



Break the *Salmonella* cycle on your operation.



POULTRY ACCOUNTED FOR 40% OF TRACKED SALMONELLA OUTBREAKS

HUNDREDS OF TRACKED SALMONELLOSIS CASES ARE LINKED TO POULTRY EACH YEAR.

In a survey of food disease outbreaks over nearly a decade, poultry accounted for a higher percentage of *Salmonella* outbreaks than any other food commodity, with approximately 40% of tracked outbreaks linked to live poultry, shell eggs or processed poultry products.¹

YOUR BIRDS ARE CONSTANTLY AT RISK.

- Vertical transmission of bacterial pathogens like *Salmonella* remains a critical issue throughout all stages of production, with reinfection promoting a cycle of disease on operations just like yours.
- In recent years, newer serovars of *Salmonella* have been reported in disease outbreaks highlighting the need for a more broad-spectrum pre-harvest food safety mitigation strategy.

WHAT IF YOU COULD CONTROL SALMONELLA IN YOUR FLOCK TO PRODUCE SAFER FOOD PRODUCTS?



COMBAT PATHOGENS.

What if you could block lateral transmission of *Salmonella* in your birds?



REDUCE LOADS.

What if you could reduce *Salmonella* loads entering your processing plant?



BUILD PEACE OF MIND.

What if you could rely on a research-backed solution proven effective throughout the poultry production system?

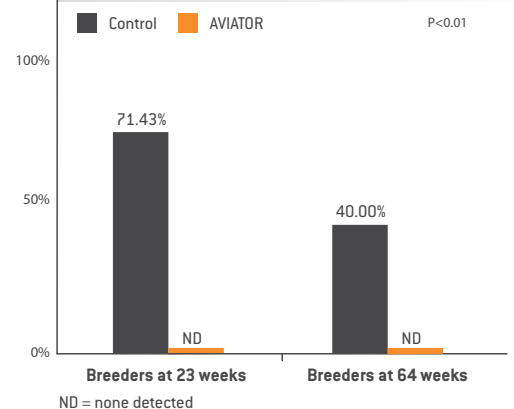
AVIATOR DELIVERS RESEARCH-PROVEN PROTECTION AGAINST FOOD SAFETY THREATS.

AVIATOR™ has been shown to inhibit *Salmonella* adhesion to chicken epithelial cell line *in vitro*², and to reduce the degree of *Salmonella* infection and colonization³⁻¹² in numerous studies across all stages of poultry production.

Salmonella reduction in breeders: In an independent study⁴ conducted to evaluate the effects of AVIATOR on *Salmonella* prevalence in broiler breeders, AVIATOR proved to be a beneficial component of a multifactorial *Salmonella* mitigation strategy in poultry production.

Broiler breeder hens fed AVIATOR had non-detectable levels of *Salmonella* ($P < 0.01$) in the ceca, compared to 71.43% and 40.00% in control hens.

TREATMENT EFFECTS ON % PREVALENCE OF SALMONELLA IN BREEDER HEN CECA.



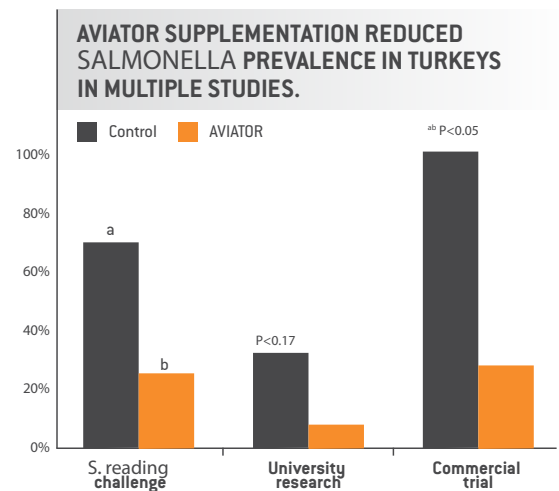
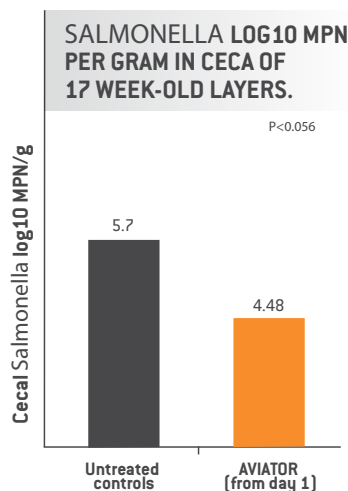
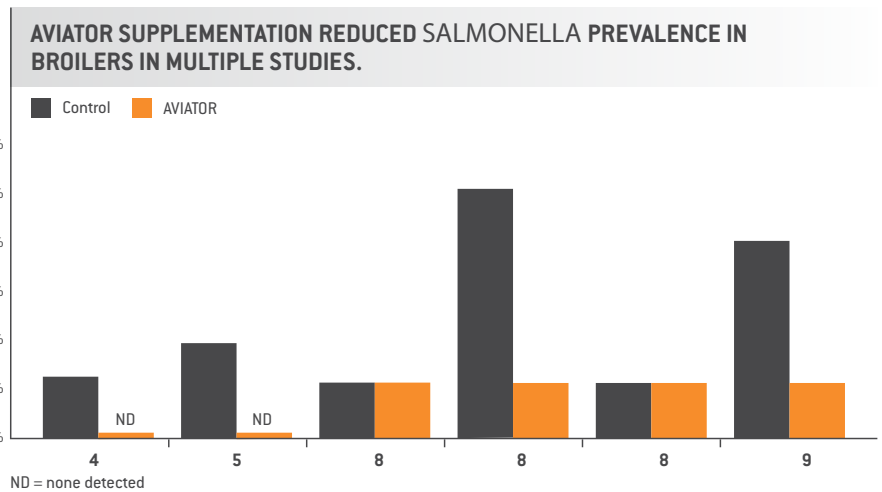
Salmonella reduction in broilers: AVIATOR™ supplementation in broiler diets under controlled research^{4,5} and commercial^{8,9} conditions reduced cecal *Salmonella* prevalence compared to control fed broilers. In three of those commercial farms, the load of *Salmonella* in the ceca was reduced by up to 3.5 logs⁸.

