Determination of Selenium Species with HPLC-ICP-MS for Various Samples

Pak, Yong-Nam
Department of Chemistry Education, Korea National University of Education, Chung Buk 28791, Korea
**E-mail: pakyn@knue.ac.kr*

HPLC connected with an Octopole collision/reaction cell ICP-MS is powerful to separate and detect many Se species in different samples. Se is important in environmental and bioanalytical areas. Thus, it is very important to monitor very low concentrations (ppb level) at complex-matrix samples. First, accurate quantitative measurements can be made by the use of collision cell technology. Different types of collisoin gases have been tried. Deuterium has been successful in removing isobaric interferences especially from Br matrix. In separating Selenium species, different columns (C18, Affinity, ion exchane) can be chosen depending on the types of samples and jobs required. Eluting solvent also should be carefully chosen as it can change sensitivity in gradient technique.

Using C18 and ion exchange columns, inorganic and organic selenium species could be determined for various samples including fish, mushrooms, vegeetables and Se-fortified Spirulina. By combining affinity column HPLC with ICP-MS, selenoproteins could be separated and determined with post column isotope dilution technique. Accurate determination of trace amount of selenoproteins in human blood serum could allow that Se be one of the biomarker for cancer diagnosis of which possibility will be discussed.