TECHNICAL NOTES | SERVA Electrophoresis

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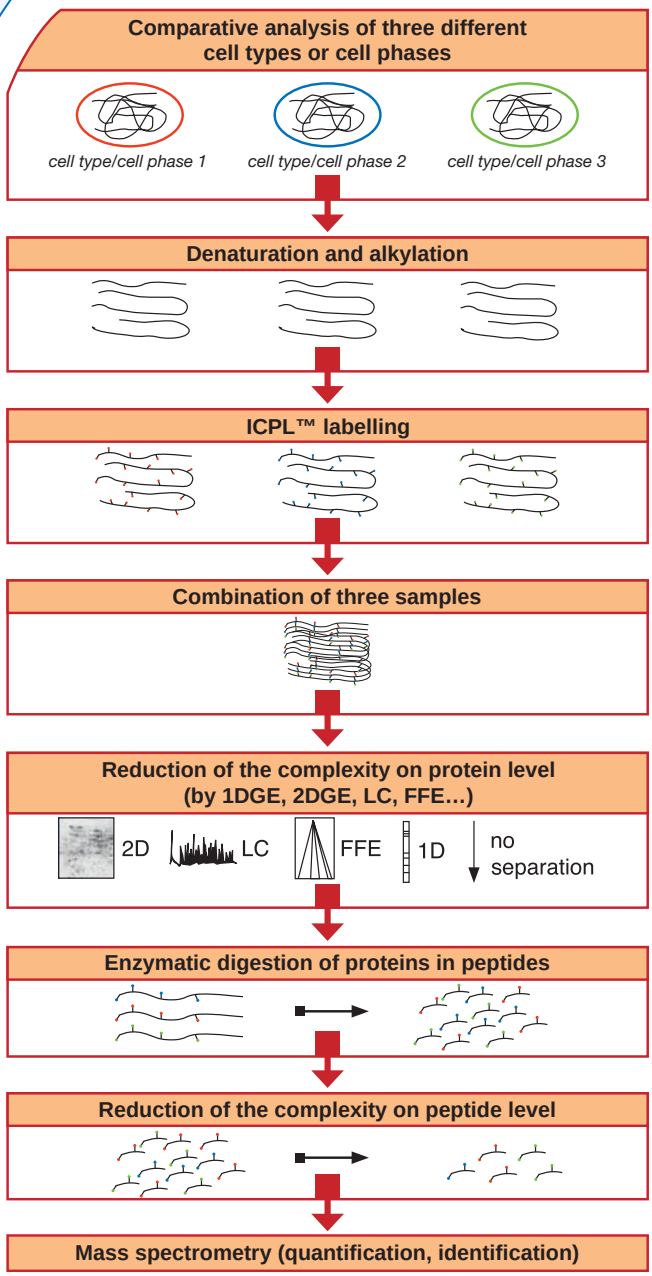
Specials

SERVA ICPL™ Triplex-Kit

Triple labelling for quantitative MS analysis of proteomes

ICPL™ Triplex-Workflow



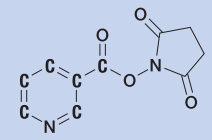
- Comparative analysis of three proteomes
- New third label for ICPL™-technology for labelling and detection of proteins in mass spectrometry
- Combines all advantages of ICPL™-technology with the new triplex analysis

ICPL™-technology: Now with third label!

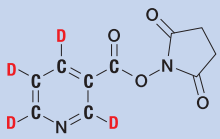
The powerful ICPL™-technology for comparative quantification of proteins is now available with a third label (see below). Applying the ICPL™ triplex method the simultaneous quantitative analysis of three independent proteome samples can be performed by stable protein labelling side by side. The ICPL™-technology combines the power of Isotope Coded Protein Labelling (ICPL) with an unmatched dynamic range for protein identification and quantification due to its potential combination with intact protein fractionation steps (see worfflow).

The ICPL™ triplex method was introduced at ABRF 2006 in Long Beach, USA (Kellermann et. al, Non-Isobaric Triplex-Labelling for Proteomics Strategies Compatible with Protein Prefractionation, ABRF 2006, P160-S). For mass spectrometric analysis of ICPL samples, the optimized software version WARP-LC 1.1 is now available from Bruker Daltonics (www.bdal.com/care).

