

Food Applications

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Pancreatic Enzymes

Neova Technologies produces purified enzymes extracted from government-certified pork pancreas glands. These naturally occurring pancreatic proteins play an important role in the digestion of food. Neova uses the term *trypsin* as the designation for these enzyme preparations. Trypsin is a serine-type protease that preferentially hydrolyzes peptide bonds whose carboxyl groups are contributed by lysine (Lys) or arginine (Arg).

Likewise, proteolytic enzymes prepared from government-certified bovine pancreas are designated as *chymotrypsin*.

APPLICATION

Trypsin is a proteolytic enzyme that is very effective in hydrolyzing a variety of proteins.

Milk proteins like casein and whey are commonly used in the food industry as meat extenders as well as for many specialty foods. Besides their high nutritional value (which is important when used in infant formulas, protein-enriched foods and beverages), dairy proteins also have the ability to foam, emulsify and form gels. These qualities can be enhanced with enzymatic hydrolysis. Trypsin easily hydrolyzes these proteins.

Meat and fish proteins can also benefit from enzymatic hydrolysis. Whether the objective is for protein recovery or added value, trypsin can be a very useful tool in achieving a specific objective.

Note: Some proteins contain a natural trypsin inhibitor, such as egg white and soy protein, making these foods unsuitable for proteolytic enzymes.

These preparations comply with the recommended purity requirements for food grade enzymes provided by the Joint FAO/WHO Expert Committee on Food Additives (JECFA), the Food Chemical Codex (FCC), as well as specific requirements stipulated in the most recent edition of the U.S. Pharmacopoeia.

OPTIMAL RANGES

Enzyme activity is dependent on both pH and temperature. Figures 1 and 2 demonstrate the effect of pH and temperature on activity and heat stability for these preparations.

Figure 1: Activity versus pH at 50°C

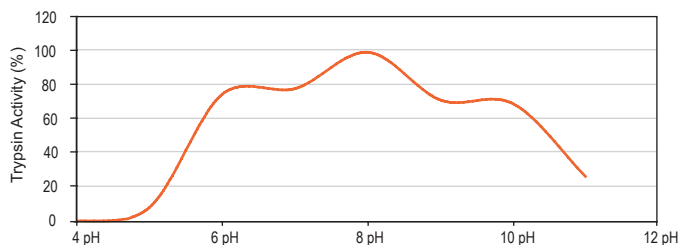
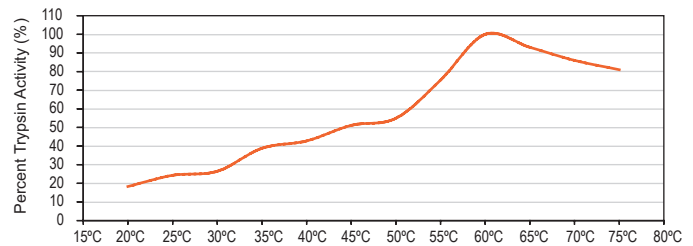


Figure 2: Activity versus Temperature at pH 8.0



BENEFITS / ADVANTAGES

A key benefit associated with using Neova pancreatic enzymes lies in the full range of services, including both technical and applications support that Neova provides. Neova works with its customers to meet their unique product specifications.

Raw materials are sourced from government-certified facilities. All extraction and refining is done under cGMP guidelines for active pharmaceutical ingredients (API). Preparations are available in lyophilized (freeze-dried) powder form and range in colour from an off white to light beige.

REGULATORY STATUS

- E.C. (Enzyme Classification) Numbers: Trypsin – EC 3.4.21.4
- E.C. (Enzyme Classification) Numbers: Chymotrypsin – EC 3.4.21.1
- CAS (Chemical Abstracts Registry) Number: Trypsin – 9002-07-7
- CAS (Chemical Abstracts Registry) Number: Chymotrypsin – 9002-07-3

Trypsin is affirmed as GRAS (Generally Recognized as Safe) by the United States Food & Drug Administration (FDA) and appears in 21 CFR 184.1914

Trypsin and Chymotrypsin monographs appear in both the Food Chemicals Codes and the United States Pharmacopoeia.

In Canada, trypsin is approved as a "Food additive that may be used as food enzymes" (Item Code T.1, and added 14-12-89). Permitted in or upon "hydrolyzed animal, milk or vegetable proteins."

European/World approval: trypsin was evaluated in 1971 by JECFA (Joint Expert Committee on Food Additives) as part of the functional class "Animal enzyme preparation (Baking, tenderizing of meat and production of protein hydrolysates)."

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