

عنوان مقاله:

Synthesis of MOF- Δ Modified Bi 2 WO 6 Polyoxometalate Accommodated on the Pores of Hollow Fiber for HF-SPME of Acetamiprid, Abamectin and Diazinon and their Determination by High Performance Liquid Chromatography-Ultraviolet

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خلاصه مقاله:

In this study, metal organic framework- Δ / Bi 2 WO 6 (MOF- Δ /Bi 2 WO 6) composite was synthesized for using in hollow fiber solid phase microextraction (HF-SPME) for separating acetamiprid, abamectin, and diazinon as the model compounds. To use the prepared adsorbent in the HF-SPME configuration, propylene hollow fiber was soaked in the methanolic mixture of adsorbent for accommodating the sorbent inside the pores of hollow fiber. In the next step, various parameters were optimized. Under optimal condition, the linear ranges for measuring acetamiprid, abamectin and diazinon were $0.2-100 \mu\text{g L}^{-1}$, $0.2-100 \mu\text{g L}^{-1}$, and $0.5-200 \mu\text{g L}^{-1}$, respectively. The coefficients of determination (R^2) were 0.9961 to 0.9982 . The limits of detection (LODs) of the method for acetamiprid, abamectin, and diazinon were 0.06 , 0.05 , and $0.14 \mu\text{g L}^{-1}$, respectively. Moreover, the enrichment factors (EFs) were 64 , 66 , and 62 for acetamiprid, abamectin, and diazinon, respectively. In addition, the absolute recoveries (ARs%) were in the range of $62-64\%$. Relative standard deviation values (RSD%) for the concentration of $2.0 \mu\text{g L}^{-1}$, $10 \mu\text{g L}^{-1}$, and $100 \mu\text{g L}^{-1}$ of acetamiprid were between 1.1% and 4.7% , for abamectin between 1.1% and 4.5% and for diazinon between 1.7% and 3.0% . Finally, the proposed method was used to determine acetamiprid, abamectin and diazinon in orange, quince, pomegranate, and agricultural water. The results showed that the percentage of relative recovery of these toxins in the real samples studied was between 89 and 102 .

کلمات کلیدی:

Pesticides, Solid phase microextraction, experiment design, MOF- Δ /Bi 2 WO 6 composite, Hollow Fiber

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