Retention and selectivity of cogent HydrideTM based stationary phases in hydrophilic interaction liquid chromatography (HILIC)

Eman Y Santali and David G Watson
University of Strathclyde, UK

Hydrophilic interaction chromatography (HILIC) has been the subject of a few excellent reviews in recent years and focused on different factors which impact on the separation of compounds in HILIC mode including column temperature, mobile phase composition, pH and buffer type and concentration. However, there have not been as many studies focusing on the retention mechanism and selectivity in HILIC. In the light of recent development in HILIC stationary phases and their applications, the need to understand the mechanisms that govern the separation in HILIC, which is not purely due to partitioning, and the contribution of stationary surface became a subject of study. The aim of this study was to define the possible mechanisms which might be involved in the HILIC mode by a comprehensive retention and selectivity study of some commercially available hydride-based stationary phases in the analysis of hydrophobic acids and bases. The study conducted on HPLC system and the mobile phases consisted of 90 and 95% acetonitrile with 20 mM ammonium acetate buffer at pH 6.9. The stationary phases included cogent silica hydride, cogent phenyl hydride and cogent cholesterol UDC. All tested probes exhibited a strong HILIC retention despite the high lipophilic properties indicating mixed-interaction mechanisms that retained the highly lipophilic probes purely on the basis of the hydrophilic interactions suggesting even the most purified Type C silica might experience ion exchange and/or lipophilic interactions at extreme acetonitrile (≥ 90%) and the most lipophilic cholesterol column interestingly being the most retentive phase under HILIC mode. This finding might propose the functionality of non-polar phases in HILIC chromatography.

Biography
Eman Y Santali has completed her MSc degree and started her PhD immediately at University of Strathclyde in Glasgow. She is in her final stage to receive PhD degree and will join Taif University in Saudi Arabia as a Lecturer in the Department of Pharmaceutical Chemistry. During her academic journey she published two papers in the field of her study. She presented her work in many conferences in Europe and also attended a number of analytical workshops and was awarded a Quality Control Manager Certificate from the European Compliance Academy (ECA) in Germany.

eman.y.santali@strath.ac.uk