

Abstract:

A rapid and simple derivatization procedure has been developed for gas chromatographic determination for of perfluorinated acids (C6-C12), using isobutyl chloroformate to convert the acids into more volatile isobutylesters, under catalysis by pyridine. The procedure was optimized in an acetonitrile medium and applied to GC techniques with electron-capture detection (GC-ECD) and mass spectrometry with electron-impact ionization (GC-EI-MS), for the sake of comparison, HPLC with electrospray-ionization MS (HPLC-ESI-MS) was also tested. The LOD and LOQ values obtained for these three techniques were compared, and the lowest LODs were obtained with GC-ECD (0,1-1,8 µg/ml). By comparing the sensitivity of analytical separation method utilizing the same derivatization technique for the analysis of PFA, GC-ECD proves to be more appropriate and sensitive than GC-MS. In addition, an evaluation of the various derivatization techniques for GC-ECD, GC-MS and HPLC-MS method without derivatization, shows that GC-ECD method is superior to GC-MS or HPLC-MS.