

# GC/MS-SIM for the Determination of Alkylphenols, Chlorophenols and Bisphenol A in Human Urine

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## ABSTRACT

I improved an analytical method for determining trace amounts of the eleven phenol endocrine disrupting chemicals (EDCs (alkylphenols, chlorophenols, and bisphenol A)) in human urine. Human urine was subjected to hydrolysis and then to solid phase extraction with a XAD-4 column.

Alkylphenols, chlorophenols, and bisphenol A in XAD-4 column were eluted with acetonitrile, and the eluate was concentrated under a nitrogen stream, and then *tert*-butyldimethylsilylation. Separation and determination were done by gas chromatography, using mass spectrometry operating in the selective ion monitoring mode for quantitation.

For *tert*-butyldimethylsilyl (TBDMS) derivatization the recoveries were 91.2~125.9%, the limits of quantitation (LOQ) for the 11 phenol EDCs in the nanogram-per-milliliter range (0.025~1.000 ng/ml) were thus achieved by using 1 ml of urine, and the SIM responses were linear with the correlation coefficient varying by 0.9300~0.9943. Based on the results for urine samples from unexposed individuals, 4-*tert*-octylphenol and pentachlorophenol were detected in hydrolysed urine sample. Other alkylphenols, chlorophenols and bisphenol A were not detected.

key words : endocrine disrupting chemicals, TBDMS, GC/MS-SIM, LOQ, phenol