

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. Dilution, washing, and detergent removal columns cannot sufficiently remove some detergents. Presence of residual detergent can lead to unsuccessful analysis of your sample and/or significant contamination of the LC column, tubing and even the mass spectrometer itself. This is both costly and time consuming. Some detergents can be separated from the sample by using columns, standard SDS-PAGE or acetone precipitation. However, Triton-X and Tween-20 tend to remain problematic and should be avoided, if possible. Below are lists of compatible/incompatible detergents for in-solution or in-gel digestions as well other mass spec-friendly detergents.

In-solution Digestion

Compatible Detergents

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

Incompatible Detergents

- Nonidet P-40/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/ CA-Igepal 630 (up to 1%)

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

Other Mass Spec Friendly Detergents

1. N-octyl- β -glucopyranoside
2. PPS Silent Surfactant (acid-cleavable detergent)
3. Protea Biosciences (anionic, zwitterionic, or cationic acid labile detergents)
4. Big CHAP deoxy
5. ASB series
6. sodium deoxycholate