

Mass Spectrometry Protein Analysis

ProteaseMAX™ Surfactant, Trypsin Enhancer

- Reduce in-gel and in-solution digestions to three hours
- Increase protein sequence coverage
- Improve peptide recovery from gels severalfold
- Eliminate additional inactivation steps
- Solubilize membrane proteins at room temperature
- Use your existing in-gel and in-solution digestion protocols



Promega

ProteaseMAX™ Surfactant, Trypsin Enhancer

ProteaseMAX™ Surfactant, Trypsin Enhancer, is designed to improve in-gel and in-solution protein digestion. ProteaseMAX Surfactant ensures fast and efficient protein digestion with proteases such as Trypsin, Chymotrypsin and Lys-C. For in-gel protein digestion, ProteaseMAX Surfactant offers time and labor savings. The digestion step is complete in 1 hour, and the surfactant provides concurrent extraction of peptides from gels, eliminating the need for post-digestion peptide extraction. The surfactant also improves recovery of longer peptides that are retained in the gel under a standard extraction protocol.

For in-solution digestions, ProteaseMAX Surfactant solubilizes proteins including difficult proteins (i.e., membrane proteins) and enhances protein digestion by providing a denaturing environment prior to protease addition.

ProteaseMAX Surfactant degrades over the course of a digestion reaction, yielding products that are compatible with downstream methods such as mass spectrometry (MS) and liquid chromatography (LC). No long-term negative effect of the residual surfactant on the ion optics and capillary of mass spectrometers has been observed.

ProteaseMAX Surfactant can be used with existing in-gel or in-solution digestion protocols.

- **No peptide extraction required following the in-gel digestions**

Save time and increase the number of samples processed.

- **Improved peptide recovery from gels**

Increase in protein sequence coverage, thus increasing confidence of protein identification.

- **Enhanced protein solubilization**

Solubilize complex proteins such as membrane proteins at room temperature, avoiding high temperature and preventing precipitation.

- **Degrades over course of digestion**

Ready for use directly for mass spectrometry analysis without additional inactivation steps such as heating or acid treatment.

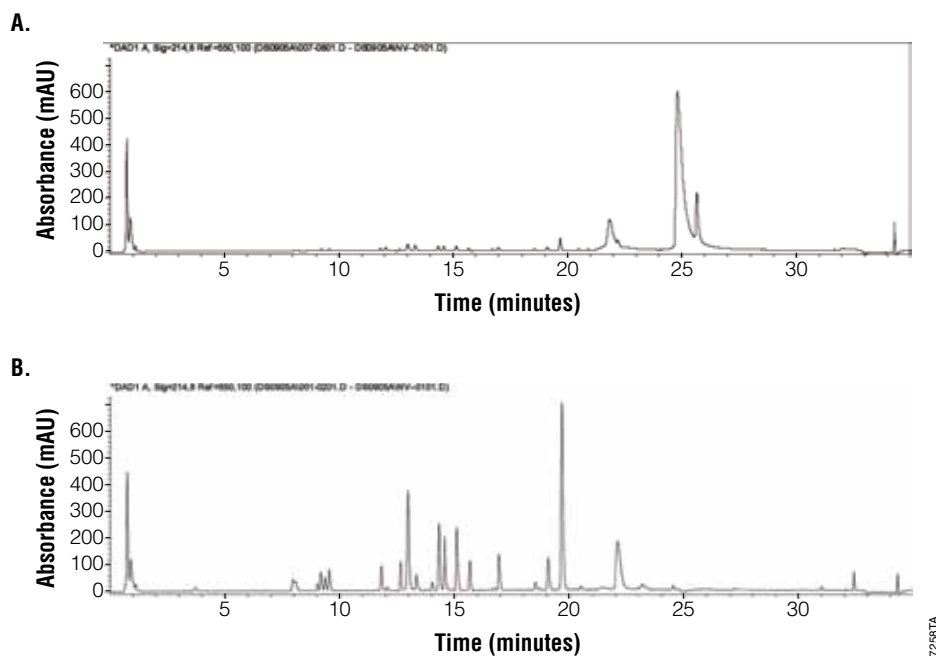


Figure 1. HPLC chromatograms of myoglobin digests (with our without ProteaseMAX™ Surfactant). Myoglobin from horse heart was digested with trypsin at 50:1 ratio for 30 minutes at 37°C and resolved on C18 HPLC column. **Panel A.** Myoglobin was digested under standard conditions (without ProteaseMAX Surfactant). The tall peak at the right is intact myoglobin. **Panel B.** Myoglobin was digested in the presence of 0.025% ProteaseMAX Surfactant. The peaks on the bottom panel indicate digested peptides.

