

# **Extraction and preconcentration of trace amount of pollutants using hollow fiber liquid phase microextraction**

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**Extraction and preconcentration of trace amount of pollutants using hollow fiber liquid phase microextraction** Abstract Formaldehyde is known as a highly toxic compound to humans and identified as a carcinogenic substance. In this study, the Hantzsch reaction was utilized for derivatization of trace amounts of formaldehyde in aqueous samples with acetylacetone in presence of ammonia to form an extractable color product named 3,5- diacetyl 1,4- dihydrolutidine and further extraction using two phase hollow fiber liquid phase microextraction (HF-LPME). The main experimental variables were affecting the extraction were investigated and optimized. Under the optimum conditions (sample volume: 12 mL; ; acetyl acetone: 0.15 mol L<sup>-1</sup>; reaction temperature: 70°C in a time interval of 30 min; ammonium acetate buffer solution: 4 mL 0.1 mol L<sup>-1</sup>; acetyl acetone: 5 mL 0.15 mol L<sup>-1</sup> reacted in ultrasound water bath (30 min at 70 °C); extraction solvent: octanol, salt concentration: (w/v); pH of donor phase: 7.0; stirring speed: 400 rpm and extraction time: 30 min) the dynamic linear range, limit of detection (LOD as 3S<sub>b</sub>/m) and relative standard deviation (%RSD) of the proposed method were obtained as 5-250 µg L<sup>-1</sup> (r<sup>2</sup> = 0.9979), 3.6 µg L<sup>-1</sup> and %2.5, respectively. Finally, the applicability of the proposed microextraction method was examined and very good results were obtained. The results confirmed the applicability of the proposed method as a versatile, low cost and sensitive preconcentration method for determination of very low concentrations of formaldehyde in aqueous solutions.

**Keywords :** Keywords: Formaldehyde, Two phase hollow fiber, Liquid-phase microextraction, Hantzsch reaction, spectrophotometer.

