Deuterated and Selenated Detergents

DEUTERATED DETERGENTS

NMR studies of membrane and other hydrophobic/lipophilic proteins often require the use of a lipid or lipid-like detergent to maintain solubility and stability[1-3]. However, this can create NMR signal interference from the increased concentration of hydrogen atoms added by the densely packed detergent. By replacing the hydrogen atoms in the detergent with a per deuterated equivalent, you can silence the interference and make it easier to resolve the protein structure.

PER DEUTERATED TAIL

F308PDT	Fos-Choline-12, Per Deuterated Tail

PER DEUTERATED HEAD

F304PDH	Fos-Choline-10, Per Deuterated Head
F306PDH	Fos-Choline-11, Per Deuterated Head
F308PDH	Fos-Choline-12, Per Deuterated Head
F312PDH	Fos-Choline-14, Per Deuterated Head

References:

1. Jun Kim, H., Howell, S. C., Van Horn, W. D., Ho Jeon, Y., Sanders, C. R. (2009) *Prog. Nucl. Magn. Reson. Spectrosc.* **55**, 335-360.
2. Sanders, C. R., and So, F. (2006) *Magn Reson Chem* **44**, S24-40.
3. Varga, K., Aslimovska, L., Parrot, I., Dauvergne, M.-T., Haertlein, M., Forsyth, V. T., Watts, A. (2007) *Biochimica er Biophysica Acta (BBA) - Biomembranes* **1768**, 3029-3035.

SEMI DEUTERATED HEAD

F304SDH	Fos-Choline-10, Semi Deuterated Head
F306SDH	Fos-Choline-11, Semi Deuterated Head
F308SDH	Fos-Choline-12, Semi Deuterated Head
F312SDH	Fos-Choline-14, Semi Deuterated Head

DEUTERATED

F308D	Fos-Choline-12, Deuterated
F312D	Fos-Choline-14, Deuterated
O311T	n-Octyl-d17-β-D-Glucopyranoside
O311D	n-Octyl-d17-β-D-Glucopyranoside-d7
D310T	n-Dodecyl-d25-β-D-Maltopyranoside

SELENIUM DETERGENTS

A selenium atom is very dense and in X-ray diffraction studies these dense atoms are used as points of reference to overcome crystal phasing problems. Historically selenium has been incorporated into protein crystals either by leaching selenium into previously formed crystals or by using proteins selenated via expression in selenomethionine media.

Replacing your current detergent that previously produced poor X-ray diffraction results with an Anatrace® selenium-based equivalent will create reference points and help to resolve your protein. In addition, recent membrane protein studies have suggested that detergents can bind at putative lipid binding sites on membrane proteins. Why not try co-crystallizing with the lipidic 12-Selenotetraethyleneglycol-Mono Octyl Ether to assist phasing?

PER DEUTERATED HEAD

D910	Decyl-β-D-Selenomaltoside
D912	Dodecyl-β-D-Selenomaltoside
H907	Heptyl-β-D-Selenoglucoside
O908	Octyl-β-D-Selenoglucoside

PER DEUTERATED HEAD

O918	Octyl-β-D-Selenomaltoside
S2000	L-(+)-Selenomethionine, Anagrade
T908	12-Selenotetraethyleneglycol Mono Octyl Ether
U911	Undecyl-β-D-Selenomaltoside

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