

Biopharma: Targeted Quantitation Solution Guide

Your lab, your challenges—
our solutions to help you address them



- Adapt to current and upcoming analytical challenges
- Develop robust, sensitive, reliable quantitation workflow solutions
- Address organizational profitability goals
- Implement easy workflow solutions from sample prep to report generation

Sample preparation SMART Digest trypsin kits

- Easy to use, fast, and highly reproducible—for every operator
- 7x faster
- Easily automated digestion with Thermo Scientific™ KingFisher™ systems

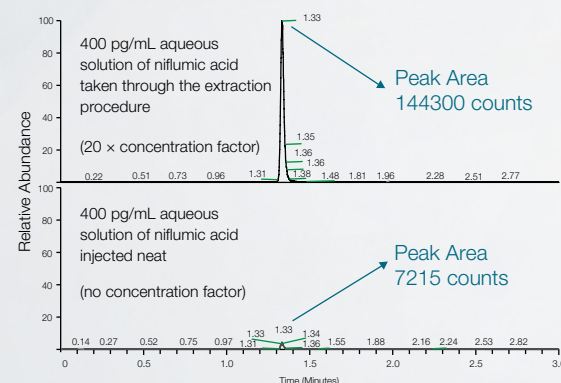
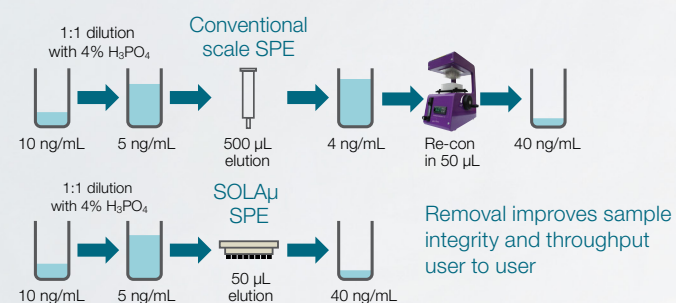


Typical Digestion Times	
Protein	Digest Time (min)
Insulin	4
BSA	<5
Carbonic anhydrase	<5
Lysozyme	<5
Apo-B	30
IgG	45
IgG in 50 µL plasma*	75
Ribonuclease A	150
Thyroglobulin	240
C-reactive protein	240

200 µL protein solution (100 µg/mL) at 70 °C.
*IgG in plasma (17.5 mg/mL total protein) at 70 °C.

Sample preparation For increased confidence

- Reduces clogging due to fritless design
- Higher reproducibility
- Significantly increase LC-MS sensitivity
- Lower sample volumes
- Improved sample integrity and throughput



Thermo Scientific™ SOLAµ™ SPE plates enable increased sensitivity.

Liquid chromatography For superior performance

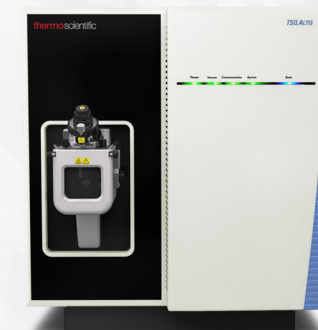
- **Performance**
 - Achieve unmatched retention time reproducibility with improved linearity and higher sensitivity with binary solvent mixing for your critical separations
- **Throughput**
 - Regain time during your analysis with faster analysis, increased sample capacity, and improved robustness

	Nano	Micro	High
Flow	100–1000 nL/min	1–20 µL/min	100–1000 µL min
Maximum pressure	1200 bar	800 bar	1500 bar
Column i.d.	25–150 µm	150–530 µm	2.1–4.6 mm
Relative gain in sensitivity	>100	>20	—
Benefits	Sensitivity	Speed	Throughput
Recommended UHPLC	Thermo Scientific™ EASY-nLC™ 1200 system	Thermo Scientific™ UltiMate™ 3000 RSLCnano system	Thermo Scientific™ Vanquish™ UHPLC system



Robust mass spectrometry Confident quantitation

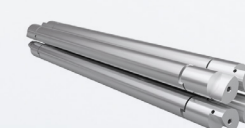
- **AIM+ technology**
 - The next step in precision design ensures ultimate performance in ion management, inception to detection, from the Thermo Scientific™ OptaMax™ NG ion source housing to the enhanced electron multiplier. AIM+ incorporates segmented quadrupoles and enhanced RF and DC electronics to further optimize ion management precision, reliability, speed, and reproducibility.
- **High Resolution SRM (0.2 Da FWHM)**
 - Segmented hyperbolic-surface quadrupoles provide superior performance at higher resolutions and higher mass ranges



Thermo Scientific™ TSQ Altis™ Triple-Stage Quadrupole MS

Features responsible for enabling biopharma quantitation:

