CAPMAG ZN

TECHNICAL BULLETIN #4

SUPPLEMENTATION IN POST WEANING PIGLETS TO IMPROVE GROWTH PERFORMANCE AND GUT HEALTH

INTRODUCTION

The gut plays a crucial role in digesting and absorbing nutrients. It is also actively involved in the development and regulation of the host immunity (Campbell et al., 2013). An early weaning, typically from 21 or 28 days of age, impairs the piglet gastrointestinal tract. This, combined with other challenges such as the separation from the sow, mixing piglets from different litters, results in a weakening of immune fitness.

Interest has grown in new sources of Zn that may have superior bioavailability to ZnO or $ZnSO_4$, sources commonly used for nutritional purposes (Schlegel et al., 2010). Indeed, the study of (Diao et al., 2021) shows the interest of different forms of zinc to improve intestinal integrity: better total tract digestibility, higher villus height and better villus height:crypt depth ratio, better expression of some specific zinc transporters, modulation of gut microbiota to influence the development of good bacteria such as Lactobacilli. A zinc source with higher bioavailability could potentially boost piglet growth during the crucial post-weaning phase by improving gut health.

MATERIAL & METHODS

This trial was conducted on 192 piglets, weaned at 26-28 days, in Ghent University (2023). The aim of the project was to assess on the effect of **CAPMAG® Zn** to improve intestinal integrity and health compared to a $ZnSO_4$ (CON) at 120 ppm Zn and a Zn-Proteinate (ZnProt) at 50 ppm Zn + 70 ppm Zn from $ZnSO_4$, as commonly used by premix stakeholders. **CAPMAG® Zn** was supplemented at 120 ppm Zn. Growth performance was assessed from weaning (D0) until the end of the post-weaning phase (D42). At 14 days post-weaning, feces and intestinal segments have been sampled for digestibility and gut health measurements.

RESULTS & DISCUSSION

Piglet growth performance are illustrated in the Table 1 below. Animals receiving **CAPMAG® Zn** had significant lower FCR in comparison to other groups. Other performance parameters were not altered.

Table 1 : Growth performances of weaning piglets

	$ZnSO_4$	$ZnSO_4$ + ZnProt	CapMag® Zn	p-value
Initial weight (kg)	7.17	7.18	7.18	*0.66*
Final weight (kg)	23.6	23.3	23.3	*0.825*
ADG (g/d)	391	384	383	*0.813*
ADFI (g/d)	520	507	495	*0.292*
FCR 0-42d PW	1.39 a	1.38 ab	1.35 b	*0.022*

CAPMAG® Zn allows a decrease of the global post-weaning FCR (Table 1).

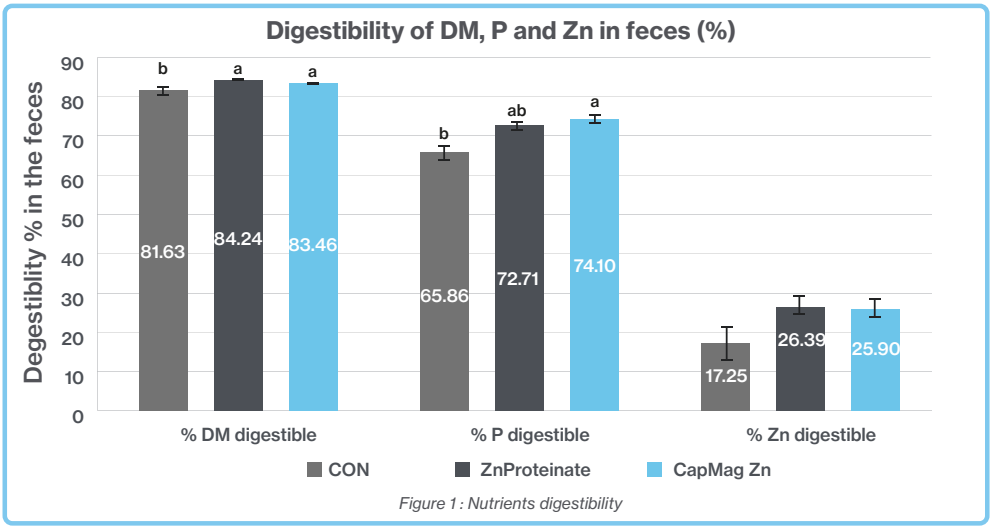

Figure 1 : Nutrients digestibility

Improvement in DM and P digestibility (Figure 1) was noticed indicating that **CAPMAG® Zn** helped to better digest the major nutrients from the diet. The improved digestibility of phosphorus (P) supported the theory that protected zinc (Zn) from **CAPMAG® Zn** prevented unwanted complexation with phytates, allowing phytase to conserve energy by hydrolyzing phytate complexes instead of internal phosphorus (P) within phytic acid.

