

Protein quality in diets devoid of blood products

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The ongoing crisis with porcine epidemic diarrhea virus (PEDV) in the U.S. has brought several nutritionists against the dilemma of removing blood products from their piglet formulas. I have already written extensively on the need to [find a suitable source of immunoglobulins](#) if animal plasma is to be replaced effectively, but I keep receiving questions regarding protein quality.

Indeed, blood products, and especially animal plasma that is spray-dried, are of exceptionally high protein digestibility. And, as a matter of fact, research has already demonstrated that feed intake in weaned piglets is related linearly to overall feed digestibility. Thus, when replacing one highly digestible ingredient with an alternative one, we should not reduce digestibility; in this case, protein being of major concern as animal plasma contains about 80 percent of it.

In my experiences, working with diets free or with minimal amounts of animal plasma (and any other blood products), the following ingredients appear to work very effectively in keeping dietary protein digestibility at the highest possible levels.

1. Low-temperature fish meal (of the highest quality only)
2. Milk protein (casein, which is very expensive, but whey protein concentrate is also excellent)
3. Purified vegetable proteins (soy protein, wheat gluten, pea protein, potato protein) -- all devoid of anti nutritional factors, of course
4. Purified amino acids (assuming L-Lysine-HCl does not exceed 0.5 percent in the final feed) and total crude protein concentration is not decreased by 2 percent points by the removal of animal blood products

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