Applications of Endo-peptidases in Food industry



Abstract: Endopeptidases, a subclass of proteases, cleave peptide bonds within proteins and are widely used in the food industry. They accelerate cheese ripening, improve meat tenderness, enhance flavor, and aid in producing gluten-free beer. Additionally, they help generate bioactive peptides with antioxidant and immune-boosting properties. Microbial sources like Aspergillus niger, Bacillus subtilis, and A. oryzae are preferred for enzyme production due to their efficiency. Growing interest in reducing gluten in wheat products has led to combining endopeptidases from *Flavobacterium meningosepticum* or Pyrococcus furiosus with gluten-degrading gene expression. Ongoing research and development continue to expand their industrial applications.

Keywords: Cheese, meat, beer, proteases.

Definition

Endopeptidases are hydrolase enzymes that selectively cleave internal peptide bonds in proteins under mild conditions, without needing cofactors. Uniquely, they can also catalyze peptide bond formation (reverse hydrolysis) in low-water environments, making them highly versatile for both protein degradation and peptide synthesis.

Sources of Endo-peptidases

Endo-peptidases are mainly sourced from plants like papaya and pineapple, and from microorganisms due to their high production efficiency. Microbial enzymes now dominate in the food industry and show strong potential for gluten reduction applications.



Applications in Food industry







Future Market

The global food enzyme market was valued at USD 2 billion in 2016 and is projected to reach USD 3.6 billion by 2024, with proteases making up 60% of this market. Microbial proteases dominate commercial production, with prices ranging from USD 10–30/kg, and are widely used in the meat and dairy industries.

Conclusion

Endo-peptidases are essential enzymes in the food industry, enhancing texture, flavor, and digestibility across various products. With growing applications—from traditional processing to gluten reduction via genetic engineering—they hold great promise for future food innovation and health-focused solutions.

Contact email: tranducthien592@gmail.com. MSc Food Science and Technology Engineering