

Over the past 20 years, APC, Inc. has developed and refined techniques associated with the manufacturing process to ensure that spray-dried plasma proteins are biologically safe and functional for use in nutritional supplements for swine, companion animals, ruminants, poultry, and aquaculture. Our dedication to research has led to many new discoveries and scientific publications as to how plasma proteins function to benefit animals in various applications.

APC's Spray-Dried Plasma (SDP) can provide a consistent growth performance, replacing preventive medication in swine diets.

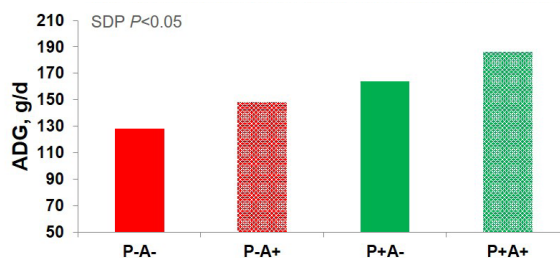
There is a worldwide tendency to restrict the use of antibiotics (AB) in swine diets due to the consumer fears of developing microbial resistances that could be transferred to pathogenic bacteria in humans. As acknowledged by experts, the success to find an effective AB substitute is complex due to factors associated with the post-weaning period and the lack of knowledge of the mechanisms of action and effective doses of the alternative substances.

Peer reviewed research has shown that post-weaning piglets fed with spray-dried plasma (SDP) in their diets perform similar to pigs fed preventive medicated control diets supplemented with AB, under commercial and experimental enteric challenge conditions

### SDP can replace preventive medication with AB under challenge conditions

Several authors have compared the use of SDP in weaning diets respect to different AB under experimental challenge conditions with pathogenic organisms. A comparison between SDP and a combination of colistin and amoxicillin in piglets challenged with *E. coli* K88, showed that SDP provides similar growth performance to the AB and while both products reduced the concentration of *E. coli* K88-specific IgA, only SDP reduced the expression of proinflammatory cytokines at intestinal level, which points to a broader set of benefits during these early growth phases.

SDP vs Fish Meal ± AB in Piglets Challenged with *E. coli* K88



P: Plasma; A: Antibiotic;  $p < 0.05$ . Statistical significance of improvement over controls without SDP

Bosi et al., 2004. Spray-dried plasma improves growth performance and reduces inflammatory status of weaned pigs challenged with enterotoxigenic *Escherichia coli* K88. *J Anim Sci.* 82:1764-72

### SDP Improved Growth Performance in diets with or without AB

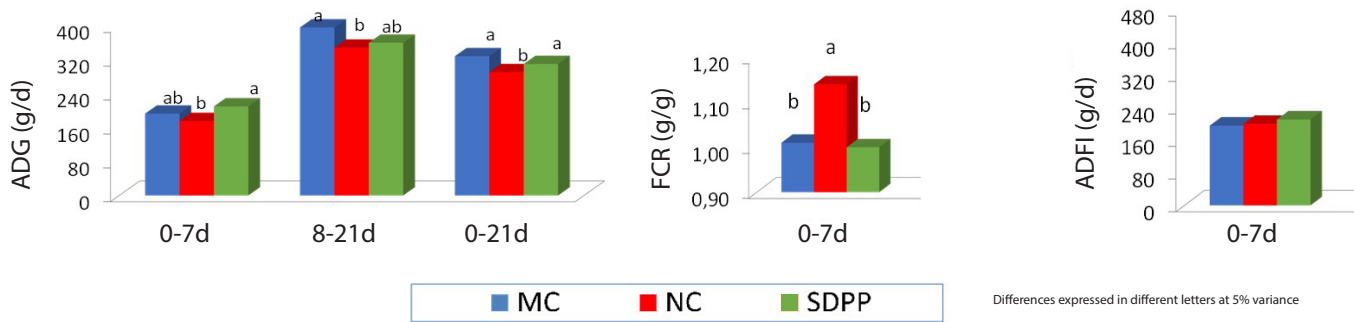
In a meta-analysis of different published studies, it was observed that SDP improved the average daily gain (ADG), average daily feed intake (ADFI) and Feed to Gain ratio (FCR) in the presence or absence of antibiotics in the diet.

Antibiotics in the diet	0-14 days Post-Weaning			
	n	Δ ADG (g/d)	Δ ADFI (g/d)	Δ FCR (g/g)
YES	110	+36*	+43*	-0.02
NO	33	+41*	+32*	-0.34*

n: Number of trials\*;  $p < 0.05$ . Statistical significance of improvement over controls without SDP.

Torrallardona D. 2010. Spray dried animal plasma as an alternative to antibiotics in weaning pigs-A review. *Asian-Aust. J. Anim. Sci.* 23:131-148.

In a commercial setting, comparing piglets fed plasma, vs. piglets fed a combination of antibiotics; colistin, lincomycin and spectinomycin, and others; ADG and F:G ratios were improved by the use of plasma, similarly to the use of the medicated feeds, indicating that the replacement of preventive medication by plasma can be efficient and effective in normal commercial settings.



MC = medicated diet, no plasma, NC = non-medicated diet, no plasma, SDPP = 5% plasma, non-medicated.

Polo et al., 2014 Evaluation of spray dried porcine plasma as an alternative to medicated feed in weaning diets, JRp, 2014

### Bottom line:

- Studies show that SDP can replace preventive medicated feed with AB, maintaining similar growth performances.
- SDP works independently or even synergically on the presence or absence of AB in post-weaning diets.
- SDP shows to be effective replacing AB under enteric challenge conditions.
- SDP is a natural ingredient not developing any microbial resistance.