



ExPro[®]
By-pass protein
for cattle

The Co-Development Company

AAK



ExPro®

– By-pass protein for cattle

ExPro® is a rapeseed based protein feed with an exceptionally high share of by-pass protein. It is specifically developed for high yielding dairy cows and fast growing cattle and can completely replace soybean meal in most feed rations. ExPro® is manufactured from non-GM rapeseed with the highest hygienic standard and is guaranteed free from salmonella.

Protein Nutrition

In early and peak lactation the cow needs a concentrate with high share of rumen un-degradable protein (RUP), so called by-pass protein. The requirement for essential amino acids, e.g. methionine, lysine and histidine, also increases with high milk yield.

In intensive production of growing cattle, the protein requirement is high, especially in the first eight months. At birth the calf's rumen is not yet developed and it cannot utilize roughage. In parallel, growth capacity, feed efficiency and muscle growth are the highest up until the animals weigh 250–300 kg. To take full advantage of this, the protein feed must be of good quality and contain a large proportion of bypass protein.

The degradation rate of feed proteins in the rumen is measured by the EPD parameter (Effective Protein Degradation). A high value indicates that a high share of the protein is degraded in the rumen and a low value that a high share passes undigested to the small intestine.

The unique ExPro® process assures a low rumen digestibility without lowering the intestine digestibility.

The ExPro® process and its benefits

In the patented ExPro® process steam is applied on standard rapeseed meal. This results in a modified protein structure which is much less degradable in the cow's rumen than standard rapeseed meal or soybean meal. In vitro-studies have established the effective protein degradation rate (EPD) to 35%, which means that 65% of the high grade amino acids pass the rumen unaffected and are digested in the small intestine instead.

No adverse effects on intestine digestibility have been found. In trials at the Swedish University of Agricultural Science intestine digestibility for ExPro® was determined to 87%, while it has been determined to 82% for standard rapeseed meal.

The heat applied in the ExPro® process also kills off any harmful bacteria.

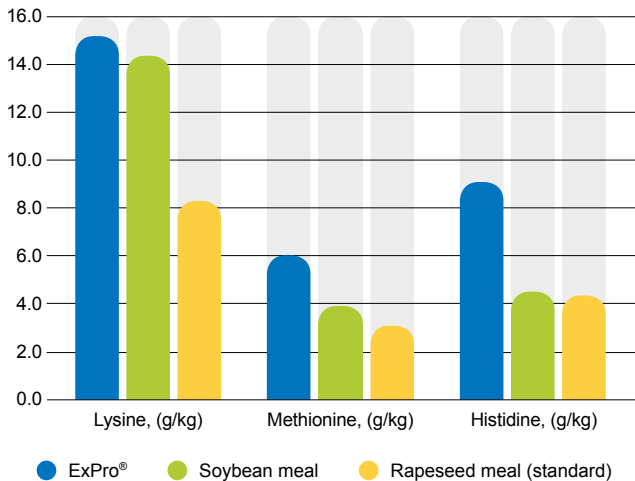
ExPro® vs. common protein feeds

Feed material	Crude protein (%/kg DM)	Share of by-pass protein (%)	By-pass protein (g/kg DM)
ExPro®	39	65	254
Rapeseed meal	39	28	109
Soybean meal	51	36	184

Comparison of ExPro®, standard untreated rapeseed meal and soybean meal. The total amount of by-pass protein is much higher for ExPro® than for soybean meal and standard rapeseed meal.

- ExPro® provides twice as much by-pass protein as standard rapeseed meal and 40% more by-pass protein than soybean meal.
- ExPro® is a non-GM protein feed which can completely replace soybean meal.
- The use of ExPro® prevents excessive protein feeding.
- ExPro® is guaranteed free from salmonella.
- ExPro® is rich in essential amino acids.

Amino acid content in common protein feeds

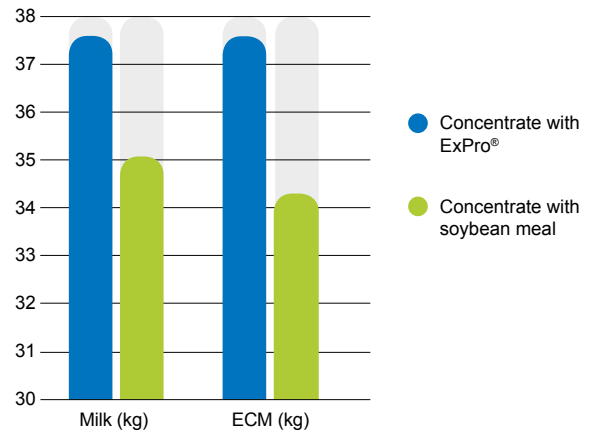


Amount of intestine digestible lysine, methionine and histidine from three different protein feeds.

Feed studies

The efficiency of ExPro® has been confirmed in several field trials as well as by the Swedish University of Agricultural Sciences in Uppsala, Sweden. Results showed that ExPro® yielded 2–3 kg more milk per cow and day than soybean meal or standard rapeseed meal, when the cows were fed the same amount of crude protein.

