



PERSPECTIVES: Adisseo Promotes its Second-Generation Feedase

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6 June 2019 - Adisseo touches base with Feedinfo News Service to discuss Rovabio® Advance Phy – the latest offering of the Rovabio® Advance series, Advance Predictor - its prediction software intended to aid nutritionists in the extraction of full value from Rovabio products, and Feedase as a novel approach in enzyme feeding. Dr. Pierre-André Geraert, Adisseo's Marketing Innovations Director, Marcio Ceccantini, Global S&T Support Director on Feed Digestibility, and Pascal Cerneau, Services Group Manager shared their opinions.

[Feedinfo News Service] Adisseo advocates the Feedase nutritional approach. Can you tell us more about this?

[Pierre-André Geraert] Feedase is an enzyme solution for the feed. It means that enzymes are acting on the indigestible fraction of the different raw materials to help release the nutritive part and improve the accessibility of the nutrients to the endogenous enzymes of the animals. Nutritionists are using phytase, carbohydrase and sometimes other enzymes. However strictly speaking, enzymes are not additives and the Feedase approach means that it is the combination of enzymes that brings the nutritional value: energy, amino acids, phosphorus, calcium... End-users have considered the energy improvement like an improvement of a nutrient for many years. But energy comes from carbohydrates, lipids and proteins. Thus, Feedase considers the organic matter digestibility as a whole.

We measure the increase of lipid and protein digestibility with Feedase which does not contain significant levels of lipase and protease. Breaking down the NSP and phytate helps with the access to the nutrients of the feed. It is thus important to better highlight the different mechanisms and propose accurate improvement levels for most the important nutrients of the feed... with a Feedase approach.

During PSA 2018 in Texas, a scientific session addressed this Feedase approach “From the indigestible fraction to the global feed enzyme approach”. Scientists reviewed many aspects - from the indigestible fraction to the action of enzymes considering digestibility as well as pro-prebiotic effect – and concluded that it is necessary to formulate on net energy basis to fully take into account the benefits of enzymes.

For many years, Adisseo has developed its enzyme portfolio around a specific and original approach having a filamentous fungus, *Talaromyces versatilis*, producing a wide range of enzyme activities: from cellulases, hemicellulases, to pectinases. We recently found the way to further stimulate the production of xylanases and particularly arabinofuranosidases required to better break down the ramified arabinoxylans frequent in corn, for example.

These genetic advances enable creating a new enzyme product: Rovabio® Advance, launched in 2015. Rovabio® Advance benefits from an innovative and unique enzyme profile, allowing large spectrum action. In terms of efficacy, a significant improvement has been observed with Rovabio® Advance compared to simple xylanases or other multi-carbohydrase combinations. Moreover, this first Feedase based on such a rich carbohydrase associated to a highly concentrated phytase is now proposed for end users with the global matrix of formulation. This new product is Rovabio® Advance Phy, the 2nd generation Feedase.

[Feedinfo News Service] What is the differentiation factor for this new product?

[Marcio Ceccantini] The innovation in Rovabio® Advance Phy is based on several aspects. First, the special balance of this new generation Feedase gives all enzymes in optimal proportion, insuring greater availability during digestion, and makes it easy to use. All enzyme activities present in Rovabio® Advance Phy are homogeneously distributed into the feed, promoting a better release of nutrients. Two forms of this product are now available, the thermostable powder (Rovabio® Advance Phy T) and the liquid (Rovabio® Advance Phy L). Second, Rovabio® Advance Phy is associated with a single complete nutritional matrix which makes feed formulation easier and optimised. Usually each enzyme

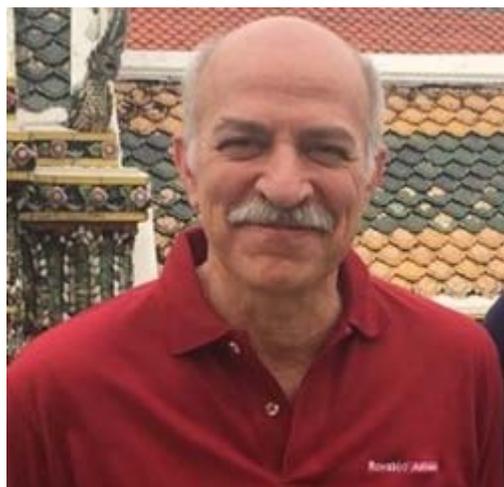


Dr. Pierre-André Geraert
Marketing Innovations Director
Adisseo

used in feed has its own recommendation. Then, the challenge lies in how to determine the nutritional matrix of each enzyme when they are used together. Therefore, we created one global approach based on the improvement of digestibility generated by a multi-enzyme complex added to feed. It allows to predict, in a more precise way, the effect of the enzyme solution. We developed this approach thanks to the knowledge we have on raw materials with the PNE (Precise Nutrition Evaluation), our tool for NIR. Based on raw material quality (levels of nutrients and anti-nutritional factors), we could analyse the effect of the enzyme solution and better assess its potential on digestibility improvement.

