

Executive summary

The present application seeks to amend Schedule 18—Processing aids of the Australia New Zealand Food Standards Code (the Code) to approve a protein-glutamine glutaminase enzyme preparation produced by Novozymes.

Proposed change to Australia New Zealand Food Standards Code – Schedule 18—Processing aids

Schedule 18—Processing aids is proposed to be amended to include a genetically modified strain of *Bacillus licheniformis* expressing a protein-glutamine glutaminase from *Chryseobacterium viscerum* as permitted source for protein-glutamine glutaminase.

The application is applied for assessment by the general procedure.

Description of enzyme preparation

The enzyme is a protein-L-glutamine amidohydrolase (EC 3.5.1.44), commonly known as protein-glutamine glutaminase.

Protein-glutamine glutaminase catalyses deamidation of gamma-amide of peptide-bound glutamine to form peptide-bound glutamate with subsequent release of ammonia.

The enzyme is produced by submerged fermentation of a *Bacillus licheniformis* microorganism expressing a protein-glutamine glutaminase from *Chryseobacterium viscerum*.

The protein-glutamine glutaminase enzyme preparation is available as a liquid preparation complying with the JECFA recommended purity specifications for food-grade enzymes.

The producing microorganism, *Bacillus licheniformis*, is absent from the commercial enzyme product.

Use of the enzyme

The protein-glutamine glutaminase enzyme preparation is used in the following food manufacturing processes:

- Production of heat-treated milk and milk-based barista products
- Production of cheese
- Production of fermented milk products
- Production of modified milk protein
- Production of plant-based analogues of milk and milk products
- Production of protein hydrolysates from plants and fungi
- Processing of yeast and yeast products
- Production of protein hydrolysates from meat and fish proteins
- Production of plant-based meat analogues

Benefits

The benefits of the use of the food enzyme in these food manufacturing processes are summarised below.

Production of heat-treated milk and milk-based barista products

- reduce fouling in heat treatment equipment
- reduce layer separation of UHT milk
- improve foaming capacity and foam texture in low fat milk used in barista products
- reduce curdling and improve mouth feel of cooled ready-to-drink milk-based coffee products

Production of cheese

- increased yield in cheese production
- improved texture
- reduced syneresis upon storage

Production of fermented milk products

- increased viscosity and firmness of fermented milk products particularly in low fat products
- reduced syneresis (whey separation)

Production of modified milk protein

- reduced fouling in production equipment
- improved solubility of milk proteins
- higher heat tolerance of milk proteins

Production of plant-based analogues of milk and milk products

- reduced fouling in production equipment
- increased protein solubility
- reduced risk of curdling for plant-based beverage added to coffee/tea
- less viscosity and better texture

Production of protein hydrolysates from plants and fungi

- increase protein solubility, emulsification capability and gelling ability
- increase the degree of hydrolysis

Processing of yeast and yeast products

- improved process efficiency
- improved solubility and functionality of yeast protein

Production of protein hydrolysates from meat and fish proteins

- source of protein with high solubility, digestibility and/or increased nutritional value
- improved taste, texture and water binding in the final food

- in gelatine extraction, reduced need for acid/base in process, higher yield, improved protein solubility and functionality

Production of plant-based meat analogues

- improved meat-like structure (increased firmness and chewiness)
- improved cutting strength
- increased protein solubility

Safety evaluation

The safety of the production organism and the enzyme product have been thoroughly assessed:

- The production organism has a long history of safe use as production strain for food-grade enzyme preparations and is known not to produce any toxic metabolites.
- The genetic modifications in the production organism are well-characterised and safe, and the recombinant DNA is stably integrated into the production organism and unlikely to pose a safety concern.
- The enzyme preparation complies with international specifications ensuring absence of contamination by toxic substances or noxious microorganisms.
- Sequence homology assessment to known allergens and toxins shows that oral intake of the protein-glutamine glutaminase does not pose food allergenic or toxic concern.

Furthermore, the safety of the protein-glutamine glutaminase preparation was confirmed by external expert groups, as follows:

- Denmark: The enzyme preparation was safety assessed resulting in the authorisation of the enzyme product by the Danish Veterinary and Food Administration.

Conclusion

Based on the Novozymes safety evaluation, confirmed by the above-mentioned bodies, we respectfully request the inclusion of the protein-glutamine glutaminase in Schedule 18—Processing aids.