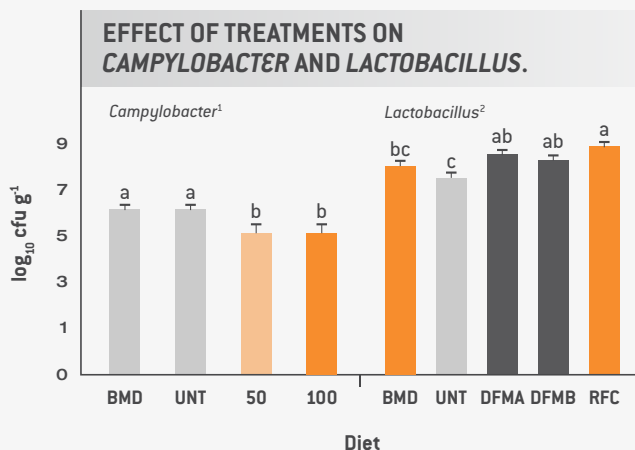
## AVIATOR™ DELIVERS:

- ✓ AVIATOR contains A-MAX™ yeast culture plus highly bioavailable Refined Functional Carbohydrates™ (RFCs™) to help maintain productivity sequentially, enhancing financial performance in poultry operations.

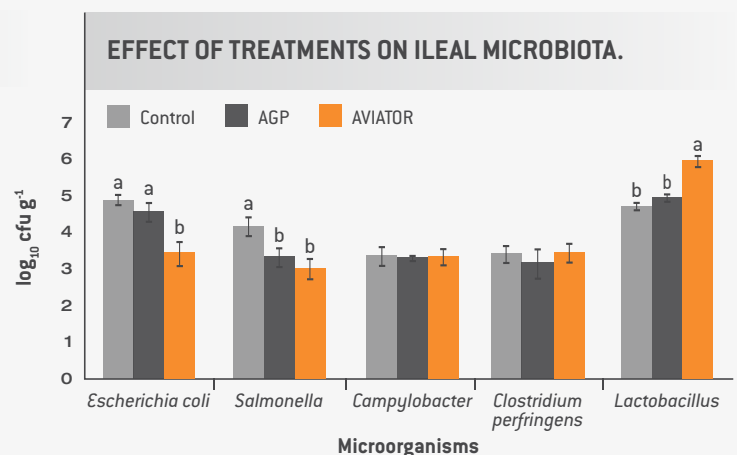
## The proof is in the research.

### AVIATOR supports a healthy gut microbiota.

Research studies have shown that supplementation of broiler diets with AVIATOR could lead to reduction in *Campylobacter*,<sup>1</sup> *E. coli*,<sup>3</sup> and *Salmonella*,<sup>3</sup> and an increase in *Lactobacillus*<sup>2,3</sup> bacteria. A well balanced and healthy gut microbiota leads to better gut morphology.



BMD= Bacitracin methylene disalicylate, 50 g/MT  
 UNT= Untreated  
 50 = AVIATOR SCP, 50 g/MT  
 100 = AVIATOR SCP, 100 g/MT  
 DFMA = Direct Fed Microbial A  
 DFMB = Direct Fed Microbial B  
 RFC = AVIATOR SCP, 100 g/MT



## AVIATOR helps improve gut morphology.

Supplementation of broiler diets with AVIATOR supports an increase in villi:crypt ratio in the *jejunum*, and an increase in villi surface area in the *jejunum* and ileum.

	THE EFFECT OF TREATMENTS ON INTESTINAL MORPHOLOGY. <sup>3</sup>				
	CONTROL	AGP (BMD)	AVIATOR	SEM	P-Values
<i>Jejunum</i>					
V:C	7.01 <sup>b</sup>	7.64 <sup>b</sup>	8.78 <sup>a</sup>	0.321	0.045
VSA, $\mu\text{m}^2$	558960 <sup>a</sup>	414635 <sup>b</sup>	568615 <sup>a</sup>	40378	0.026
<i>Ileum</i>					
V:C	5.89	7.49	6.41	0.43	0.317
VSA, $\mu\text{m}^2$	305830 <sup>a</sup>	218637 <sup>b</sup>	247945 <sup>ab</sup>	14949	0.042