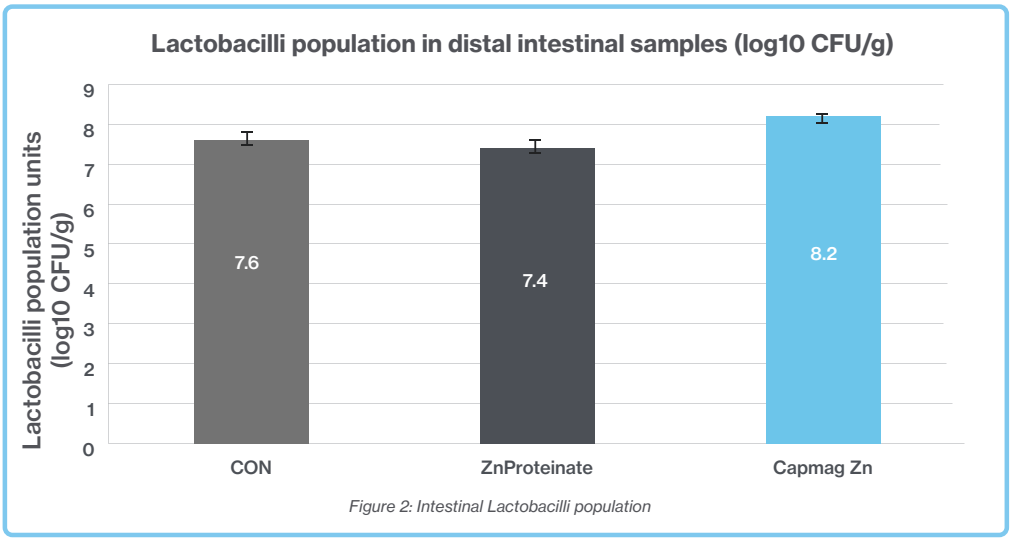

Figure 2: Intestinal Lactobacilli population

A tendency to modulate the distal intestinal microbiota in Lactobacilli favor with **CAPMAG® Zn** (Figure 2) was noticed. These bacteria are involved in gut health, and their presence is beneficial to avoid pathogens.

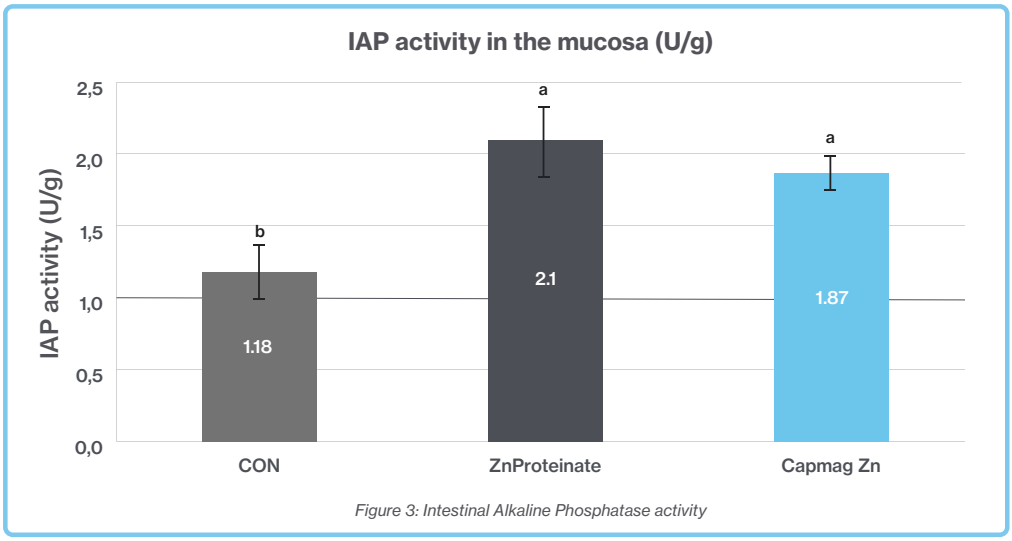

Figure 3: Intestinal Alkaline Phosphatase activity

CONCLUSION

Piglet fed **CAPMAG® Zn** during the whole post-weaning phase had better performance in comparison to piglets fed other sources of Zn ($ZnSO_4$ or Zn-Proteinate).

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