

Digesta Viscosity Benefits

| TRT                          | cP <sup>1</sup>   |
|------------------------------|-------------------|
| Positive Control             | 2.84 <sup>b</sup> |
| Negative Control             | 4.43 <sup>a</sup> |
| NC w/ Enspira+ & a 6-phytase | 2.84 <sup>b</sup> |
| NC w/ Enspira+ Phytase       | 2.73 <sup>b</sup> |
| Pr > F(Model)                | 0.025             |

<sup>1</sup>cP, Centipoise; Total tract obtained from 5 randomly selected 42 d old birds per treatment

ABOUT UNITED ANIMAL HEALTH

Scientifically Better

United Animal Health started as a regional swine nutrition company in 1956, but our aspirations were always bigger. We believed that with a commitment to providing the best answer to protein producers, we could expand to serve all species of protein producers around the globe. Over the last 65+ years, we've transformed into a multinational ag-biosciences enterprise. We are innovators of animal science and we strive to impact the health of animals using the least amount of resources. We offer scientifically better solutions that are planet responsible.

Guided by Science. Proven with Research.

We work to discover and innovate solutions for animal producers that are tested extensively to prove consistency before they go to market. We believe that hope is not a strategy, but good science is. We engineer the most profitable animal solutions on and for the planet through scientific research and animal centered design.

All statements are based on independent trials conducted by or in conjunction with United Animal Health.



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ARE YOU GETTING THE FULL POTENTIAL OUT OF YOUR COMBINATION NSPASE AND PHYTASE PRODUCT?

The New Enhanced Corn-SBM Based Diets Combination Product



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The Problem

The presence of non-starch polysaccharides (NSPs) in feedstuffs used to formulate commercial poultry diets can result in reduced performance due to their antinutritional nature.

NSPs are not well digested by poultry as they lack endogenous enzymes necessary to break down the linkages of complex polysaccharides present in plant-derived feedstuffs.

Feeding exogenous carbohydrase enzymes may reduce or eliminate the negative effects observed by the presence of NSPs. However, it is not just as simple as adding a single exogenous enzyme to the diet. A complex array of enzymes are needed such as xylanase, cellulase, β-glucanase, mannanase, and even arabinoxylan (AX) debranching enzymes to unlock the full nutritional potential of feedstuffs.

Exogenous phytase addition to the diet is critical to ensure the release of P from Phytate, the plant storage form of P, known to have considerable anti-nutritive effect due to its potent-binding activity. Phytase in poultry diets can improve the digestibility of P, Ca, amino acids and energy, as well as reduce the negative environmental impact of inorganic P excretion.

What Is Enspira+ Phytase?

Enspira+ Phytase is a diverse & synergistic mixture of a phytase & multi-carbohydrase enzymes containing:

- Multi-carbohydrases from *Aspergillus* & *Trichoderma*
- Contains significant levels of cellulase, β-glucanase, β-mannanase, α-galactosidase, amylase, & protease activities
- Multiple xylanase strains (13)
- Several key AX debranching enzymes (important for corn- based diets)
- 6-phytase

What does Enspira+ Phytase do?

Through its mode of action, Enspira+ releases the nutritional value locked within NSPs, consistently providing more nutrients to the birds. This allows for the reduction in costly added fat to the diet and the flexibility to use lower-cost ingredients.

Additionally, the debranching enzymes unlock the trapped proteins, minerals, etc., bound in the AX backbone and release prebiotic xylose oligosaccharides, which can promote *Bifidobacteria* and *Lactobacillus* growth.

The benefits of adding a phytase to poultry diets are well documented. The phytase can gain access to the phytic acid faster with the addition of Enspira+, since the enzymes in Enspira+ are releasing the phytic acid bound via the cage effect.

Enspira+ Phytase Energy Calculator  
(1000 kg of Complete Feed)

|                | Estimated Energy Release (kcal/kg) |
|----------------|------------------------------------|
| Broilers       | +110                               |
| Layers/Pullets | +95                                |

Enspira+ Phytase Broiler Trial at Poultry Research Partners (Athens, GA)

- Corn/SBM basal diets with 2.5% DDGS
- Treatments (10 reps per treatment with 40 birds per pen)
  - Positive Control (PC): No energy reduction with 6-phytase (1000 FTU/kg)
  - Negative Control (NC): -125 kcal/kg with 6-phytase (1000 FTU/kg)
  - NC with Enspira+ (125 ppm) with 6-phytase (1000 FTU/kg)
  - NC with Enspira+ Phytase (100 ppm, phytase inclusion at 1000 FTU/kg)

Broiler Performance

| Treatment                    | Avg Weight (kg) | FCR (mort. adj.)   | FCR (BW adj.) <sup>1</sup> |
|------------------------------|-----------------|--------------------|----------------------------|
| Positive Control             | 2.89            | 1.545 <sup>b</sup> | 1.553 <sup>b</sup>         |
| Negative Control             | 2.80            | 1.615 <sup>a</sup> | 1.637 <sup>a</sup>         |
| NC w/ Enspira+ & a 6-phytase | 2.86            | 1.542 <sup>b</sup> | 1.554 <sup>b</sup>         |
| NC w/ Enspira+ Phytase       | 2.86            | 1.551 <sup>b</sup> | 1.564 <sup>b</sup>         |
| Pr > F(Model)                | 0.230           | <0.001             | <0.001                     |

<sup>1</sup>FCR adjusted to 2.94 kg

Carcass Yield

| Treatment                    | Live Wt (kg) | Breast % | Wings % | Leg % | Chilled WOG % <sup>1</sup> |
|------------------------------|--------------|----------|---------|-------|----------------------------|
| Positive Control             | 2.89         | 21.62    | 8.45    | 23.60 | 76.98                      |
| Negative Control             | 2.86         | 21.15    | 8.57    | 23.76 | 76.52                      |
| NC w/ Enspira+ & a 6-phytase | 2.85         | 22.00    | 8.47    | 23.30 | 76.67                      |
| NC w/ Enspira+ Phytase       | 2.90         | 21.91    | 8.66    | 23.65 | 77.18                      |
| Pr > F(Model)                | 0.694        | 0.111    | 0.159   | 0.186 | 0.445                      |

<sup>1</sup>WOG – without giblets weight, no neck & hock carcass

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