Benefits of rapid intestinal hydrolysation and absorption of protein

If you are working with piglets then you know that protein digestibility is important, but did you know that the absorption speed of proteins is essential too?

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When it comes to feed, proteins that are hydrolysed and absorbed fast in the intestine pose great benefits for your pigs.

Research shows that such proteins (fast hydrolysis and absorption) can improve the performance and feed efficiency of the animals. If your feed contains fast hydrolysable and absorbable proteins, your piglets can better utilise the feed. This means that you will be able to increase your production of, for instance, meat without increasing the protein content of the feed. A fast absorption will reduce the risk of protein fermentation in the hind gut and will contribute to lowering nitrogen excretion into the environment.

Soy protein from Hamlet Protein is hydrolysed faster than other soy-based proteins which makes it a beneficial and efficient protein source for your pigs. Let us have a closer look at how protein kinetics – the speed by which protein is hydrolysed – can benefit your animals and you as a farmer.

What is protein kinetics?

Protein kinetics describes the speed by which proteins are hydrolysed and absorbed. The concept is important as both the speed and where in the intestine these processes are taking place matters for the subsequent availability and utilisation in the animal. Traditionally, a protein source is evaluated based on its protein content and digestibility, however, digestibility does not provide the full picture. Protein digestibility only considers how much protein is left at the end of the small intestine. This value does therefore not provide any indications of how fast or where in the intestine the protein is absorbed.

Two protein sources can thus have the same value for protein digestibility but vary considerably in how fast the protein is digested. This is decisive for the total utilisation of protein. The faster the protein is hydrolysed, the faster it is absorbed and the better it is utilised in the animal. By also considering protein kinetics we move from only looking at how much protein is being absorbed to also be looking at how fast it is absorbed.

Why are fast absorbable proteins beneficial?

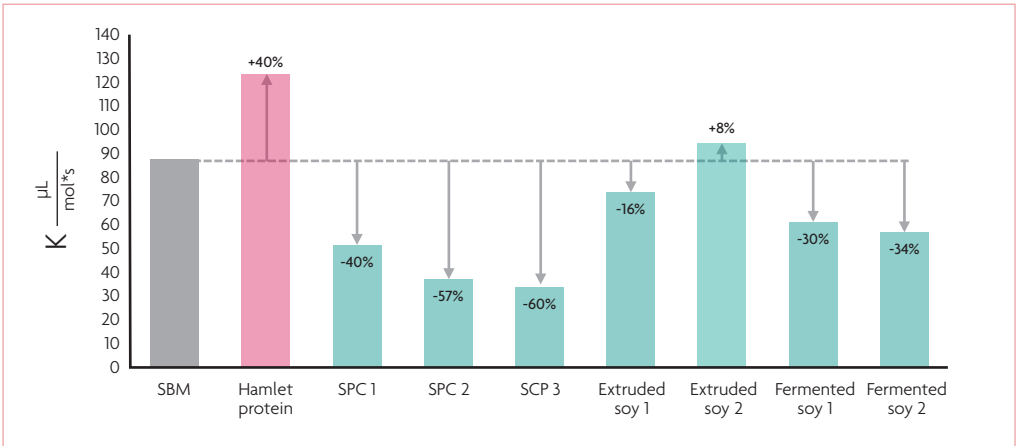
1. Faster protein hydrolysis early in the small intestine: Peptides are hydrolysed throughout the small intestine by proteases, and fast protein hydrolysis means that more peptides are hydrolysed into amino acids in the first part of the small intestine.

2. Faster amino acid absorption into the blood stream: The earlier in the small intestine the amino acids are absorbed, the better synchronisation with energy released from starch digestion.

3. Increased protein availability for tissues, milk and organs: The better synchronisation in absorption speed for all amino acid sources, the more of the protein is used for growth and building of tissues, milk and organs.

4. Improved protein utilisation and feed efficiency: Fast absorbable proteins contribute to a better utilisation of feed resulting in improved feed conversion ratio, less risk of protein fermentation in the hind gut and reduced excretion of nitrogen.

**Fig. 1. Speed of protein degradation measured by the hydrolysis constant* for seven different soy-based protein ingredients when incubated with proteolytic enzymes for 120 minutes. The higher the k-value, the faster the hydrolysis and thus absorption. ****k [µL/(mol*s); µL=microliter NaOH needed to keep pH at 8 during hydrolysis (acid is released) and s=seconds]*



Which protein ingredient to choose?

The new research from Hamlet Protein shows that protein from Hamlet Protein is hydrolysed faster than other soy-based protein ingredients (Fig. 1). The unique production process of Hamlet Protein using enzymatic treatment does not only effectively reduce the content of anti-nutritional factors but may also modify the protein in such a way that it becomes easier accessible for proteolytic enzymes, resulting in a very fast protein source.

By including Hamlet Protein in feed formulation, the speed of the feed's overall protein hydrolysis can be increased, which improves utilisation of the feed. This makes Hamlet Protein an advantageous protein source for you and your animals.

How do animals benefit from fast proteins?

Fast absorbable protein ingredients provide the following benefits for you as a farmer:

- Improved growth performance and FCR as the proteins will be utilised better within the pig.
- Reduced environmental impact as less non-used protein will be excreted as nitrogen.
- Less non-hydrolysed protein will reach the hindgut which reduces the risk of unwanted protein fermentation and growth of pathogens. ■