TECHNICAL NOTES

Trypsin MS Approved

SERVA
serving scientists

For mass spectrometric analysis of proteins

Product Description

Trypsin MS Approved is designed for in-gel digestion and mass spectrometric analysis of proteins. Based on excellent and proprietary production procedures, Trypsin MS Approved is of unique stability due to exceptional low autocatalytic activity (Fig. 1).

Trypsin MS Approved is a serine endopeptidase which specifically cleaves peptide bonds at the carboxyl side of lysine, arginine and S-aminoethyl cysteine residues. There is little or no cleavage at arginyl-proline or lysyl-proline bonds. Cleavage may also be considerably reduced when acidic residues are present on either side of a potentially susceptible bond [1].

Trypsin MS Approved is supplied as lyophilisate.

Outstanding performance is guaranteed by:

- Each lot MS approved
- Exceptional low autoproteolysis
- Extreme stability
- High purity
- High specificity
- No chymotryptic activity

Extreme Stability

Trypsin MS Approved is modified by reductive methylation and purified by chromatography, yielding a highly active molecule that is extremely resistant to autolytic digestion (Tab. 1).

Incubation	Trypsin Premium Grade, MS appoved	Trypsin native, not modified
Time (h)	Activity (%)	
0	100	100
3	100	43
5	87	30
7	84	25
22	46	5

Tab.1: Stability of Trypsin MS Approved and Trypsin native, not modified in 20 mM Tris-HCl, pH 8.0 at 37 °C.

[1] Wilkinson, J. M. (1986): Fragmentation of Polypeptides by Enzymatic Methods. In: Practical Protein Chemistry: A Handbook. A. Darbre, ed., John Wiley and Sons, New York, N.Y.

High Purity

Trypsin MS Approved is a highly purified enzyme preparation that is free of activity from other proteases. The absence of chymotryptic activity is verified by purity and function control which is carried out for each lot (Fig. 1, Fig. 2).

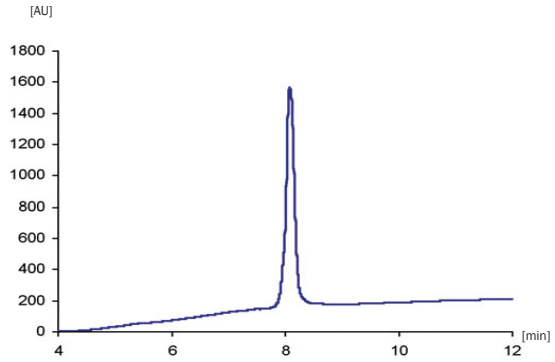

Fig.1: Purity of Trypsin MS Approved by Reversed Phase HPLC.

High Specificity

The specificity of Trypsin MS Approvedis verified with the oxidized B chain of insulin (insulin Box) as substrate. 25 µg of insulin Box are incubated with 0.5 µg Trypsin MS Approved at 37 °C for 18 h to detect traces of impurities of chymotrypsin (Fig. 2).

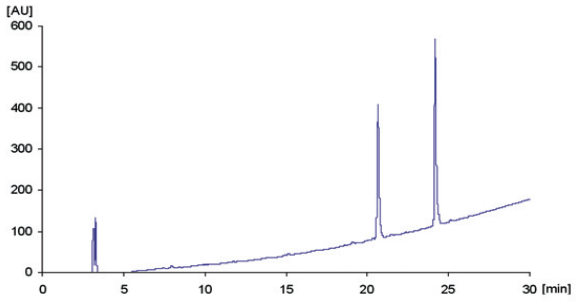

Fig. 2: Specificity of Trypsin MS Approved analyzed by Reversed Phase HPLC. RP Fragments: 20.6 min Gly (23)-Lys (29), 24.2 min Phe (1)-Arg (22)

SERVA Electrophoresis GmbH
Carl-Benz-Str. 7 · D-69115 Heidelberg · Germany
Phone: +49 (0) 6221 13840-0 · Fax: +49 (0) 6221 13840-10
E-Mail: info@serva.de · Internet: www.serva.de

TECHNICAL NOTES

Trypsin MS Approved

For mass spectrometric analysis of proteins

SERVA
serving scientists

Quality Control

Each lot of Trypsin MS Approved is qualified by in-gel digestion and mass spectrometric analysis. An example of a spectrogram is shown in figure 3. Lot specific generated spectrograms using bovine serum albumin (BSA) as substrate are available at tech.service@serva.de.

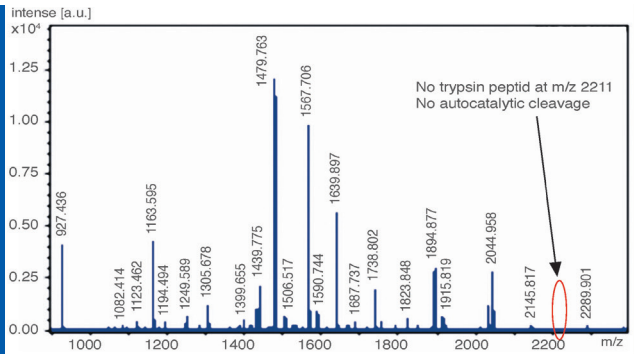

Fig. 3: Spectrogram of BSA digested with Trypsin MS Approved. 300 ng BSA were separated by gel electrophoresis and digested with 10 ng/ µl Trypsin MS Approved in 50 mM NH4HCO3 at 37 °C overnight. The peptides generated were analysed in reflectron mode using the Bruker Ultraflex MALDI-TOF/TOF mass spectrometer. Indicated mass values were identified as BSA protein using the Mascot search engine (Score > 300). No trypsin petid at m/z 2211 was identified that indicated autocatalytical digestion of Trypsin MS Approved. In contrast, other commercial available modified trypsins exhibited autocatalytical activity under identical conditions. Mascot scores for protein identification were significant higher using Trypsin MS Approved than for other modified trypsins (Ref: A. Pich, unpublished, Medical School Hanover (MHH)).

- Source: porcine pancreas
- Purity: > 90 %
- Tryptic activity: > 6000 U/g *
- No chymotryptic activity detectable
- Modified by reductive methylation
- Each lot qualified by in-gel digestion and mass spectrometric analysis

** Unit definition: 1 U catalyzes the hydrolysis of 1 µmol Nα-Benzoyl-L-arginine-4-nitroanilide hydrochloride (BAPNA) per minute at 30 °C, pH 8.0.*

Ordering Information

Product	Quantity	Cat. no.
Trypsin MS Approved	1 x 100 µg	37286.01
	1 x 150 µg	37286.02
	1 x 1 mg	37286.03
	4 x 25 µg	37286.04

Related products

Product	Quantity	Cat. no.
Trypsin Sequencing Grade, modified	4 x 25 µg	37283.01
	1 x 100 µg	37283.02
	1 x 1 mg	37283.03

Version 04/22

SERVA Electrophoresis GmbH
Carl-Benz-Str. 7 · D-69115 Heidelberg · Germany
Phone: +49 (0) 6221 13840-0 · Fax: +49 (0) 6221 13840-10
E-Mail: info@serva.de · Internet: www.serva.de