

Detergents and Mass Spectrometry

Please talk to us about any detergents that are used in your sample preparation procedure, *even if they are far upstream in your sample handling protocol.*

Unfortunately, most detergents are **not** compatible with downstream mass spectrometry analysis on the ion trap (*LTQ*). Dilution, washing, and detergent removal columns cannot remove enough detergent for successful analysis of your sample or to prevent significant contamination of the mass spectrometer. Detergent contamination of a mass spectrometer is very costly (ruined columns/tubing) and very time consuming to the laboratory. If you have a simple sample, we might be able to analyze it using the MALDI TOF/TOF mass spectrometer. If your samples are very complex, we might be able to purify them by running them through an SDS-PAGE gel. Below is a list of compatible/incompatible detergents for in-solution or in-gel digestions.

In-solution Digestion

Compatible Detergents

- 0.05%-1% SDS
- 0.05%-0.5% CHAPS

Incompatible Detergents

- Nonidet P-40 (which can no longer be purchased; Sigma is substituting *CA-Igepal 630*)
- Triton® X-100 (or any derivative)
- Igepal/PEG (any derivative)
- Brij®-35 (or any derivative)
- Tween®-20
- OTG
- CHAPSO
- Type NP40/NP40 alternative

In-gel Digestion

Compatible Detergents

- SDS (up to 2%)
- CHAPS (up to 4%)
- Nonidet P-40 (up to 1%); which can no longer be purchased; Sigma is substituting *CA-Igepal 630*

Incompatible Detergents

- Triton® X-100 (or any derivative)
- Tween®-20
- Igepal/PEG (any derivative)
- Brij®-35 (or any derivative)
- OTG

- CHAPSO
- Type NP40/NP40 alternative

Some detergents can be separated from the sample by standard SDS-PAGE or acetone precipitation. However, Triton-X and Tween-20 cannot be used under any circumstances. These **cannot** be removed from your sample using dilution, washing, detergent spin columns, or SDS-PAGE. Alternatively, below is a list of mass spec friendly detergents and their vendors. We are happy to help you develop a mass spec friendly sample preparation protocol.

Other Mass Spec Friendly Detergents

1) N-octyl- β -glucopyranoside

<http://www.piercenet.com/products/browse.cfm?fldID=02050602>

2) PPS Silent Surfactant (acid-cleavable detergent)

<http://www.proteindiscovery.com/solubilization/solubilization-with-pps-silent-surfactant/>

OR

[http://www.chem.agilent.com/en-](http://www.chem.agilent.com/en-US/Search/Library/_layouts/Agilent/PublicationSummary.aspx?whid=57648&liid=9010)

[US/Search/Library/_layouts/Agilent/PublicationSummary.aspx?whid=57648&liid=9010](http://www.chem.agilent.com/en-US/Search/Library/_layouts/Agilent/PublicationSummary.aspx?whid=57648&liid=9010)

3) Protea Biosciences (anionic, zwitterionic, or cationic acid labile detergents)

<https://proteabio.com/products/group/18>

4) Big CHAP deoxy

http://www.merck-chemicals.com/usa/life-science-research/big-chap-deoxy/EMD_BIO-256455/p_Ltab.s1L_8AAAEWhmEfVhTm?WFSimpleSearch_NameOrID=chap&BackButtonText=search+results

5) ASB series

http://www.emdchemicals.com/life-science-research/novel-zwitterionic-detergents/c_Cxyb.s1OXy0AAAEi2J1NIRzu

6) sodium deoxycholate

<http://www.piercenet.com/products/browse.cfm?fldID=5aea3ff6-a1ed-4054-841d-42ff0097191b>