

عنوان مقاله:

Extraction of imidacloprid from human biological samples using the QuEChERS method and its determination by high performance liquid chromatography (HPLC)

محل انتشار:

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تعداد صفحات اصل مقاله: 1

نویسندگان:

Zohreh Karimi - *Department of Toxicology, Faculty of pharmacy, Mazandaran University of medical Sciences, Sari, Iran*

Mohammad Shokrzadeh - *Department of Toxicology, Faculty of pharmacy, Mazandaran University of medical Sciences, Sari, Iran*

Ali Abbasi - *Legal Medicine Research Center, Legal Medicine Organization, Tehran, Iran- Department of Community Medicine, Sari Branch, Islamic Azad University, Sari, Iran*

Vahid Sharifi - *Legal Medicine Research Center, Legal Medicine Organization, Tehran, Iran*

خلاصه مقاله:

Introduction: Suicide attempt using the pesticides is an important health problem in different countries. Imidacloprid is a systemic insecticide and belongs to a class of chemicals called the neonicotinoids . Due to the complexity of biological matrices and low concentrations of analytes in these environments use of newly emerged extraction techniques which use small amounts of organic solvents is inevitable. In this research QuEChERS method was applied to extract imidacloprid from blood and liver tissue of a deceased body admitted to the legal medicine of Mazandaran. **Materials and methods:** The QuEChERS is a simple and fast extraction method which uses the low volume of organic solvents. Experimental factors affecting the extraction recovery were investigated and the optimum extraction conditions were determined. The blood and liver samples were extracted in the optimum extraction conditions and analyzed by HPLC. **Results:** Optimum extraction conditions were 3 ml of acetonitrile, pH = 5, 0.1 mg of NaCl and 0.4 gMgSO₄ as adsorbent. At the optimum conditions LOD and LOQ were 0.02 and 0.06 ppm respectively. The HPLC mobile phase was 30% of acetonitrile and 70% of phosphate buffer (pH=2.3) with flow rate of 1 mLmin⁻¹. Standard addition method was used for determination and the concentrations of 12 and 1.8 ppm were obtained in blood and liver respectively. **Conclusion:** By analyzing and optimizing the QuEChERS method variables after analyzing the results, this method can be used as a simple and effective alternative to the liquid-liquid extraction method. The advantages of this method are simple, fast and very low organic solvent volume.

کلمات کلیدی:

Imidaclopride, Extraction, QuEChERS, Biological samples, HPLC

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