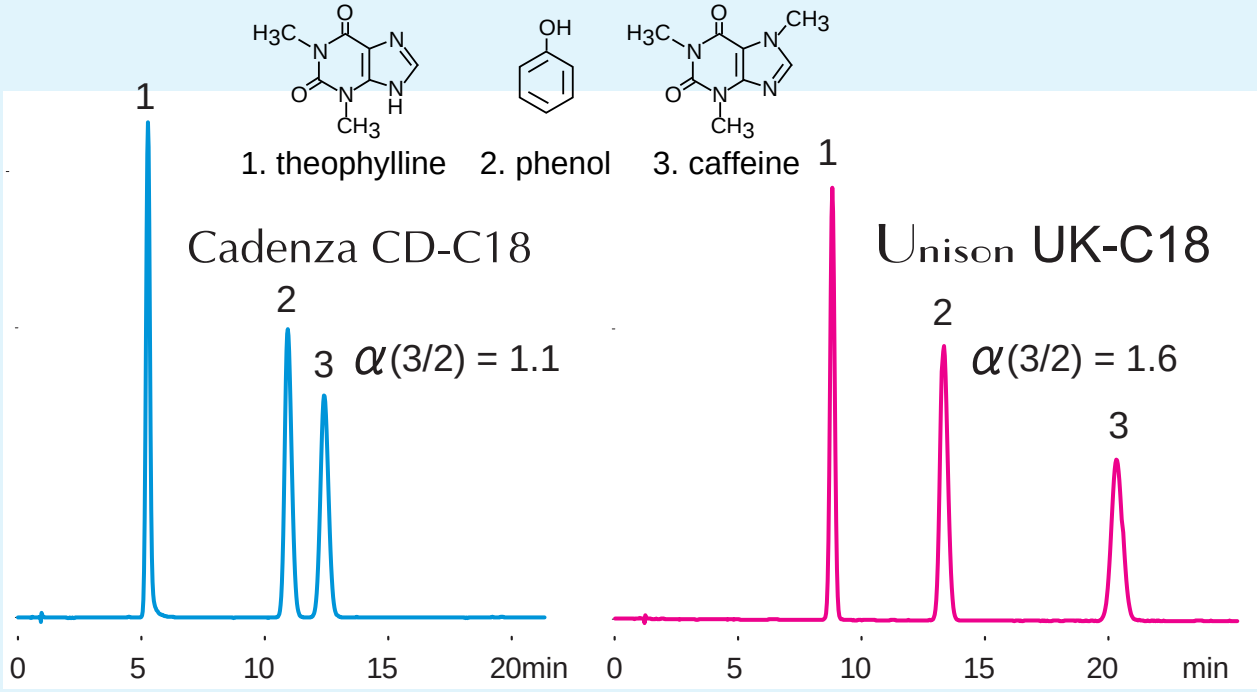
Unison UK-C18
Cadenza CD-C18

Technical

Retention properties of polar compounds

Electrostatic Interaction



75x4.6mm, water/acetonitrile/formic acid = 96/4/0.1, 1mL/min, 37deg.C, 260nm

The figure above shows the selectivity difference between Cadenza CD-C18 and Unison UK-C18 for hydrophilic compounds. The increase in retention for both theophylline and caffeine on UK-C18 is (relatively) large. However, the observed increase in retention for phenol on UK-C18 is not so large. This difference comes from electrostatic interaction (hydrogen bonding or dipole interaction). The hydroxide group on phenol does interact more with UK-C18 than CD-C18 (resulting in an increase in retention). However, the reason for the (relatively) larger increase in retention for both theophylline and caffeine on UK-C18 is due to the amount of polar atoms (nitrogen or oxygen) in the molecules.

Unison UK-C18 has adopted the same porous base silica and "polymeric end-capping" process as CD-C18. Both UK-C18 and CD-C18 have the same siloxane surface structure, but differ in ODS ligand density (UK-C18 having a lower ODS ligand density than CD-C18). Solutes have more access to the siloxane surface structure of UK-C18, due to the lower ligand density. This results in more electrostatic interaction between solute and stationary phase. Consequently, hydrophilic compounds are retained more on the less hydrophobic ODS phase (UK-C18).

Unison UK(US)-C18 surface structure is designed with the following concepts:

- Utilization of siloxane via silica matrix and end-capping structure
- Optimization of octadecyl ligand density.

This novel design concept is advantageous for depressing ionic interaction between basic compounds and residual silanols, as well as increasing retention for hydrophilic compounds.

The surface structure of Unison UK(US)-C18 allows for an optimal amount of hydrophobic and electrostatic interaction, and is compatible with eluents of varying solvent strengths (100% aqueous up to 100% organic). Unison UK-C18's surface structure provides an excellent balance of retention for both hydrophilic and hydrophobic compounds.