Sheng-Suan (Victor) Cai, J Anal Bioanal Techniques, 2:6
doi: http://dx.doi.org/10.4172/2155-9872.S1.02

OMICS Group Conferences
Accelerating Scientific Discovery

2nd International Conference on
Analytical & Bioanalytical Techniques

16-17 December 2011 San francisco, USA

TITLE

UHPLC-APPI-MS Method for High-Sensitivity and High-Throughput Analysis of US EPA Sixteen Priority Pollutants Polynuclear Aromatic Hydrocarbons in Oyster

Sheng-Suan (Victor) Cai[1], Joan Stevens[2], Brian Nies[1] and Jack A. Syage[1]

[1]Syagen Technology, Inc., 1411 Warner Avenue, Tustin, USA

[2]Agilent Technologies, Inc., 5301 Stevens Creek Blvd, Santa Clara, USA

In response to Gulf of Mexico deepwater horizon oil spill, we developed a QuEChERS and APPI based UHPLC-MS method for analysis of PAHs in oyster using the Agilent 1290 Infinity LC System coupled to an Agilent 6140 Single Quadrupole LC/MS System equipped with the Syagen PhotoMate APPI source. APPI gave major ions of M^+ for all PAHs using chlorobenzene as a dopant. In comparison with the existing HPLC-UVD/FLD and GC or GC-MS based methods, this method offers better selectivity and higher sample throughput. UHPLC-APPI-MS gave 3.6 – 5.1 (Ave. 4.4) orders of dynamic linear ranges ($R^2 \geq 0.995$) for these analytes. Ten grams of oyster were used for QuEChERS extraction and d-SPE cleanup. The method detection limits (MDLs, 6σ S/N=3) were: Naphthalene: 0.028 ppm; Acenaphthylene: 0.129 ppm; Acenaphthene: 0.102 ppm; Fluorene: 0.013 ppm; Phenanthrene: 0.040 ppm; Anthracene: 0.030 ppm; Fluoranthene: 0.030 ppm; Pyrene: 0.023 ppm; Benzo[a]anthracene: 0.030 ppm; Chrysene: 0.031 ppm; Benzo[b]fluoranthene: 0.021 ppm; Benzo[k]fluoranthene: 0.021 ppm; Benzo[a]pyrene: 0.027 ppm; Dibenzo[a,h]anthracene: 0.013 ppm; Benzo[g,h,i]perylene: 0.057 ppm; Indeno[1,2,3-c,d]pyrene: 0.040 ppm. These MDLs were as much as four orders of magnitude lower than the US FDA levels of concern (LOCs). The spike recoveries ranged from 77% to 110% with %RSD of 0.6-6.7 at spike conc. (Level 1) lower or substantially lower than LOCs, and 71% to 92% with %RSD of 0.3-4.3 at Level 2 (5x Level 1).

Biography

Mr. Sheng-Suan (Victor) Cai is a Senior Applications Scientist at Syagen Technology, Inc., a wholly owned subsidiary of Morpho Detection, Inc., Safran Group. Mr. Cai has over 25 years of hands-on working experiences in the field of analytical chemistry. Since joining Syagen in 2003, Mr. Cai has authored and co-authored a dozen of peer-reviewed, LC-APPI-MS(/MS) based, research journal articles and has presented over twenty APPI related presentations in scientific conferences such as ASMS conference, Pittcon, Montruex LC-MS Symposium, AOCS Annual Meeting and Expo, CoSMoS, FPRW and AOAC International conference, etc.