ExPro® gives more milk



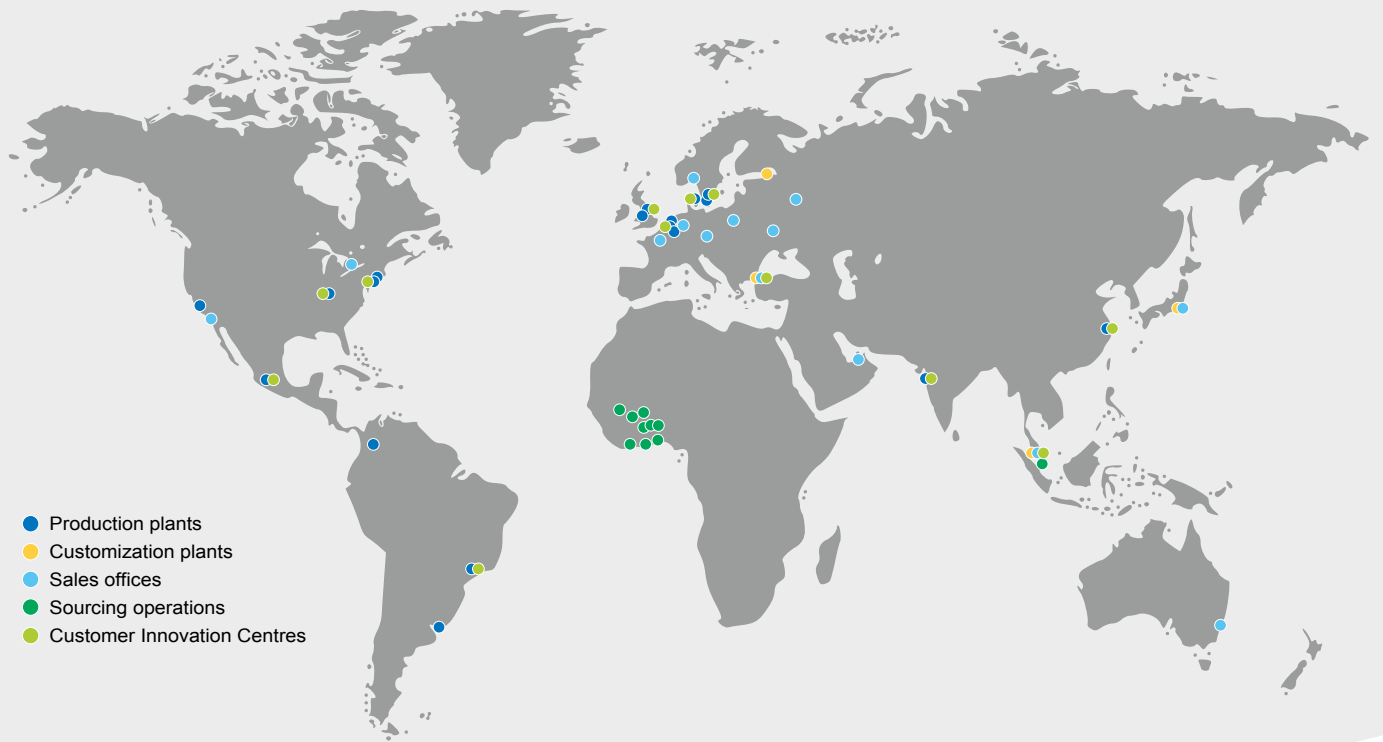
Milk yield, in kg, and kg ECM per cow and day, for cows fed an ExPro®-based concentrate compared to cows fed a conventional soybean meal-based concentrate.

Recommendations

AAK recommends approximately 25% ExPro® in concentrates for cattle or up to 5.5 kg per animal and day.

Other recommended reading:

- Effects of level and degradability of rape meal in rations for dairy cows 1. Animal performance; Bertilsson, J., Gonda, H.L., Lindberg, J.E. Acta Agric. Scand, sect. A, Animal Sci.44:222-229, 1994.
- Effect of level and degradability of rapeseed meal in rations for dairy cows2. Diet digestibility, Dietary nitrogen partition and urinary purine derivatives excretion. Gonda, H.L., Lindberg, J.E., Bertilsson, J. Acta Agric. Scand; Sect A, Animal Sci. 36-44, 1995.
- Effects of soybean meal or canola meal on milk production and methane emissions in lactating dairy cows fed grass silage-based diets. Gidlund, H., Hetta, M., Krizan, S.J., Lemonsquet, S., Huhtanen, P. Journal of Dairy Science 98:8093-8106, 2015.
- Replacing cereals and soybean meal with sugar beet pulp and rapeseed meal or distiller's grain in grass silage diets to dairy cows. Karlsson, J., Spörndly, R., Patel, M., Holtenius, K. Nordic Feed Science Conference, 2016.



The first choice for value-adding vegetable oil solutions

We develop and provide value-adding vegetable oil solutions in close collaboration with our customers, enabling them to achieve long lasting business results.

We do so through our in-depth expertise in oils & fats within food applications, working with a wide range of raw materials and broad process capabilities.

Through our unique co-development approach we bring together our customers' skills and know-how with our capabilities and mindset. By doing so, we solve customer specific needs across many industries – Chocolate & Confectionery, Bakery, Dairy, Special Nutrition, Foodservice, Personal Care, and more.

AAK's proven expertise is based on more than 140 years of experience within oils & fats. With our headquarters in Malmö, Sweden, 20 production facilities and customization plants, and sales offices in more than 25 countries, more than 3,000 employees are dedicated to providing innovative value-adding solutions to our customers.

So no matter where you are in the world, we are ready to help you achieve long lasting results.

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Explore more at www.aak.com
 Or contact us at feedsales@aac.com