- **Sensitivity**
 - Enabled by segmented quads and H-SRM technology (0.2 Da FWHM)
- **Confidence and reliability**
 - H-SRM reduces noise achieving LOD and LOQs consistently
 - Enhanced electron multiplier increases uptime
- **Productivity**
 - Enabled by ion beam guide and neutral blocker and plug and play sources for all LC flow ranges
 - Real-time update of retention time windows to accommodate chromatographic shifts with dynamic retention time (dRT) software feature
- **Speed**
 - Enabled by Active Q2, with axial DC field
 - Enhanced RF and DC electronics supporting ultra-fast SRM rates (600 SRM/second)



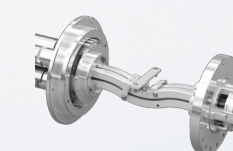
Segmented quads



EasySpray Ion Source



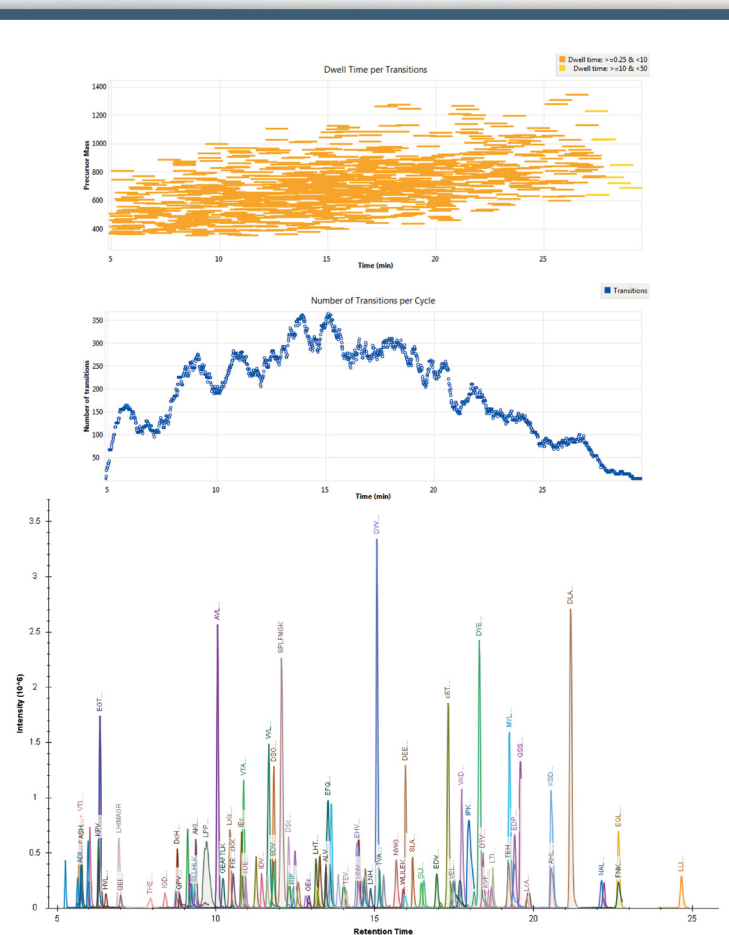
OptaMax NG ion source



Ion beam guide with neutral blocker



Active Q2 (collision cell)



Quantitation of 965 peptides from digested plasma. SRM scheduling is facilitated by automated visualization tools which offer dwell time SRM overlap (top-inset) and number of transitions per cycle (bottom-inset). Real-time management of RT windows with dRT.

TraceFinder software Enabling quantitation with confidence

- **Productivity**
 - For targeted quantitation labs
- **Intuitive and easy**
 - From method development to automated report generation
- **Template-driven workflows**
 - With customized templates
- **Compound databases**
 - Generate databases directly from Skyline™ software, including RT and optimized CE

Highlights of Thermo Scientific™ TraceFinder™ software

- **Method development**
 - Supports import of peptide transition lists from Skyline software
- **Easy data review**
 - Intuitive flagging features
- **Report**
 - Easily customizable and automated report generation
- **Productivity**
 - 4-click workflows

Service and Application Support

Unity™ Lab Services

- Single source for integrated lab service, support, and supply management
- Complete portfolio of services and support solutions
- Enabling users to improve productivity, reduce total cost of ownership, and ensure performance
- Help in instrument and equipment acquisition to disposition

Application support

- From regional demonstration laboratories to centers of excellence support
- From global marketing teams to special solution centers
- Enable your workflows via an extensive network of experienced and expert scientists

Partnership to Ensure Your Success

Enables your lab with the capability to address key challenges:

Webinars:

- Advancing SRM-based proteomics for detection and quantitation of histone modifications in scarce clinical specimens
Presented by Dr. Nebiyu Abshiru (Proteomics Center of Excellence, Northwestern University)
- Characterization and quantitation of biotherapeutics in biological matrices
Presented by Dr. Jun Qu (State University of New York-Buffalo)
- Multiplexed Immunoassay based quantitation of peptides
Presented by Eric Kuhn (Broad Institute)

Blog:

- Transitioning from small to large molecule quantitation. Development of a robust, low flow LC-MS/MS method for peptide quantitation

Thermo Fisher Scientific ensures success for every bioanalytical lab focused on targeted quantitation of peptides

Find out more at www.thermofisher.com/Altis-Quantis

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