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BacPack® Q3+1: A multi-tool choice for enteric stress mitigation in turkeys

Key Points:

- Synbiotics combine probiotics and prebiotics
- Turkey brooding period and synbiotics have something in common, they can make a difference
- Enteric stress is common in turkey production and can significantly hinder growth and efficiency
- BacPack® Q3+1 is a combination of multi-Bacillus strain probiotic and pure yeast cell wall (YCW)
- Feeding BacPack® Q3+1 during the first 6 weeks can mitigate enteric stress in turkeys

Turkey production continues to seek effective alternatives to antibiotics

Under commercial conditions, turkeys can experience a variety of microbial and environmental stress. The effects of such challenges can very often be highly consequential, particularly during the critical six-week brooding period. In the absence of antibiotics, the turkey industry has carefully evaluated and often adopted mitigating strategies to minimize the impact of such threats on bird performance. Plans of action have included trying out alternative feed additives, including probiotics, prebiotics, and sometimes their combination (synbiotics). Feeding the right type and source of a particular synbiotic can be not only effective but also profitable. In a way, both the first 6 weeks of production and synbiotics have something in common: they can make a difference.

BacPack® Q3+1 is a combination of select multi-strain *Bacillus*-based DFM and pure yeast cell wall

Probiotics are live microorganisms that convey one or several health benefits on the host animal. Similarly, but possibly differently, prebiotics are non-viable ingredients that confer a health benefit on the host animal. Synbiotics combine the gains of prebiotics and probiotics. The rationale behind such a combination is that it leads to synergistic effects via multiple and complementary modes of action. Serving as a nutrient for the probiotic was the original expected role for the prebiotic. We know now that there are prebiotics that do more for the host animal than simply support the growth of a probiotic. Research has shown that feeding synbiotics to poultry can result in significantly improved performance, the magnitude of which can be a function of variables, including the choice and effectiveness of the probiotic, the prebiotic, and the animal's rearing environment.

BacPack® Q3+1 is a combination of a select multi-strain *Bacillus*-based DFM and a pure cell wall from a strain of yeast *Saccharomyces cerevisiae*. When combined, the spore-forming DFM, mannan-oligosaccharides, and ß-glucans can work together synergistically via their complementary modes of action to convey growth and efficiency performance benefits to turkeys. Promotion of gut health, improvement of immune system responsiveness, inhibition of pathogens and competition against their intestinal colonization, and binding and excreting toxins and foodborne microbes are among the various mechanisms BacPack® Q3+1 can help turkeys optimize and balance their gut microbiota, thereby assist in reaching target production goals.

Synbiotic BacPack® Q3+1 benefits turkey's first and critical 6 weeks of production

Growth and efficiency performance of turkeys fed diets supplemented with a commercially recommended dose of BacPack® Q3+1 (1 Lb./ton feed) was evaluated in a 2-trial study. The focus of the project was on the first 6 weeks of the production cycle using Nicholas Select males, working under the premise that what starts well generally ends well. In order to create a level of enteric stress that simulates commercial conditions, poults were subjected to *Eimeria adenoides* and *Eimeria meleagrimitis* either orally or via feed.

In the first trial, turkey poults were allocated to three treatment groups and reared in battery cages from 1 to 28 days of age. With the exception of the negative control (no feed additive supplementation, no introduced enteric stress), the positive control (no additive supplementation) and the BacPack® Q3+1

fed birds received an oral dose of field *E. adenoides* and *E. meleagrimitis* oocysts on day 14 of age. Mash feed and water were provided ad libitum.

