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Let's make it work! Efficient biotechnology for efficient animal nutrition
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Evonik is the only company in the world to manufacture and sell all four essential amino acids for modern animal feed to adjust feed composition precisely to animals' needs. This promotes animal health, conserves resources, and reduces environmental load through the use of high-protein feeds.

With the exception of DL-methionine, monogastric animals (poultry, pigs, and fish) can use only L-amino acids. Fermentation with bacteria as production organisms has for decades been the method of choice for enantiomerically pure production of Biolys® (L-lysine), ThreAMINO® (L-threonine) and TrypAMINO® (L-tryptophan). Biolys®, with current annual production of about 280,000 metric tons, is the largest fermentatively produced product of Evonik.

To meet increasing demand for animal feed amino acids and further improve the efficiency of the production processes, Evonik is investing €350 million over the period 2011 to 2015 in building new production capacities and expanding biotechnology research. New Biolys® plants are under construction in Volgodonsk (Russia) and Castro (Brazil), which will increase annual global capacity to nearly 500,000 metric tons.

Thanks to decades of experience in biotechnology, Evonik is in a position to operate a production process for L-lysine that is significantly more environmentally friendly, but also more challenging, than the standard (L-lysine HCl) method. Evonik's process comprises only a few production steps. Here, the quality of raw materials plays a major role. The result is a product (Biolys®). This is considered worldwide to be a highly effective lysine source for animal feeds. The factors important to customers are precisely defined composition with accurately quantifiable nutritional value as well as good handling properties for processing in the feed mill. In the case of Biolys®, spray granulation after drying of the fermentation broth has proven suitable for producing an easy to process product that generates a minimum of dust during handling.

To increase production efficiency, deep biological understanding must be combined with process-engineering expertise. Achieving a satisfactory balance between growth and product formation in the metabolism of the production organism is a

fine art. And this must then be translated into an industrial process with both high productivity and high efficiency.

In the last twenty years Evonik has succeeded in increasing the efficiency of Biolys® production by more than 40 percent, and by a few percentage points in 2013 alone. Each increase in efficiency is also associated with a reduction in process-related CO₂ emissions.

Moreover, Evonik is working continuously on improvement of product properties and the development of specific product forms, such as for application in aquaculture. In fish and shrimp farming as well, it makes ecological and economic sense to replace costly and scarce raw materials such as fish meal by plant protein sources and amino acids. Evonik is already a leading global supplier of DL-methionine and L-lysine for fish feeds. Current efforts in this area are directed toward developing customized and even more specific product forms—such as different particle sizes with varying solubility and absorption behavior—that meet the specific needs of fish and crustaceans. The first products in this new range are DL-Methionine for Aquaculture™ and AQUAVI®Lys.