Effect of a novel *E. coli* 6 phytase on broiler performance, bone ash and ileal digestibility of phytate, phosphorus and protein at levels up to 1000 FTU/kg

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Summary

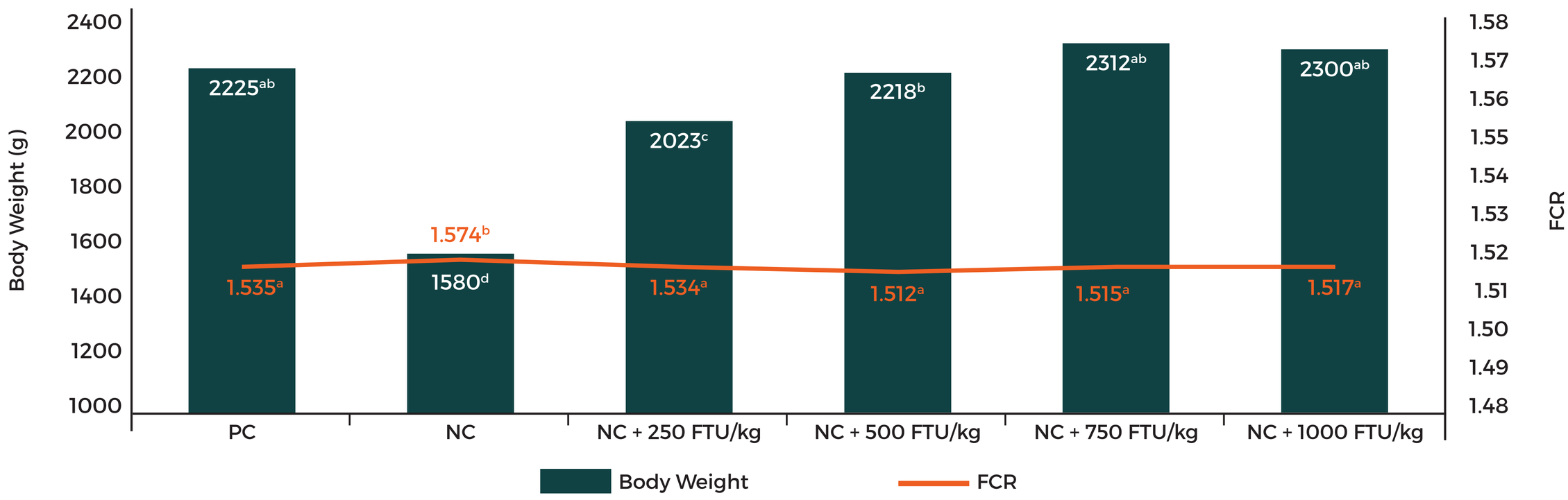
In a broiler study, increasing levels of OptiPhos® Plus led to increased degradation of phytate-P, leading to an increase in available P by 1.00, 1.12, 1.54 and 1.53 g/kg feed at 250, 500, 750 and 1000 FTU/kg, respectively. Protein digestibility is enhanced up to 5 % by increasing levels of OptiPhos® Plus. This equals 10 g protein per kg feed savings assuming a feed protein level of 200 g/kg.

Method

- 1666 male Ross 308 broilers distributed over 98 pens
- Feeds (pelleted)
  - Starter (d 0-5): 21.5 % CP; 1.1 % dig. Lys; 0.90 % Ca; 0.45 % aP
  - Grower (d 5-21): 20.5 % CP; 1.02 % dig. Lys; 0.80 % Ca; 0.32 % aP
  - Finisher (d 21-35): 19.4 % CP; 0.095 % dig. Lys; 0.75 % Ca; 0.30 % aP
- Treatments
  - Positive control feed (PC) feed to all treatments
  - A negative control (NC) grower and finisher feed produced by reducing 0.15 % and 0.15 % Ca and 0.17 % and 0.15 % aP from grower and finisher, respectively.
  - NC + OptiPhos® Plus at 250, 500, 750 and 1000 FTU/kg
- Measurements: technical result, tibia ash (day 21) and protein digestibility (day 35).

Results

- The body weight and feed conversion for the NC were 1.58 kg and 1.57, respectively.
- Adding phytase increased the BW and FCR in a dose-responsive way reaching 2.30 kg and 1.52 respectively at 35 days (1000 FTU/kg) while the PC reached 2.25 kg BW and a FCR of 1.54.
- Bone ash was increased from 36.9% to 45.9 % at 0 and 1000 FTU/kg while the PC reached 47.9 %.
- Protein digestibility in the PC and NC were 69.8 and 73.5 %, respectively, while protein digestibility increased to 78.9, 79.2, 77.8 and 77.6 % for 250, 500, 750 and 1000 FTU/kg OptiPhos® Plus, respectively.



([a-d] values of line or column followed by different letter are sign. different ($p < 0.05$))

Figure 1. Doses response of OptiPhos® Plus on performance

Table 1. Doses response of OptiPhos® Plus on bone ash and protein digestibility (%)

	Bone ash (%)	Protein digestibility (%)
PC	47.9[a]	73.5[b]
NC	36.9[e]	69.8[c]
NC + 250 FTU/kg	40.1[d]	78.9[a]
NC + 500 FTU/kg	42.8[c]	79.2[a]
NC + 750 FTU/kg	43.8[c]	77.8[a]
NC + 1000 FTU/kg	45.9[b]	77.6[a]

([a-e] values in a column with different superscripts are sign. different ($p < 0.05$))