

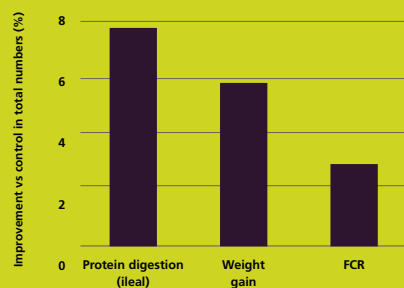
Alliance fights back as

Take two companies, 10 years of hard work, and a project that involved more than 100 employees and you get RONOZYME® ProAct – a game-changing enzymatic solution that makes chicken feed more digestible and broiler farming more profitable.



RONOZYME® ProAct unlocks the nutritional value of a large variety of proteins by complementing the activity of digestive enzymes, such as pepsin and pancreatic proteases, thereby releasing more peptides and free amino acids for uptake.

FIG. 1. BETTER WEIGHT GAIN, BETTER FEED CONVERSION



Trials show that RONOZYME® ProAct improves protein and energy digestibility significantly when added to diets containing low crude protein and correspondingly reduces essential amino acid levels. These results translate into significant improvements in weight gain and feed conversion ratio.

animal feed costs rise



"It all started when DSM identified a market segment in the animal feed industry that had great potential," remembers Lene Nonboe Andersen, Senior Science Manager and RONOZYME ProAct project leader at Novozymes. "They wanted to know if we could work together to find an enzymatic solution to improve digestion of vegetable proteins, particularly soy, in animal diets."

That was the spark which led to a project that would span a decade, ride out numerous highs and lows, and eventually help support an alliance that creates animal nutrition products unmatched by other companies in the industry today.

Looking back

"Prior to this project the animal feed industry had only disappointing experiences with proteases," says Joachim Pfeiffer, Director R&D Program Animal Nutrition & Health at DSM. "But with encouragement from our R&D counterparts at Novozymes, we decided that it was worth the effort to take a closer look at finding a protease that could work in animal feed applications."

In 1999 Novozymes began the big task of screening proteases to see if any of them might have a positive effect on the hydrolysis of vegetable proteins like soy.

"We soon discovered a unique protease that had great potential," says Lene Nonboe Andersen. "Following the discovery it took us years of hard work and close collaboration with DSM to develop the application and optimize production."

To make a decade-long story short, DSM and Novozymes pooled their significant expertise – Novozymes in enzyme screening, strain development, formulation, and production, DSM in animal nutrition, feed technology, and sales & marketing – to work on this new protease.

"There were a couple of times when the project almost died," says Joachim Pfeiffer. "There were times with bad luck, times with inconclusive results, and also times where we were a little bit too enthusiastic. But looking back

now, we really have to pay tribute to the people on both sides. Despite significant setbacks we always managed to get back on track. It was a great learning case for all of us involved."

And through this long process of trial and error, not only did an exceptional product finally emerge, but the alliance was revitalized as well. Since 2001 the two companies have been joined in a successful global alliance focused on improving and expanding their mutual product offerings.

"Working together with DSM on the development of RONOZYME ProAct is an amazing realization of our alliance," says Peter Christensen, Alliance Manager at Novozymes. "Novozymes and DSM colleagues from all functions, particularly R&D and Regulatory Affairs, and all over the world have been part of this development and together we have created a truly innovative solution that is sought after in the market. That is exactly what we envisioned with this alliance."

Reducing the costs

Farmers are under tremendous pressure these days. Higher feeding costs are reducing their profits and placing stress on the entire industry, but fortunately this new breakthrough feed solution gives farmers a way to actively combat these rising costs.

Trials have shown that RONOZYME ProAct enables broiler chickens to optimize their performance potential. RONOZYME ProAct improves protein digestibility when added to diets containing low crude protein and correspondingly reduces essential amino acid levels. This translates into significant improvements in weight gain and feed conversion ratio. Figure 1 shows that, by using RONOZYME ProAct, broilers gain a substantially higher final weight and improved feed conversion ratio (i.e., ratio between feed intake and weight gain).

The benefits for the animals have been described above, but the benefits for the farmers are just as impressive. Even with the additional cost of the supplemented enzymes in the feed,

using RONOZYME ProAct lowers total feed costs by several percent. This means farmers can potentially save a lot of money, particularly in light of the sharp rise in feed costs during the past couple of years.

Digestion-boosting enzyme

RONOZYME ProAct is a protease that catalyzes the hydrolysis of dietary proteins into peptides and amino acids, making these nutrients more readily available for uptake and further utilization by the broilers. It is an unspecific protease, which means that it increases the solubilization and degradation of a wide range of feed proteins, making diet formulation more flexible. It complements the animals' own digestive enzymes, such as pepsin and pancreatic proteases, which are found in the digestive tract.

RONOZYME ProAct is the newest in a wide range of specifically designed feed enzyme solutions in the joint DSM & Novozymes portfolio and it is fully compatible with Phytase and other feed enzymes commonly used.

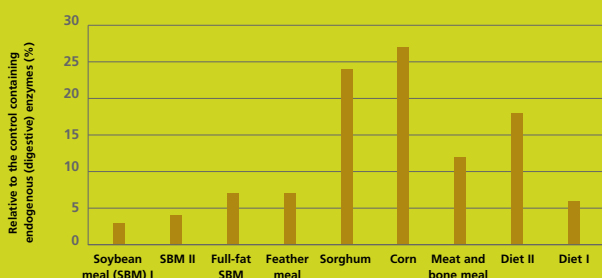
Truly needed in the market

In recent years global trends have been converging to make alternative nutritional solutions for animal feed increasingly profitable.

Significant increases in feed and food prices, particularly grain prices, due to a fast-growing population, unsatisfactory harvests, and increased competition for raw materials, have hit the animal farming industry hard. In addition, the demand for meat across the globe is rising at an estimated 2–3% due to increasing populations and urbanization.

Not only have these trends raised the price of the raw materials used for animal feed, but the available raw materials are often of lower quality which, without nutritional boosting, potentially impacts the animals' health and growth negatively. Fortunately RONOZYME ProAct gives broiler farmers a low-cost, high-gain solution that works against these market trends. ■

FIG. 2. COMPLEMENTS DIGESTIVE ENZYMES



Trials using a gastrointestinal model including digestive enzymes (pepsin/pancreatic proteases) demonstrate improved protein digestibility when RONOZYME® ProAct is added to different protein raw materials and to typical broiler diets.

FOR MORE INFORMATION

Lene Nonboe Andersen
lna@novozymes.com

Peter Christensen
ptch@novozymes.com