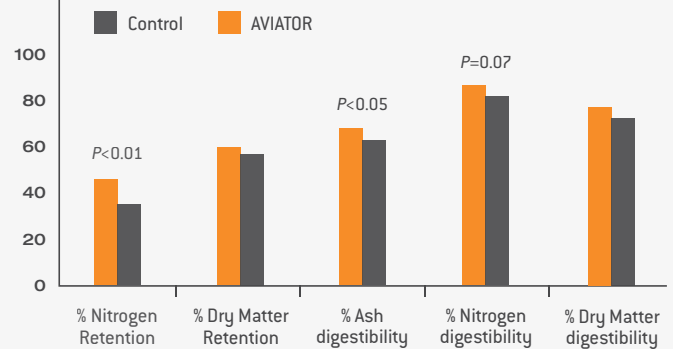
V:C= Villi/Crypt ratio; VSA= villi surface area

## AVIATOR promotes digestibility and nutrient retention.

A healthy gut microbiota, as well as improved villi structure and surface area, provide optimal conditions for feed digestion and nutrient absorption. In one study, AVIATOR supplementation in broiler diets improved nitrogen retention and nitrogen and ash digestibility.<sup>4</sup>

This can allow diet reformulation to realise improved nutrient digestibility through enhanced gut structure.

### EFFECT OF TREATMENTS ON DIGESTIBILITY AND RETENTION.

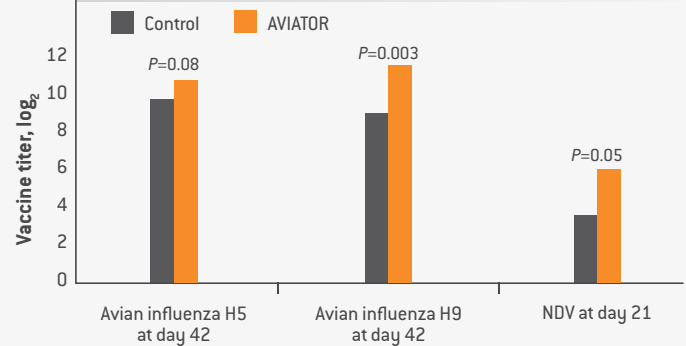


## AVIATOR improved immune status of birds.

Supplementation of broiler diets with AVIATOR also improved vaccine titers of birds in multiple studies.<sup>3,5</sup>

Ultimately, these results suggest an immunologically stronger bird capable of performing at a higher level.

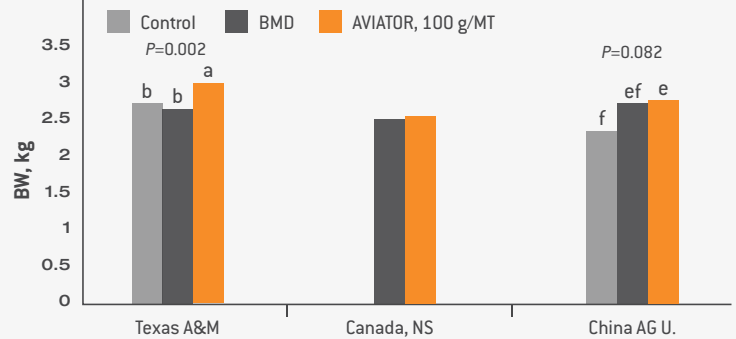
### EFFECT OF AVIATOR ON VACCINE TITER.



## AVIATOR™ helps improve performance in poultry.

The combination of improved overall gut microbiota, gut morphology, and immune status consistently improved poultry performance compared to broilers fed AGP or control treatments in multiple studies.

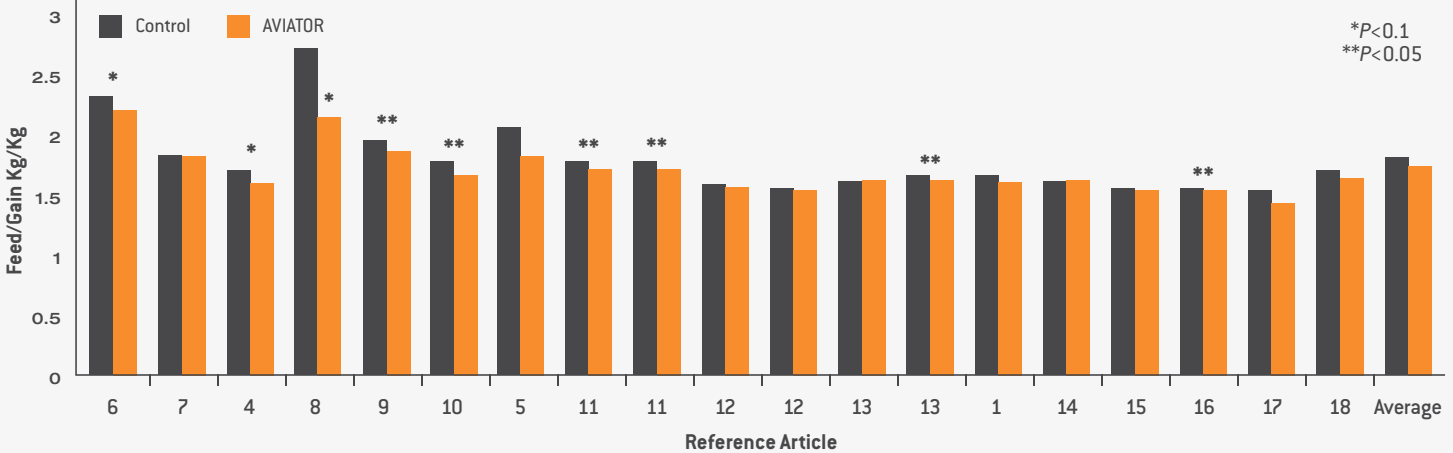
### COMPARISON OF BROILERS FED AGP VERSUS AVIATOR ON BODY WEIGHT.



