Separation and Characterization of Alkyltrimethylbenzene Derivatives in Diesel Exhaust Particles (DEP)

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In our continuing studies on estrogenic compounds in diesel exhaust particles (DEP), we have reported the systematic separation of alkyl dibenzothiophenes from the estrogenic hexane fraction of DEP. In this study, another estrogenic fraction was further isolated and characterized. DEP were roughly fractionated by successive extraction with hexane, benzene, dichloromethane, methanol, 1 M ammonia and 1 M HCl. The hexane extract, which exhibited estrogenic activity, was further fractionated by column chromatography and high performance liquid chromatography (HPLC). From one of the obtained fractions that showed estrogenic activity, three alkyltrimethylbenzenes were identified by gas chromatography-mass spectrometry (GC-MS) and ¹H-nuclear magnetic resonance (NMR) spectroscopy.

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