

PROTEIN BY-PRODUCTS FOR MEAT QUALITY

BY ASSOCIATE PROFESSOR JOHAN VERBEEK, THE UNIVERSITY OF WAIKATO, NEW ZEALAND

While the global love affair with meat continues, the underlying risks associated with meat consumption are often taken for granted. During slaughtering, meat quality is preserved by, among other things, preventing contact with faecal matter. To do this, the intestinal tract is sealed at both ends, preventing stomach and intestinal contents from coming into contact with meat.

Typically, meat processors spend a great deal of money on inspecting meat quality throughout the slaughtering process. Unfortunately, in the process of ensuring quality, plastic products are introduced to the biological waste stream; these are primarily rectal plugs and weasand clips. These make their way into rendering products, such as meat-and-bone meal. To prevent products downstream from meat-and-bone meal from being contaminated by plastics parts, these need to be removed, which is an expensive exercise. The alternative is to use clips that are manufactured from a material that breaks down.

Novatein® is material produced from blood meal and is used to make the plastic products required for maintaining meat quality during slaughtering. Blood meal is a co-product of meat processing itself, and because it is made from a protein, it easily forms part of meat-and-bone meal when used as a plastic substitute in meat processing products.

Proteins are condensation polymers, very similar to polyamides, or nylon as we know it. Nylon, however, is a simple homopolymer with relatively easily predictable properties. Novatein, on the other hand, is a heteropolymer, which means that it has up to 20 different monomers built into its chain, making it vastly more complex to understand and predict its properties.

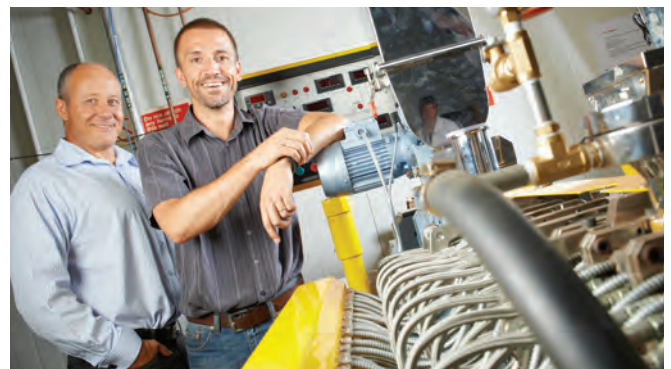
With the funding, in part, from the Meat and Livestock Association, Aduro Biopolymers LP (New Zealand) has created this polymer material to be fully renderable,

which makes it an ideal material for use in meat processing. Its renderability eliminates the costly separation step because it is mostly protein, similar to products such as meat-and-bone meal. Aduro Biopolymers has commercialised this material, and its first product is now manufactured commercially. The 'Port Jackson' is a very humble product and was designed by Bestaxx Ltd in Sydney. Aduro has licensed the design and is manufacturing the product in New Zealand using Novatein.

The technology was invented in 2007 at the University of Waikato, and has since been patented in several countries around the world. Extensive collaboration between Aduro Biopolymers, the university and other research providers in New Zealand aims to extend the applications of this material into areas such as foam packaging, as well.

The road to commercialisation has been a challenging one; pushing the technology may not always be the appropriate route to anchoring a product in the market. In the case of Novatein, it wasn't until industry pain was identified (the need for a fully renderable product) that the material was successfully established in the market. Identifying a need may indeed be the first step for any successful new product. 🍷

Johan Verbeek will be speaking at the 17th International Biotechnology Symposium (IBS 2016).



Darren Harpur, CEO of Aduro Biopolymers (left) and Johan Verbeek, R&D manager and co-inventor of Novatein (right)