## Consistently maintain feed conversion ratios.

Across numerous studies AVIATOR improved feed conversion ratio (FCR) by 8 points in broilers.<sup>1,4-18</sup>

### EFFECT OF AVIATOR ON FEED CONVERSION RATIOS IN BROILERS.



**We're your global to local animal and food production team.**

We use scientific research to unlock the power of nature to create products that focus on you, your animals and worldwide food security. To learn more about AVIATOR contact your nutritionist, veterinarian or ARM & HAMMER™ representative or visit [AHfoodchain.com](http://AHfoodchain.com).

1 L. K. Froebel, S. Jalukar, T. A. Lavergne, J. T. Lee, and T. Duong (2019) Administration of dietary prebiotics improves growth performance and reduces pathogen colonization in broiler chickens *Poultry Science* 98:6668–6676

2 L. K. Froebel, S. Jalukar, T. A. Lavergne, C. D. Coufal, T. Duong (2020) Administration of direct-fed *Bacillus* cultures and refined functional carbohydrates to broiler chickens improves growth performance and promotes positive shifts in gastrointestinal microbiota. *J. of Appl. Poult. Res.* Volume 29, Issue 4, 765-774

3 China Commercial broiler study (Report on file).

4 Gómez S, Angeles ML, Mojica MC, Jalukar S. (2012). Combination of an Enzymatically Hydrolyzed Yeast and Yeast Culture with a Direct-fed Microbial in the Feeds of Broiler Chickens. *Asian-Aust J Anim Sci* 2012;25(5):665-673.

5 Adaei SA, El-Shafei AA, Jalukar S. (2011) Effect of CELMANAX on performance, immune function and health of broilers challenged with *E. coli* 078, 2011. Presented at IPSF in Atlanta, Ga.

6 Gómez S, Angeles M. Effects of CELMANAX combined with flavomycin and monensin on finishing broiler. *International Journal of Poultry Science* 2011;10(6):433-439. Research Bulletin P-22.

7 Effect of CELMANAX supplementation in broiler diets on production performance of broilers, Research Bulletin P-27.

8 Gómez, et al. Effects of the protein source and the inclusion of cell wall components plus a yeast culture in the diet of broiler chickens. World Poultry Congress, 2008; Abstract 111. Research Bulletin P-48.

9 Report on file. Research Bulletin P-57.

10 Report on file. Research Bulletin P-58.

11 Mathis G, Lumpkins B, Jalukar S. Effect of CELMANAX SCP feed supplementation on performance of broilers either fed an anticoccidial drug or vaccinated. 2011. Presented at IPSF in Atlanta, Ga.

12 Report on file. Research Bulletin P-78.

13 Brake, et al. Coccidiostat withdrawal from broiler diets containing Refined Functional Carbohydrates™ (RFC™) from enzymatically hydrolyzed yeast. 2015; Abstract M3. Presented at IPSF, Atlanta, GA. Research Bulletin P-88.

14 Caraway CT, Walker GK, Brake J. The effects of coarse corn and refined functional carbohydrates on the live performance and cecal *Salmonella* prevalence in coccidiosis-vaccinated broilers. *Poultry Science* 2019;98:4565-4574.

15 Walker, et al. The effect of refined functional carbohydrates from enzymatically hydrolyzed yeast on the transmission of environmental *Salmonella Senftenberg* among broilers and proliferation in broiler housing. *Poultry Science* 2018;97:1412-1419.

16 ARM & HAMMER field trial. Report on file.

17 ARM & HAMMER field study. Report on file.

18 ARM & HAMMER study. Report on file.