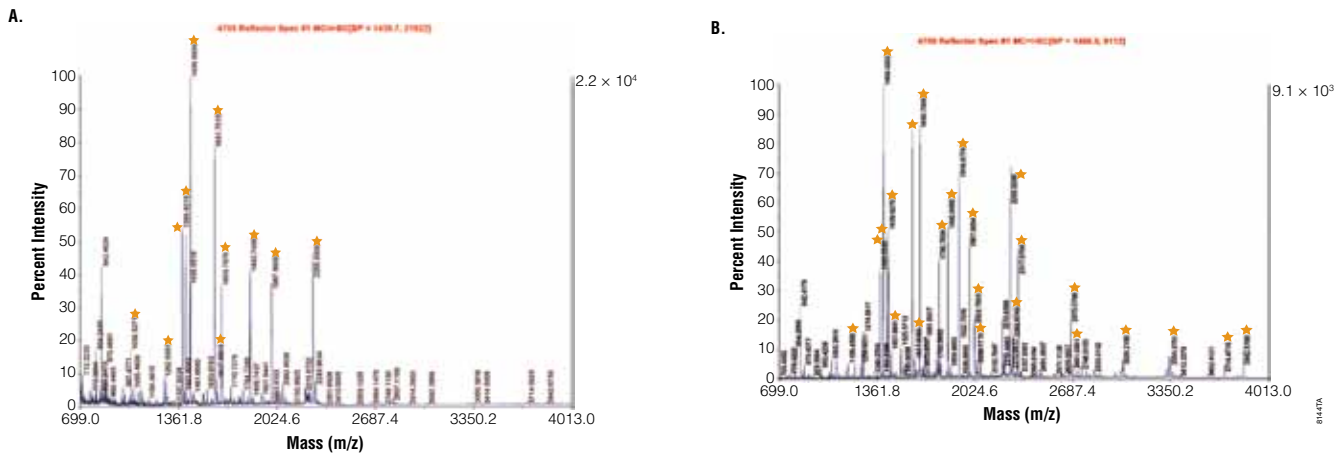


Figure 2. Efficient in-gel protein digestion with ProteaseMAX™ Surfactant. MALDI-TOF mass spectra of the protein in-gel digests performed with or without ProteaseMAX Surfactant. Membrane protein extract from mouse heart was resolved by 4–20% SDS-PAGE, and the gel was stained with Coomassie® R-250. A protein band with an apparent mass of 56kDa was excised from the gel, and protein was digested with or without ProteaseMAX Surfactant. **Panel A.** Conventional overnight digestion followed by peptide extraction with TFA/acetonitrile. **Panel B.** ProteaseMAX Surfactant-assisted 1-hour digestion, no peptide extraction (assigned peptides are indicated by asterisks). Note the efficient recovery of long peptides (2,300–4,000Da long) in the presence of ProteaseMAX Surfactant.

Improved in-solution digestions

ProteaseMAX Surfactant solubilizes and denatures hydrophobic proteins (i.e., membrane proteins) at room temperature, providing conditions for an efficient digestion. Digestion of complex protein mixtures typically requires 3 hours. ProteaseMAX Surfactant can be used as a single protein solubilizing agent or as an additive with urea. As an additive with urea, ProteaseMAX Surfactant improves the solubilizing effect of urea (Figure 1).

Improved in-gel digestions

In-gel digestion normally requires overnight incubation followed by laborious peptide extraction. In the presence of ProteaseMAX Surfactant, protein digestion and peptide recovery are complete in a single step that can be as short as 1 hour. During digestion ProteaseMAX Surfactant enhances peptide extraction, eliminating the need for post-digestion extraction. Data quality also can be improved by the recovery of longer peptides that typically remain trapped in the gel under conventional conditions (Figure 2).

Degrades over course of digestion

ProteaseMAX is designed to degrade over the course of the digestion reaction, yielding peptides that are compatible with downstream applications such as mass spectrometry. There is no requirement for acid inactivation, which requires additional time and can result in the loss of peptides.

Ordering Information

Product	Size	Cat.#
ProteaseMAX™ Surfactant, Trypsin Enhancer	1 1mg	V2071
	5 1mg	V2072

ProteaseMAX is a trademark of Promega Corporation.
Coomassie is a registered trademark of ICI (Imperial Chemical Industries Inc.).

Related Products

Product	Size	Cat.#
Trypsin Gold Mass Spectrometry Grade	100µg	V5280
Sequencing Grade Modified Trypsin*	100µg	V5111
Sequencing Grade Modified Trypsin (Frozen)*	100µg	V5113

*For Laboratory Use.

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Promega Corporation • 2800 Woods Hollow Road • Madison, WI 53711-5399 USA • Telephone 608-274-4330 • Fax 608-277-2601
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