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SIMULTANEOUS DETERMINATION OF ENDOCRINE DISRUPTIVE PHENOLIC COMPOUNDS AND ORGANOCHLORINE PESTICIDES IN WASTEWATER AND SLUDGE SAMPLES BY GC-MS AFTER MULTIVARIATE OPTIMIZATION OF BINARY SOLVENT MICROEXTRACTION

Dotse Selali Chormeya, Merve Fırata, Sezgin Bakırderea\*

aYıldız Technical University, Faculty of Art and Science, Chemistry Department, 34210, İstanbul, Turkey

\*E-mail: bsezgin23@yahoo.com

The main sources of environmental contamination are anthropogenic activities, and the level of contamination increases according to the level of production and consumption. Even at low levels, contaminants have the tendency to enter the human body and accumulate in organs/tissues over time, causing health disorders [1]. A group of chemicals known as endocrine disruptive chemicals/compounds (EDCs) have the capability to act like hormones and/or block the receptor cites of hormones, leading to endocrine system malfunction [2]. These include a broad range of natural/synthetic compounds as pesticides, alkylphenols (APs), bisphenol A (BPA) and phthalates include the metabolism, developmental, neurological, immune and reproductive systems, and they occur at low levels in the environment [3]. This therefore calls for very sensitive analytical strategies to perform accurate and precise determination of these compounds. In this study, an accurate and sensitive dispersive liquid-liquid microextraction method based on a binary mixture of extraction solvents was used to preconcentrate selected analytes for the simultaneous determination by GC-MS. A Box-Behnken experimental design was used to optimize the amounts of binary and dispersive solvents, and mixing period. Analysis of variance was used to evaluate the main effects experimental parameters and their interaction with each other. Under the optimum experimental conditions, the detection limits of the analytes ranged between 0.16 – 1.5 µg/L. The linear dynamic range of the analytes was broad, and the low percent relative standard deviation obtained for six replicate measurements of the lowest concentrations of the calibration plots was low (%RSD < 8.0 %), indicating high precision. Two municipal wastewater samples were spiked at 10.0, 50.0 and 100 ng/mL and their percent recoveries used to validate the method’s accuracy and applicability to real samples. The results obtained fell between 82 and 108%, indicating that the method is applicable to wastewater matrix. Recovery of analytes from waste sludge was also tested, but matrix matching was employed to overcome complex matrix effects to obtain satisfactory recovery results (≈100%).

**KEYWORDS:** Dispersive liquid-liquid microextraction, endocrine disruptors, experimental design, pesticides.

**REFERENCES:**

1. Salgueiro-González, N., Muniategui-Lorenzo, S., López-Mahía, P., Prada-Rodríguez, D., Analytica Chimica Acta, (2017), 962, 1-14.

2. Chormey, D.S., Büyükpınar, Ç., Turak, F., Komesli, O.T. and Bakırdere, S., Environmental Monitoring and Assessment, (2017), 189 (6): 277.

3. Pojana, G., Gomiero, A., Jonkers, N., Marcomini, A., Environmental International, (2007), 33, 929-936.