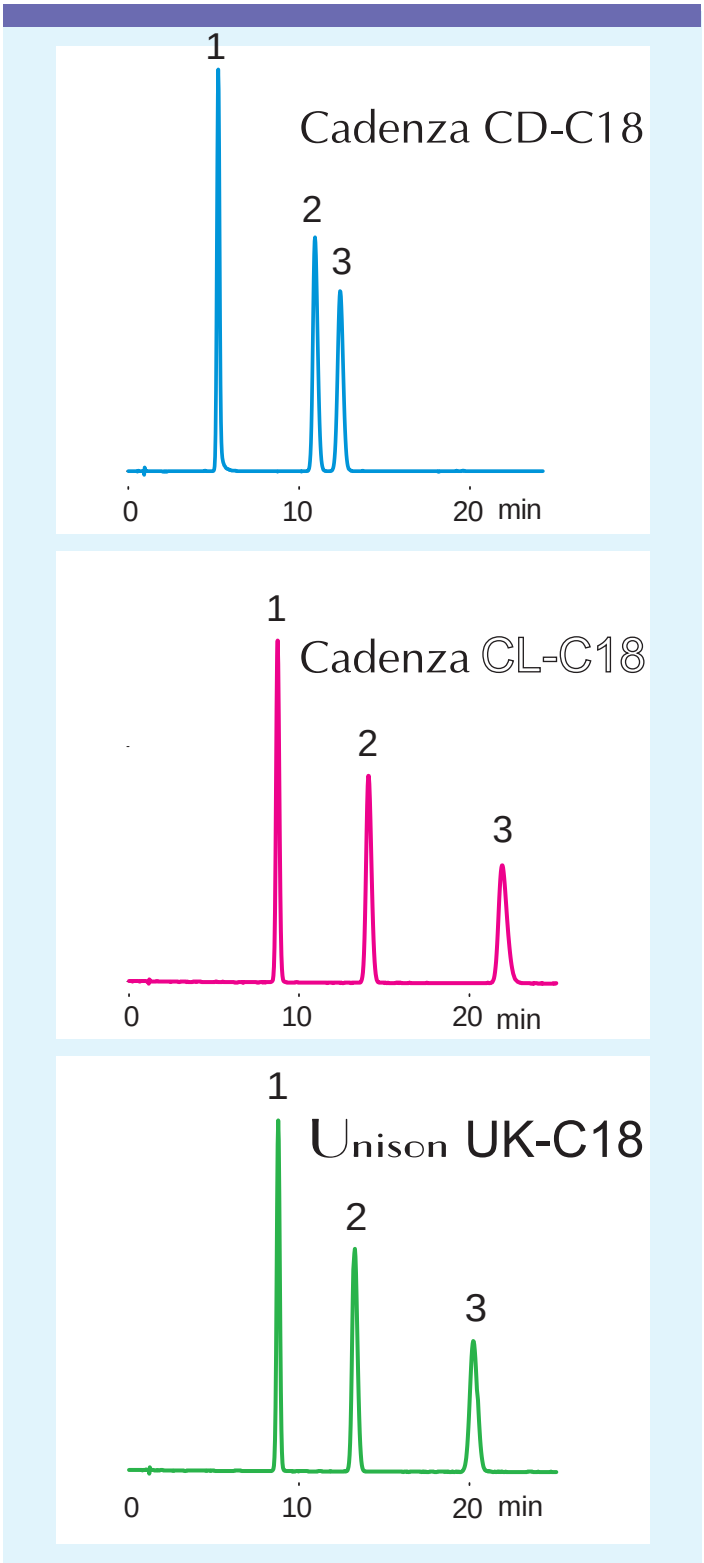
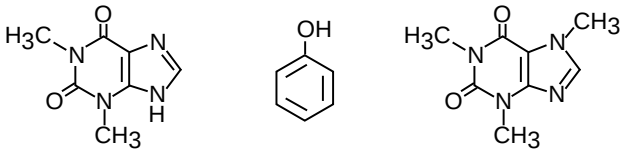
Cadenza CL-C18
Cadenza CD-C18
Unison UK-C18

75 x 4.6 mm

Technical

Retention behavior of polar compounds





1. theophylline 2. phenol 3. caffeine

75 x 4.6 mm,
water /acetonitrile /formic acid = 96 /4 /0.1
1mL/min, 37deg.C, 260nm

In reversed-phase separation mode, the molecular interaction between polar compounds and stationary phase consists of both hydrophobic and secondary interactions. Caffeine and theophylline are highly polar molecules (containing many nitrogen and oxygen atoms). Electrostatic (secondary) interaction can affect retention / separation for such polar molecules.

Cadenza CD-C18

CD-C18 is designed with high ODS ligand density as well as minimal electrostatic interaction. Because this packing material does not allow for much electrostatic interaction to occur, theophylline and caffeine have (relatively) short retention times.

Cadenza CL-C18

CL-C18 ODS ligand density is the same as CD-C18 - however, the residual silanols in CL-C18 allow for an increase in electrostatic interaction. This results in longer retention times for both theophylline and caffeine. An increase in retention time is also observed for phenol with CL-C18 due to weak interaction between OH functional group and residual silanols.

Unison UK-C18

UK-C18 ODS ligand density is lower than CD-C18 - however, the end-capping efficiency is the same as CD-C18. This phase design allows for analytes to easily interact with the siloxane on the surface of the silica material. Theophylline and caffeine have longer retention times on UK-C18 (than on CD-C18) due to the electrostatic interaction between polar atoms and siloxane. Retention for these two compounds is similar to that obtained on CL-C18.