TRYPSIN SE PANCREATIN

For Food Applications

Neova Technologies Inc. manufactures a pancreatin formulation known as Trypsin SE Pancreatin which is able to hydrolyse proteins, starches, and lipids using the same natural process as the human digestive system, making it applicable for use in digestive pharmaceuticals and food applications.

Sourced from government certified pork pancreas, this product contains a variety of pancreatic enzymes including trypsin, chymotrypsin, elastase, carboxypeptidase B, amylase, and lipase. With this enzymatic profile, Trypsin SE is able to hydrolyse proteins, starches, and lipids using the same natural process as the human digestive system, making it applicable for use in digestive pharmaceuticals and food applications.

In mammals, these digestive enzymes are secreted from the pancreas in their inactive forms (zymogens) and activated in the duodenum by trypsin. At Neova Technologies Inc., the enzymes are extracted from pork pancreas and converted into their active forms during processing for Trypsin SE.

A preparation of pancreatin is defined by three enzyme activities: protease, amylase and lipase. Protease activity is contributed to by trypsin, chymotrypsin, elastase, carboxypeptidase B and other enzymes. This combination of exo and endopeptidases results in a highly robust hydrolytic profile.

Preparations are available in lyophilised (freeze-dried) powder and range in colour from off-white to light beige.

Applications

- Total Enzymatic hydrolysis of whey & casein for use in hypoallergenic infant formula
- Improve digestibility of food

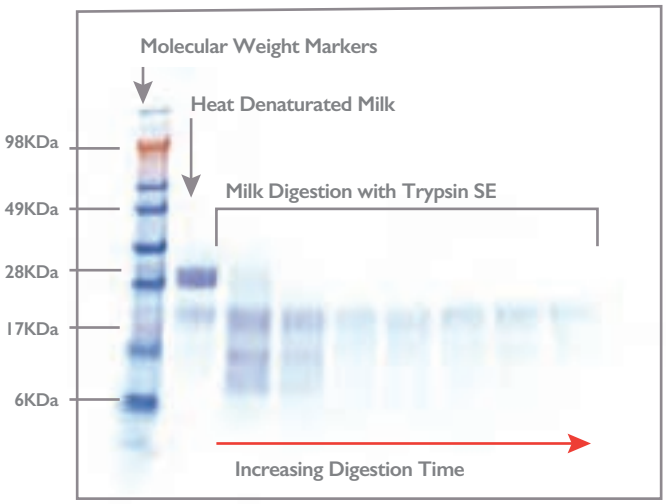
Product Details

Packaging: 5kg boxes, 25kg drums
Form: Light Brown powder

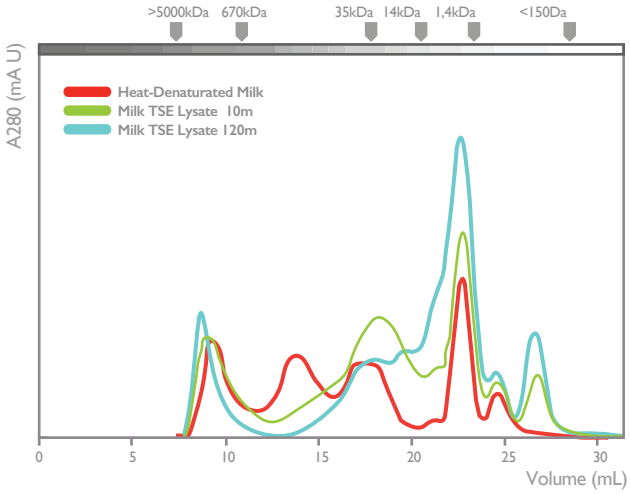
Ingredient Declaration

Porcine Enzyme
Sugar

SDS-PAGE of the digestion of milk proteins with Trypsin SE



Trypsin SE Hydrolisis of Milk



Digestion of milk with Trypsin SE (Pancreatin) results in a shift towards larger quantities of low molecular weight proteins. The right-most peaks present in the hydrolysed samples represent extremely short peptides. Milk protein fragments of lower molecular weight have reduced antigenicity compared to whole milk proteins.

KEY PERFORMANCE PARAMETERS	MIN	MAX	UNITS
Protease Activity[2]	270	350	USP units/mg
pH (10% Solution)	5.0	7.0	
Protein Content	30	70	%

1 Results may vary with quality/source of milk

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Technical Information

Usage Information

Hydrolysis of milk proteins using Neova Technologies Inc. Trypsin SE (Pancreatin)*

Dissolve whey or casein protein to 8% (w/v) in water.
Optional: Heat protein solution to 80C for 30 minutes.
Warm protein solution to 40-45°C
pH solution to between 7.5 and 8.5 using calcium hydroxide

Add Trypsin TSE as 0.1% (w/v) of the solution; maintain pH and temperature for 7-8 hours or until there are no detectable intact proteins left in solution.

Optional: Ultrafilter with a low MWCO membrane during enzymatic hydrolysis to continuously remove peptides, while returning the retentate to the enzyme reactor.

Heat product to 80°C for up to 30 minutes to inactivate enzyme.

At this step, the whey or casein hydrolysate may be sterilized and clarified, ultra-filtered, concentrated, lyophilized, or undergo additional processing.

Efficiency of the enzymatic hydrolysis can be assessed via:

• Size exclusion chromatography – demonstrating increased volumes of low molecular weight proteins and decreased high molecular weight proteins

• SDS-PAGE & Silver Stain – demonstrating larger low molecular weight bands and smaller high molecular weight bands

• ELISA – using rabbit anti-cow milk antibodies to assess the remaining antigenicity of the milk hydrolysate

• Formol Titration – measuring alkali (OH-) consumption during the hydrolysis process

* Disclaimer: results may vary with quality/source of milk

Microbiological Data

Standard Aerobic Plate Count	<5x103	CFU/g
Total Yeast & Mold Count	<1x102	CFU/g
Escherichia coli	Not Detected	in 25g
Salmonella	Not Detected	in 25g
Staphylococcus aureus	<100	CFU/g
Bacillus cereus	<100	CFU/g
Enterobacteriaceae	<10	CFU/g

Shelf-Life and Storage

2 years from date of manufacture when stored at room temperature in original packaging. Avoid excessive heat and protect from moisture and sunlight.

Allergen Data

Dairy/Dairy Derivatives	Absent
Egg/Egg Derivatives	Absent
Soy/Soy Derivatives	Absent
Wheat/Wheat Derivatives	Absent
Peanuts/Peanut Derivatives	Absent
Treenuts/Treenut Derivatives	Absent
Fish/Fish Derivatives	Absent
Shellfish/Shellfish Derivatives	Absent

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