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# New perspectives about functional proteins for pig production

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**P**ig production needs to permanently evolve and adapt, like any other business. Worldwide health institutions, like The National Antimicrobial Resistance Monitoring System for Enteric Bacteria (NARMS) or the European Commission, are increasingly concerned about human antibiotic resistance.

One of the most focused efforts is on developing strategies that help to decrease the use of antimicrobials in animals. At the same time, consumer associations are increasing the animal welfare pressure worldwide.

Those two lines will be key points in the coming years and producers should start thinking about what answers to give. From this viewpoint, the use of new feeding strategies and the transparency towards an increasing number of feed additives and commercial strategies is needed.

## Spray Dried Porcine Plasma

The use of functional proteins like Spray Dried Porcine Plasma (SDPP) is one powerful tool regarding the objective of improving piglet welfare and reducing the use of antimicrobials in swine production.

Spray dried porcine plasma (SDPP) is a common feed ingredient used in nursery diets, produced from blood of healthy pigs slaughtered in abattoirs under the control of official veterinarians.

Moreover, SDPP contains high levels of neutralizing antibodies, contributing to the biosafety of this ingredient. The plasma fraction obtained after the centrifugation of blood, is concentrated by evaporation or membrane filtration, then finally spray dried at high pressure and temperatures over 80°C throughout its substance.

The product is normally included at a rate of 4-8% during the first two weeks into the post-weaning diet and also during the creep feeding period before weaning.

According to three independent meta-analyses done by Coffey and Cromwell (2001), van Dijk et al (2001) and more recently by Torrallardona (2010), the



inclusion of Spray Dried Plasma (SDP) in the post-weaning diets improves the Average Daily Gain (ADG) by more than 20% and the Average Daily Feed Intake (ADFI) by a similar percentage, resulting in weaned piglets that start to adapt to the following post-weaning phases easier and in a much better health condition.

The use of functional proteins like SDPP is from a scientific perspective a confirmed support to overcome a very sensitive stage in pig life.

There are several studies comparing directly the use of SDP against antibiotics demonstrating that SDP resulted in superior or equivalent performance. There are also strong scientific data that have shown better results for SDPP when compared to other antimicrobials' alternative products.

As indicated in the conclusion of a publication from Lallès et al. (2009) between the top five European pig research institutes/universities, diet supplementation with SDP is probably the best way to prevent post-weaning gut disorders and we can also say that it is the best way to avoid the development of bacteria resistance.

The mode of action was hypothesised by Torrallardona (2010) as an energy saver by the immune system during the stressful post-weaning phase.

A reduction in the production of pro-inflammatory cytokines was shown by Bosi (2004) when piglets were challenged with *E. coli*. The bioactive proteins' combined action, IgG and glycoproteins, seems to impede the adhesion of bacteria to enterocytes. This takes to a lower activation of the immune system improving the general

condition and therefore global welfare during growth.

This is strongly supported by the work of Touchette et al. (2002) where they were able to show a lower immune system activation in piglets fed SDPP than in those with no SDPP.

Regarding emerging diseases SDPP has also recently been shown to avoid the adhesion of *E. coli* in challenged piglets with porcine epidemic diarrhoea virus (PEDv).

The same work has also reported a reduction in the faecal PEDv shedding in piglets consuming SDPP, which could, in the author's opinion, contribute to lower environmental loads and lower transmission rates of the virus. Positive effects have also been observed in other viral diseases.

Messier et al., (2007) observed a reduction in cumulative mortality in a farm with high prevalence of circovirus over the whole growing-finishing period (SDPP inclusion in the initial weeks).

Additionally, Campbell et al. (2011) observed a reduction in lung lesions when SDPP was used in piglets challenged with swine influenza virus.

Spray dried porcine plasma is a natural and safe feed ingredient that improves the intestinal condition leading to a better health status. The improvements in performance make piglets more resistant to diseases and also improves profitability. This is coherent with the axes of welfare and antibiotic use reduction. ■

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*References are available from the author on request*