National University of Science and Technology
Think in Other Terms

Department of

Applied Chemistry

Final Year Project

By

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HPLC and UV/Vis spectrophotometry methods development, validation and comparison for simultaneous quantification of Deltamethrin and Pirimiphos methyl in pesticide products.

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Abstract

Reversed phase HPLC and UV spectrophotometry methods for estimation of deltamethrin and pirimiphos methyl in dust pesticides formulation were developed. Both methods are relatively simple, fast, precise, accurate and cost effective. The HPLC method uses acetonitrile and water in the ratio 9:1 as the mobile phase. Isocratic elution and a mobile flow rate of 2.0ml/min on protecol C18 column. Under these conditions the elution of the two actives occurs in 5minutes. A single beam spectrophotometer was used for the UV absorbance measurements. Acetonitrile gave good solvent characteristics and was used as the UV solvent. All absorbance measurements were carried out using quartz cuvettes. Maximum absorbance for the actives was observed at 277nm and 302nm for deltamethrin and pirimiphos methyl respectively. All solvents used were analytical grade. The amount of actives in the product was determined using simultaneous equation method. The HPLC method proved to be more accurate and accurate and precise than the UV method. However the UV method gains more advantages in saving time and resources. Performing a t-test on the results indicates that there was no difference between the two methods at 95%conifidence level. This suggests that both methods can be used for the simultaneous estimation of deltamethrin and pirimiphos methyl in dust pesticide formulations.