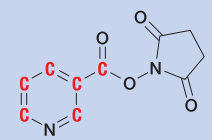
1-($^{12}C_6{}^1H_4$)-Nicotinoyloxy-succinimide (^{12}C-Nic-Reagent): M_r =105.0215 Da



1-($^{12}C_6{}^2D_4$)-Nicotinoyloxy-succinimide (^{2}D-Nic-Reagent): M_r =109.0715 Da



1-($^{13}C_6{}^1H_4$)-Nicotinoyloxy-succinimide (^{13}C-Nic-Reagent): M_r =111.0419 Da



Mass difference between modified amino groups of proteins labelled with:

	^{12}C-Nic-Reagent	^{2}D-Nic-Reagent	^{13}C-Nic-Reagent
^{12}C-Nic-Reagent	0 Da	4.05 Da	6.0204 Da
^{2}D-Nic-Reagent	4.05 Da	0 Da	1.9704 Da
^{13}C-Nic-Reagent	6.0204 Da	1.9704 Da	0 Da

SERVA ICPL™ Triplex-Kit

Triple labelling for quantitative MS analysis of proteomes

Comparative analysis of proteomes

The new experimental approach (details see “Work-flow”) enables to compare the accurate and reproducible quantification of proteins. Protein fractionation provides a more sensitive and, therefore, a higher proteomes coverage. Protein labelling occurs prior to the chromatographic/electrophoretic separation thus maintaining the quantitative ratios. Even proteins, which are superimposed in the 2D-gel, as well as isoforms, posttranslational modified proteins and proteolysis products can be identified and yet more important, quantified. The ICPL™ Triplex-Kit is designed for use with protein fractionation such as 1D-PAGE and post digestion LC-MS/MS analysis.

The quantitative analysis of three highly complex protein mixtures can be significantly improved in comparison to until now available “Stable Isotope Label”-methods by the development of the ICPL™ Triplex-Kit (ICPL = Isotope Coded Protein Labelling). The labelling on protein level has the following advantages:

a) In contrast to other labelling techniques the ICPL™ Triplex-Kit permits proteome analysis on 2D-gel-basis as well as on multidimensional LC-MS-basis using ESI-MS or MALDI-MS.

b) All the approaches that work on a truly proteomics scale use protein pre-fractionation such as LC, PAGE, 2D-GE or magnetic beads. Protein fractionation is compatible with the ICPL™-technology, as quantitative ratios remain constant throughout any fractionation steps. This reduces complexity in each protein fraction which increases the dynamic range of protein detection and quantification and thus the number of identified proteins.

c) A high sequence coverage of labelled peptides provides a sound statistical base for automatic protein quantification avoiding excessive manual validation efforts.

d) Modified peptides are detected by MS at increased sensitivity.

SERVA´s partner for the ICPL™-technology

TOPLAB The Proteomics Company

TOPLAB has provided an exclusive distribution license for the ICPL™-technology to SERVA. TOPLAB as a service company carries out complete proteome analysis by customer order, but supports as well customers with regard to all technical questions concerning ICPL™ (www.toplab.de).

SERVA´s partner in marketing of the ICPL™-technology worldwide

BRUKER DALTONICS

The SERVA ICPL™ Triplex-Kit can also be obtained from Bruker Daltonics (Cat. No. BDAL #244573). For more information please contact Bruker Daltonics directly.

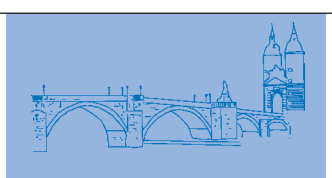
We take care of our customers

CARE products are designed for supporting our customers worldwide with high-quality consumables, accessories and certified kits for all Bruker Daltonics systems.

www.bdal.de/care

Ordering Information

Product	Cat. No.	Size
SERVA ICPL™ Triplex-Kit	39231.01	1 Kit (3 x 6 Samples)



SERVA Electrophoresis

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