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)


OR


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