
Enzyme Boost Surfactant

Cat. No.: B1526913 | Pack size: 1 mg / 3 mg / 10 mg | Storage: Store at -20°C

Overview

Enzyme-Enhancing Surfactant is an anionic, mild protein denaturant specifically designed to increase the hydrolysis efficiency of proteases (such as trypsin, Lys-C, PNGase F, Asp-N, etc.) in solution. By promoting protein solubilization and structural unfolding, it allows endoproteases to more readily access cleavage sites within hydrophobic proteins, thereby significantly improving digestion efficiency and substantially shortening digestion time.

Unlike conventional denaturants, this surfactant has virtually no adverse effect on the activity of the above-mentioned hydrolytic enzymes at final concentrations below 1%. At the same time, it avoids introducing unwanted modifications such as oxidation or deamidation to the target proteins and is fully compatible with mass spectrometry detection.

Owing to its mild yet effective denaturing properties, it also improves the solubility of hydrophobic proteins and peptides, reduces the amount of costly protease required, and helps laboratories complete high-recovery digestion workflows in less time, meeting the demands of high-throughput analysis.

Product Applications

Enhance the cleavage efficiency of proteolytic enzymes and shorten digestion time.

Instructions (For Reference Only)

Before use, centrifuge the product at $10,000 \times g$ for 10 s (applicable only to the 1 mg and 3 mg sizes) to ensure all powder settles at the bottom of the tube.

1. PNGase F Digestion – Non-Reducing Conditions

- ① Reconstitute the Enzyme-Enhancing Surfactant in 10× Glycosidase Digestion Buffer (500 mM sodium dihydrogen phosphate, pH 7.5) to a final concentration of 10 mg/mL. Mix gently.
- ② Dissolve 50–100 µg of glycoprotein in deionized water. Add 5 µL of the 10× Glycosidase Digestion Buffer containing the surfactant, and bring the volume to 48–49 µL with deionized water.
- ③ Heat at 80–90 °C for 3–5 min, then cool to room temperature (this step is optional, but heating improves digestion efficiency).
- ④ Add 1–2 µL of PNGase F to bring the total reaction volume to 50 µL. Mix well.

⑤ Incubate at 50 °C for 10 min. If digestion is suboptimal, extend to 15 min. Use thin-walled tubes whenever possible during heating.

2. PNGase F Digestion – Reducing Conditions

① Reconstitute the Enzyme-Enhancing Surfactant in 10× Glycosidase Digestion Buffer (500 mM sodium dihydrogen phosphate, pH 7.5) to a final concentration of 10 mg/mL. Mix gently.

② Dissolve 50–100 µg of glycoprotein in deionized water. Add 5 µL of the 10× Glycosidase Digestion Buffer containing the surfactant and 1 M DTT to a final concentration of 20 mM (based on a total volume of 50 µL), then bring the volume to 48–49 µL with deionized water.

③ Heat at 80–90 °C for 3–5 min, then cool to room temperature (this step is essential and cannot be omitted).

④ Add 1–2 µL of PNGase F to bring the total reaction volume to 50 µL. Mix well.

⑤ Incubate at 50 °C for 10 min. If digestion is suboptimal, extend to 15 min. Use thin-walled tubes whenever possible during heating.

3. Preparation of Samples Compatible with LC and LC/MS

① For N-glycan analysis, after the digestion is complete, add formic acid (final concentration 0.5%), TFA (final concentration 0.5%), or HCl (final concentration 30–50 mM). Incubate at 37 °C for 30–45 min to degrade the Enzyme-Enhancing Surfactant. Precipitation may occur during degradation. Remove the precipitate by centrifugation at 10,000 × g for 10 min. The supernatant can be directly used for subsequent HPLC or mass spectrometry analysis.

② For deglycosylated protein analysis, the deglycosylation efficiency can be assessed directly by SDS-PAGE. Alternatively, after buffer exchange via micro-dialysis or microfiltration, the sample can be used for HPLC and mass spectrometry analysis.

4. Trypsin Digestion

① Reconstitute the Enzyme-Enhancing Surfactant in 50 mM ammonium bicarbonate solution to a final concentration of 10 mg/mL. Mix gently.

② Add the reconstituted surfactant solution (in 50 mM ammonium bicarbonate) to the protein solution to a final surfactant concentration of 1 mg/mL. Mix well.

③ Add DTT solution to a final concentration of 5 mM. Heat at 60 °C for 30 min, then cool to room temperature.

④ Add IAA to a final concentration of 15 mM and incubate in the dark at room temperature for 15 min.

⑤ Add trypsin for digestion (recommended enzyme-to-substrate ratio 1:50–1:100) and incubate at 37 °C for 3 h–overnight.

⑥ After digestion, add formic acid (final concentration 0.5%), TFA (final concentration 0.5%), or HCl (final concentration 30–50 mM). Incubate at 37 °C for 30–45 min to degrade the Enzyme-Enhancing Surfactant. Precipitation may occur during degradation. Remove the precipitate by centrifugation at 10,000 × g for 10 min. The supernatant can be directly used for subsequent HPLC or mass spectrometry analysis.

Product Information

Item	Details
Specifications & Purity	BioReagent, ≥95%(NMR)
Stability And Storage	Store at –20 °C; stable for at least 24 months. After reconstitution, store at –80 °C for up to 1 month or at 2–8 °C for up to 1 week.
Storage	Store at -20°C
Shipped In	Ice chest + Ice pads. This product requires cold chain shipping. Ground and other economy services are not available.
Purity	≥95%(NMR)
Application	Enzyme digestion

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Limitations & Disclaimer

- ☐ For Research Use Only (RUO). Not for use in human or animal diagnostics, therapeutics, or in vivo applications. Not for food, cosmetic, or household use.
- ☐ This product is not a CE-marked in vitro diagnostic device under IVDR (EU) 2017/746 and is not an FDA-cleared device under 21 CFR. Use is restricted to verified businesses, institutions, and qualified professionals for research and development purposes.
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