

Joint Event

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## Optimization of liquid-liquid micro-extraction technique for trace determination of pesticide diazinon before HPLC analysis

**Introduction & Aim:** Measurement of pesticides in biological matrices has become a serious challenge for researchers due to their very low concentration in different matrices. The aim of this study was to optimize a new sample preparation procedure with high accuracy and validity and short retention time for determination of diazinon.

**Materials & Methods:** Dispersive liquid-liquid micro-extraction technique coupled with high performance liquid chromatography equipped with ultra violet detector was developed for trace extraction and determination of diazinon pesticide in human urine samples. One variable at a time method was used to optimize parameters affecting the diazinon extraction. Different parameters such as extraction solvent, disperser solvent, and volume of the extraction solvent, volume of the disperser solvent, centrifugation time and speed, salt addition, and sample pH were studied and optimized.

**Result:** Findings showed that optimal levels of these variables for diazinon pesticide were 150  $\mu$ l of carbon tetrachloride as extraction solvent, 1.5 ml of methanol as dispersive solvent, pH of 6, 5 minutes centrifuge time at speed of 4000 rpm, 0% (w/v) salt addition. Correlation coefficient was 0.9965 indicating the linearity of a wide range of concentrations of the toxin. LOD and LOQ was calculated less than 0.7 and 5  $\mu$ g L<sup>-1</sup> respectively. The relative standard deviation for six replicate experiments in intra-day and inter-day at three selected concentrations (50, 200 and 1000  $\mu$ g L<sup>-1</sup>) was less than 4% that indicates the accuracy and precision of the optimized method. Enrichment factor and extraction recovery for diazinon were 245 and 99% respectively.

**Conclusion:** According to the results, dispersive liquid-liquid micro-extraction procedure was successfully developed for the extraction of diazinon from human urine samples. Compared to other extraction techniques, the proposed procedure had some advantages such as shorter extraction time, better reproducibility, and higher enrichment factor.

### Biography

Seyed Jamaledin Shahtaheri has completed his PhD from Surrey University, Guildford, Surrey, England in 1996. He is an Academic Member of Department of Occupational Health Engineering, Tehran University of Medical Sciences, Iran; acting as the Dean Research Deputy at Institute for Environmental Research in the same University. He served as Persistent Organic Pollutant Review Committee (POPRC) Member under the Stockholm Convention, UNEP, UN during the period 2014-2018

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