The highest measured digestibility level of a 21 feed phosphate

PHOSFEED® 21, a new bio digestibility record

Recent study performed by Wageningen Livestock Research Center confirms that PHOSFEED® 21 has 90,3% digestibility level, the highest ever measured for a 21 feed phosphate, and comparable to the average values of 22,7 feed phosphates.
PHOSFEED® 21 is the most efficient choice of phosphate source for your livestock. P digestibility of PHOSFEED® 21 means that your formula requires lower quantities of phosphate feeds.
In addition, the environmental impact is reduced thanks to lower phosphorus content in the livestock wastes and thus in water resources.

In 2019, **Wageningen Livestock Research Center** performed a broiler study on the pre-caecal phosphorus (P) and calcium (Ca) absorbability where 9 different phosphate sources were determined. The experiment was conducted at the research facility of Wageningen Bioveterinary Research, **Runderweg,** Lelystad, in the Netherlands.
During this study, five 22, 7 feed phosphates ($Ca(H_2PO_4)_2.H_2O$), three 21 feed phosphates ($CaHPO_4.Ca(H_2PO_4)_2.H_2O$) and one meat and bone meal (MBM) from porcine origin were evaluated. All tested phosphate sources are commercially available products.

Material and Methods

The study protocol was in line with the World's Poultry Science Association (WPSA) protocol for determination of P availability in poultry based on pre-caecal absorbability. From day 14 onwards, the broilers received the experimental diets, which were randomly assigned to the floor pens. Ten experimental diets were used: One basal diet with a low P level and nine diets with the aforementioned phosphate sources added to the basal diet.

The nine sources of phosphates tested were: OCP Phosfeed® 21, 22.7 product samples (3 to 7) , 21 product samples (8 and 9) and meat and bone meal from porcine origin (sample 10)"
Competition samples were collected from the 5 continents.

Table 1 : Analysed* and calculated (in parentheses) nutrient of diets (g/kg)

Diet	Type of P source	Dry matter (g/kg)	Phosphorus (g/kg)	Calcium (g/kg)	Ca:P
1	experimental diet	893	1.44 (1.4)	1.74 (1.9)	1.21 (1.3)
2	OCP PHOSFEED® 21	894	2.92 (2.9)	3.37 (3.8)	1.15 (1.3)
3	22,7 comp1	899	2.90 (2.9)	3.42 (3.8)	1.18 (1.3)
4	22,7 comp 2	892	2.95 (2.9)	3.61 (3.8)	1.22 (1.3)
5	22,7 Comp 3	899	3.03 (2.9)	3.38 (3.8)	1.12 (1.3)
6	22,7 comp 4	892	2.95 (2.9)	3.41 (3.8)	1.15 (1.3)
7	22,7 Comp 5	894	2.96 (2.9)	3.52 (3.8)	1.19 (1.3)
8	21 comp 1	897	3.01 (2.9)	3.64 (3.8)	1.21 (1.3)
9	21 comp 2	896	2.81 (2.9)	3.43 (3.8)	1.22 (1.3)
10	MBM	894	2.85 (2.9)	3.73 (4.0)	1.31 (1.4)

Comp: competitive sample product
**All values are based on analysis in duplicate*
22,7 comp = monocalcium phosphate
21 comp = dihydrate dicalcium phosphate
MBM = meat and bone meal (porcine)

Each dietary treatment was replicated six times, except for the basal treatment, which was replicated twelve times. Separated into two groups over 23 and 24 days of age, all birds were sedated and subsequently euthanized by an intravenous injection of T61, and the content of the terminal part of the ileum (approx. 20 cm) was sampled from all birds in a pen. Subsequently, the left tibia bone was collected from three birds per pen. Pre-caecal P and Ca absorbability were determined using titanium dioxide as an indigestible marker.

In addition to the absorbability, ash, calcium and phosphorus contents of the tibia bones were tested. The growth performance of the birds was also determined by the study.

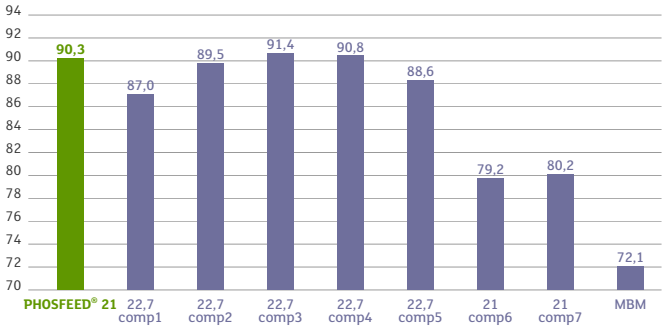
RESULTS

1 - PHOSFEED® digestibility level compared to other phosphate sources

The study demonstrated that the 22,7 feed phosphate had the highest P absorbability (89.5%), followed by 21 feed phosphate (83.3%) and the MBM (72.1%). The estimated phosphate absorbability of MBM is significantly lower than the phosphate absorbability of the other phosphate sources tested (cf. Figure 1).

