



OptiPhos® Plus improves bone ash and P digestibility in piglets at 250 FTU/kg

Trial description

1 Set-up

- **Location:** ILVO, Belgium
- **Trial period:** April - May 2018
- **Animals:** 18 Ra-Se hybrid sow x Piétrain boar piglets (average live weight 8.6 kg) were housed individually and distributed over 3 treatments.
- **Feeds** (Table 1, corn/barley/wheat soy based; mash):
 - Positive control: 7.2 g/kg Ca and 3.5 g/kg dig. P
 - Negative control: 5.6 g/kg Ca and 2.3 g/kg Dig. P
- **Protocol:**
 - Piglets were fed *ad libitum* during the first 3 weeks (4-7 weeks of age) followed by an 11 day adaptation period, and then followed by a 5 day collection period. During this time, the amount of feed provided per animal was restricted to 800 g per day spread over 2 meals (2 times 400 g).
 - After the collection period, piglets were fed *ad libitum* during the remaining 6 days.

2 Treatments

- Positive control
- Negative control
- Negative control + OptiPhos® Plus at 250 FTU/kg

3 Measurements

- Technical performance
- Digestibility : in the collection period, faecal and urine samples of each piglet were collected during 5 consecutive days. Samples were pooled per piglet and analysed.
- Metacarpus ash: at the end of the trials the metacarpus IV was taken from the front feet of each piglet for Ca and P analysis.

Results

- End body weight for the positive control, the negative control and OptiPhos® Plus was 27.9, 26.8 and 27.2 kg, while feed conversion reached 1.44 and 1.46 and 1.45 respectively.
- Feeding the negative control feed decreased significantly the metacarpus ash and its Ca and P content. However adding OptiPhos® Plus at 250 FTU/kg counteracted this decrease and brought the values even above the positive control values (Table 2).
- Similarly OptiPhos® Plus at 250 FTU/kg counteracted the decrease in faecal P and Ca digestibility seen in the negative control (Table 3).
- Based on the bone ash results and the dig. P value measured, it can be calculated that 250 FTU OptiPhos® Plus equals 1.73 g/kg aP but only 0.4 g/kg Dig. P. The latter is due to the higher than expected P digestibility in the negative control feed.

Table 1. Feed composition and analysis

Ingredient (%)	Positive control	Negative control
Corn	27.9	29.2
Barley	25.0	25.0
Wheat	10.0	10.0
Toasted soybeans	12.0	12.0
Soybean meal	8.0	8.0
Vegetable fat	0.5	0.1
Beet molasses	3.0	3.0
Wheat gluten meal	2.0	2.0
Potato protein	0.88	0.66
Limestone	0.97	0.84
MCP	1.21	0.56
Others*	8.6	8.6
Nutrients (%)		
Crude protein	180	180
SID Lys	11.5	11.5
Ca	7.2	5.6
P	6.3	4.8
Dig. P	3.5	2.3
NE (Kcal/kg)	2345	2345

* Salt, Synthetic Amino Acids and vitamin/mineral premix

Table 2. Effect of OptiPhos® Plus at 250 FTU/kg on metacarpus ash, P and Ca (%)

	Ash	P	Ca
Positive control	34.8 ^b	6.3 ^b	13.3 ^b
Negative control	31.7 ^a	5.6 ^a	11.9 ^a
Negative control + 250 FTU/kg	35.5 ^b	6.4 ^b	13.5 ^b

a,b values in a column with a different superscript are significantly different at P<0.05

Table 3. Effect of OptiPhos® Plus at 250 FTU/kg on digestibility of P and Ca (%)

	P	Ca
Positive control	62.1 ^b	62.8
Negative control	54.8 ^a	62.8
Negative control + 250 FTU/kg	63.0 ^b	67.6

a,b values in a column with a different superscript are significantly different at P<0.05

Conclusion

- OptiPhos® Plus added at 250 FTU/kg to the negative control brought performance, metacarpus ash and P and Ca digestibility even above the results obtained by the positive control piglets.
- Based on the bone ash results and the dig. P value measured, it can be calculated that 250 OptiPhos® Plus equals 1.73 g/kg aP but only 0.4 g/kg Dig. P. The latter is due to the higher than expected P digestibility in the negative control feed.