Salmonella reduction in layers: In a *S. enteritidis* challenge in layers³, AVIATOR supplementation reduced *S. enteritidis* by 1.2 logs compared to control.

In a commercial trial⁶, AVIATOR supplementation in pullet and layer diets reduced environmental *Salmonella* prevalence at the end of the pullet phase (4.2 percentage points lower than control birds) and in mid-lay (13.75 percentage points lower than the control).

Salmonella reduction in turkeys: AVIATOR supplementation in turkey diets under controlled research^{10,11} and commercial⁹ conditions reduced cecal *Salmonella* prevalence compared to control fed birds. In the *S. reading* challenge¹⁰, AVIATOR fed turkeys had *S. reading* load 1.77 logs lower compared to control fed turkeys ($P < 0.001$). In the commercial trial, levels were 4.5 logs lower compared to control fed turkeys⁷.

In addition to proven ability to effectively combat *Salmonella* challenges across poultry production systems, a recent study¹² found that AVIATOR had no negative effects on the ability of live *Salmonella* vaccine AviPro® Megan® Vac 1 to reduce colonization, even suggesting a synergistic or additive effect between the two interventions.



To learn more about the role that AVIATOR can play in minimizing food safety concerns in your facility, contact your veterinarian, nutritionist or ARM & HAMMER™ representative, or visit AHfoodchain.com.

1 Cosby DE, Cox NA, Harrison MA, Wilson JL, Buhr RJ, Fedorka-Cray PJ. *Salmonella* and antimicrobial resistance in broilers: A review, *The Journal of Applied Poultry Research* 2015;24(3):408-426. <https://doi.org/10.3382/japr/pfv038>.

2 Froebel LE, Froebel LK, Duong Tri. Department of Poultry Science, Texas A&M University. Abstract #216. Presented at IPSF, Atlanta, 2020.

3 Hofacre, et al. Effect of a Yeast Cell Wall Preparation on Cecal and Ovarian Colonization With *Salmonella enteritidis* in Commercial Layers. *J Appl Poult Res* 2018;27(4):453-460.

4 Walker GK, et al. Effect of refined functional carbohydrates from enzymatically hydrolyzed yeast on the presence of *Salmonella* spp. in the ceca of broiler breeder females. *Poultry Science* 2017;96:2684-2690.

5 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. *Poult Science* 2018;97(4):1412-1419.

6 Nezworski J, Karunakaran D, Jalukar S. The effects of Refined Functional Carbohydrates™ (RFCs™) supplied to laying hens on egg production and mortality under commercial conditions. Presented at 2019 International Poultry Scientific Forum; B311.

7 Data from commercial turkey farm. Data on file. 2019.

8 Composite data from three commercial farms. Data on file. 2019.

9 Lavergne, et al. PSA Abstract #204. 2019.

10 Jalukar, et al. IPSF Poster #P289. 2020.

11 Huff, et al. The effects of yeast feed supplementation on turkey performance and pathogen colonization in a transport stress/*Escherichia coli* challenge. *Poultry Science* 2013;92:655-662.

12 Adapted from a study done at a private Poultry Research Center. Data on file, 2020.