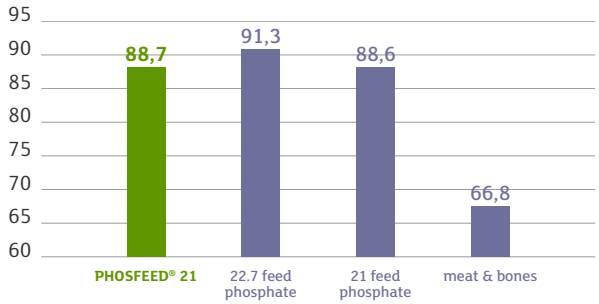
The estimated phosphate absorbability of Phosfeed® 21 is 90.3%. Phosfeed® 21 phosphate absorbability is significantly higher than the phosphate absorbability of the other 21 feed phosphate products tested, 21 Comp1 (79.2%) and Comp 2 (80.2%) (Statistically significant difference). Furthermore, the P-absorbability of Phosfeed® 21 is comparable to that of the 22,7 feed phosphates (cf. Figure 1).

Figure 1: Pre-caecal phosphorous absorbability (%) of the different P-sources



Estimated pre-caecal Ca absorbability was on average 91.3% for the 22,7 feed phosphate, 88.6% for the 21 feed phosphate and 66.8% for the meat and bone meal (cf. Figure 2).

Figure 2: Ca absorbability of phosphate sources



2- Advantages of a highly digestible IFP product on growth performance

Birds that received the basal diet, deficient in P and Ca content, had deteriorated growth performance compared to birds that received the supplemented diets as reflected by a lower feed intake, lower body weight gain (BWG), and a higher feed conversion ratio (FCR). Supplementation of each of the phosphate sources to the basal diet improved the growth performance.
No differences in body weight (BW), feed conversion ration (FCR) were observed within the 22,7 and 21 feed phosphate. However, BWG of broilers fed with basic diet + meat and bone meal was slightly lower compared to broilers fed with the 22,7 feed phosphate or 21 supplemented diets. Broilers fed with the MBM supplemented diet had a significant higher FCR compared to broilers fed with the 21 or 22,7 feed phosphate supplemented diets. (cf. Figures 3 & 4)

Figure 3: BWG (g) over the experimental period(14 to 23 days age)

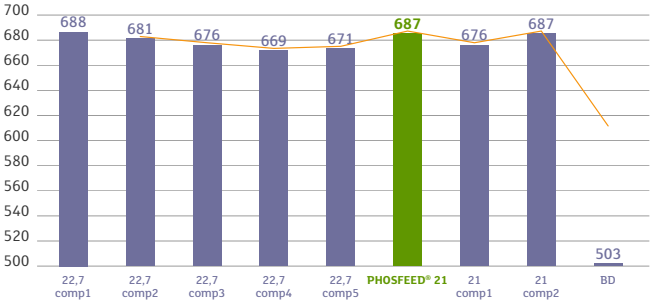
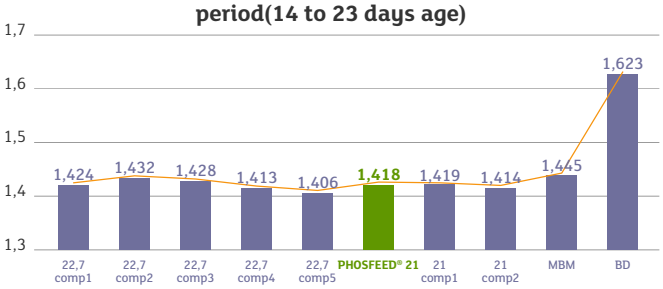


Figure 4: FCR over the experimental period(14 to 23 days age)



FCR = Feed conversion ratio

About OCP and PHOSFEED®

OCP is a global leader in the phosphate industry with 100 years of experience in harnessing the power of natural resources to feed the world sustainably.

Phosfeed® is OCP's complete range of inorganic feed phosphate products, manufactured for livestock, out of the finest selected raw materials at OCP, Morocco.

Phosfeed®, a fully integrated production, has been serving its increasing and loyal customer base with sustainable supply since 2012.

Phosfeed® products fulfill the highest quality standards for an optimal feeding experience. They are GMP+ and ISO 22000 certified.