Proteases (or peptidases) are enzymes secreted by animals for a number of physiological processes, among which is the digestion of feed protein. Animals normally secrete sufficient amount of enzymes to adequately digest enough of their feed so that they grow and remain healthy under normal conditions, such as those found in the wild. Any increased needs for protein (amino acids) for more rapid growth due to improved genetics has been traditionally met by adding more protein (or synthetic amino acids) into the feed. This was facilitated by a relatively low cost for most protein-rich ingredients, such as soybean meal, and synthetic amino acids, such as L-lysine HCL. Thus, an exogenous protease (as a feed supplement) was not considered essential; that is, until recently.

Today we face not only the problem of feeding animals of continuously increasing genetic potential (this requires diets increasingly richer in amino acids), but also an unprecedented rise in ingredient prices, leaving very small (if any) margin for profitability. Thus, it has been deemed essential to seek ways to improve the nutritive value of existing ingredients reducing feed cost. Naturally, protein, being the second most expensive feed component, has received considerable attention worldwide. This has been aided by the negative public image of animal residues, which if rich in nitrogen (basic component of all proteins) constitute a potential environmental hazard.

Here it should be noted that natural feed proteins are never 100% digested by any animal. For monogastric species, protein in soybean meal is about 87% digestible, whereas protein in maize is only 81% digestible; the rest reaches the environment. Thus, there is a significant part of feed protein that is clearly being wasted, instead of being used for production of meat, eggs, and milk. The reasons for this inefficiency are varied and include (but are not limited to) feed particle size, the rate of passage of feed through the digestive tract, the age of the animal, and its physiological/health condition. All of these variables are rather difficult to control, but supplementing animal feeds with extra enzymes is rather easy if it can be done in a profitable way.

Up until recently, any protease activity in commercial enzyme cocktails was part of unavoidable by-products from the production of other enzymes. Fortunately in 2008, DSM launched a pure (mono-component) protease (RONOZYME® ProAct) that can be used with any protein source and in any type of formulation, even with low-protein diets! Results based on a number of scientific papers indicated that this protease enhances protein digestion by about 4% (depending on the specific amino acid under question this number can be higher or lower). Empirical data from commercial broiler farms has shown that the use of this enzyme in ‘protein reduced’ diets can improve profitability by 2 euro-cents per broiler (after taking into account the cost of the enzyme)! Benefits from reducing the emission of ammonia into the environment further enhance the value of this protease.