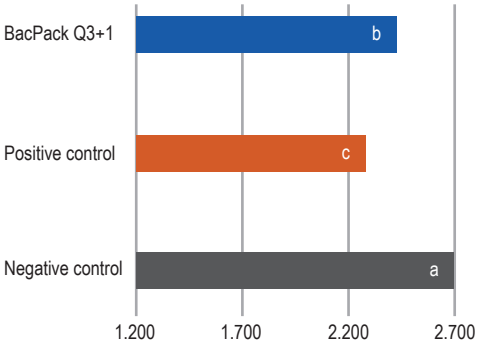

Figure A: Weight gain, 0-28 days of age, LB/bird. P≤0.05

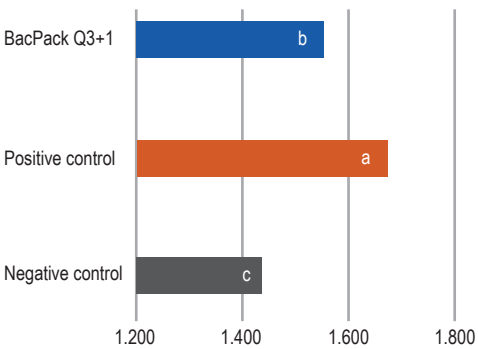

Figure B: Adj-FCR, 0-28 days of age. P≤0.05

The enteric stress significantly reduced weight gain by 15.4% (Figure A) and significantly increased FCR by 17.6% (Figure B). Feeding BacPack® Q3+1 significantly alleviated such effects by 34.4% and 50%, respectively. Birds fed BacPack® Q3+1 shed 55% less *E. adenoides* and *E. meleagrimitis* oocysts per gram of fecal material, compared to the un-supplemented birds (data not shown). Feed intake was not significantly different among treatments and there was no mortality during the trial (data not shown).

In the second trial, turkey poults were allocated to two treatment groups and raised in floor pens with new litter, using a 2-phase feeding program from 0 to 42 days of age. The test group's feed was supplemented with BacPack® Q3+1, whereas the control group feed contained no additive. Both groups of birds were exposed to a dose of field *E. adenoides* and *E. meleagrimitis* oocysts introduced into the feed on day 14 of age. Pelleted and crumbled feed and water were provided ad libitum.

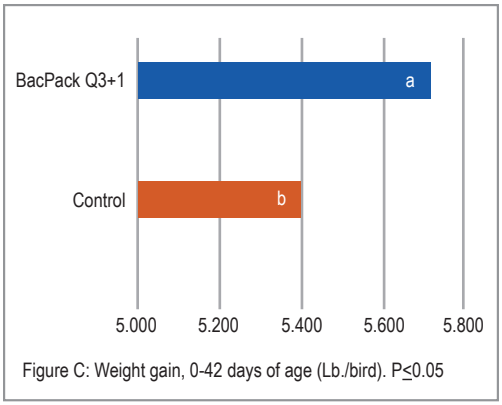

Figure C: Weight gain, 0-42 days of age (Lb./bird). P≤0.05

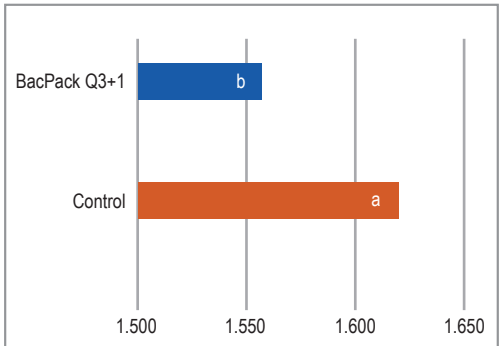

Figure D: Adj-FCR, 0-42 days of age. P≤0.05

Feeding BacPack® Q3+1 in turkeys significantly improved weight gain and FCR by 6.0% and 3.9%, respectively (Figures C & D). Shedding of *E. adenoides* and *E. meleagrimitis* oocysts was also reduced, suggesting a lower microbial stress and a healthier intestinal tract. There was no significant difference in feed intake or mortality between the two turkey groups.

BacPack® Q3+1, a multi-tool choice for enteric stress mitigation in turkeys

Both trials demonstrated that feeding BacPack® Q3+1 to turkey poults undergoing enteric stress for the first 42 days of life significantly improved weight gain and feed conversion. Such performance enhancements can be attributed to gut health promoting effects as well as reduction of intestinal damage caused by pathogens and their toxins. The use of BacPack® Q3+1 can be high potential multi-tool in one package to assist young turkeys overcome enteric stresses incurred during the brooding period and set the birds up for better performance later in the growout phase.

Intestinal Integrity®

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