[Feedinfo News Service] From a nutritional perspective, how did the enzyme experts contribute to the development of this value proposition?

[Marcio Ceccantini] Several research programmes were conducted to understand the mode of action of the new enzyme solution, focusing on developing knowledge on various feedstuffs with different qualities. These research programmes have allowed to quantify the amount of nutrients released based on the nutritional level of the feed and on the indigestible fraction of this feed. It means that the enzyme will add more value to the feed if it is richer in indigestible amino acids for example, on the contrary, if the feed is very digestible, the space for the enzyme is lower. We now can quantify this precisely. Moreover, we have also developed a programme to study how the specific oligosaccharides produced by the enzyme solution stimulate butyrogenic-producing bacteria and reduce gut mucosa inflammation, supporting the greater value created by this new enzyme solution.



Marcio Ceccantini
Global S&T Support Director on Feed Digestibility
Adisseo

To develop this system of matrixes on Feedase, many in vivo trials have been performed to address a large set of situations: from different ingredients to different growing conditions, these trials support the proposal of the optimal matrix. Of course, considering several scenarios tested and analysed, we realised that more the precision we get, larger is the spectrum in our proposal of nutritional matrix. But for us, the main point is the optimal performance of the broiler, and not only the discussion around which single enzyme is contributing more to the feed. They are all part of the same process of digestion.

[Feedinfo News Service] In practice, how will you recommend using this new enzyme in feed formulation?

[Pascal Cerneau] Usually, there are three ways to consider enzymes in feed formulation:

First, “on-top” incorporation as an insurance without valuation in terms of energy or nutrient uplift. This practice has been mainly used to buffer the variability of raw materials and avoid consequent potential over assessment of their nutritional value. It’s a first step, not optimal, but according to a particular context, could be acknowledgeable.

Second: uplift on the enzyme premix. This method gives a nutritional value only to the premix enzyme, whatever the raw materials and their prices. It’s the most workable practice but not the most efficient (economically and technically).

And third: uplift on each material. This method requires a specific nutritional value for each raw material in the formula. It allows a global formulation, taking into account the price and the relative uplift of each raw material to maximise the cost saving of Feedase. However, it needs a real time investment for end-users. It requires many experimental studies to precise, not only the accurate uplift for each raw material but also their interaction together in a Feedase system and thus, in a non-linear formulation system. This work is in progress by our R&D and Datascience teams.

Adisseo proposes a fourth way in order to approach the efficiency of the third way with less time investment and more convenience: Uplift on the total feed with a calculation from the uplift of each used raw material with a specific tool, the Predictor. This method is based on individual formula reformulation and calculates a downspec based on a reference formula. Easier than the third way, the practice expects to maintain the matrix upgraded with the uplift of raw material by raw material. It’s very practical in a context without large “recipes” modification and for specialised plant. It’s a good compromise to approach the most efficient cost saving with a minimal time investment in specific context.

Rovabio® Advance Phy has been evaluated in different systems and formulation contexts and can be adapted to all of them. Predictor helps nutritionists and formulators calculate the tailored nutritional uplift of the enzyme in the basal feed formula entered in the programme. The calculation considers the amount of indigestible fraction and adapts the Feedase uplift according to this information. This specific and accurate Feedase uplift can then be attributed to the enzyme in the feed formulation software to optimise the formula.



Pascal Cerneau
Services Group Manager
Adisseo

This is the Feedase nutritional strategy, with a practical tool, minimal time investment and taking into account the variability of the raw materials. The Predictor programme allows the consideration of raw material quality since the user can modify the nutritional values. We know that variability is a key challenge for formulators and nutritionists, thus at Adisseo we are developing new tools to better monitor this variability and be more specific in the prediction of enzyme response, in the ultimate goal of further reducing feed costs.

[Feedinfo News Service] Adisseo will organise an Advancia Academy prior to the ESPN congress in Gdansk next week to address the topic of variability. Could you please tell us more?

[Pierre-André Geraert] The Advancia Academy will be entitled: “Variability: the nutritionist’s nightmare!” Indeed, nutritionists and feed formulators have to deal with variability on a day-to-day basis – or even in real time: from the type of ingredients to the quality of each batch of ingredient. Formulating diets for reliable and sustainable production requires a management of such variabilities. How to help feed formulators and production managers monitor such variabilities, anticipate the variability, optimise formulas... will be the hot topics discussed during Advancia by renowned experts.

[Pascal Cerneau] We will highlight the nutritional characteristics of cereals and oilseed meals, and ways to control them. Some workshops will allow to exchange on the good practices and new perspectives, for example how to use the NIR for nutritional value prediction on daily routine basis and optimise feed formulation. Of course, the use of enzymes will be also addressed in these sessions. The variability of raw material isn’t an issue, it requires only the best practices to monitor this variability and transform it into opportunities and strategy for better performances and cost savings. There is no bad raw material, but only wrongly evaluated and incorrectly used raw material.

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