

**University of zabol
Graduate school
Faculty of science
Department of chemistry**

The Thesis Submitted for the Degree of M. Sc

In the field of Analytical Chemistry

**Application of Solid microextraction method using Curcumin-
based fibres for Determination of pesticides by gas
chromatography**

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Abstract

Due to the fact that residual toxins in agricultural and food products, which are a direct result of repeated, inappropriate and excessive spraying of crops during the growing season, is a serious threat to consumer health. Therefore, identifying and determining the residual toxins in products with the aim of ensuring the health, safety and quality of products is of particular importance. Since many sample preparation methods usually require high solvent consumption. Development of new preparation techniques with high efficiency and simple working method is the most important part of research and development. One of the most important developments in sample preparation is solid phase microextraction technique, which due to its unique benefits such as Solvent free and high performance used by researchers in various fields including food, medicine and clinical chemistry. In this study, using an electrochemical method, a new high-performance fiber has been synthesized for measuring agricultural pesticides. The synthesized fiber has been investigated by methods such as infrared (IR) spectroscopy and scanning electron microscopy (SEM) and has been used to extract agricultural pesticide residues. In this way, the parameters affecting extraction such as extraction temperature, solution volume, salt effect, fiber thickness effect, pH effect, etc. on extraction efficiency are investigated and optimized, and in optimal conditions, the efficiency of the proposed method in extraction from real samples is evaluated.

Keywords: Solid phase microextraction, Curcumin, Agricultural pesticides, Gas chromatography