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Application of HPLC techniques in pesticide

Reyhaneh Sahba
Plant Protection Organization, Iran

Pesticides of different chemical classes are widely used in agriculture and public health worldwide. As we can see, the amount of pesticides which complicates the task of quality controls, determination of active ingredients (a.i.) was conducted according to official CIPAC, FAO and original manufacturer. The liquid chromatography system is used in the laboratory of PPO for the QC of imported and produced pesticides to the active ingredients (a.i.) content. In this paper, a different approach to the original method of analysis and QC of the reference or the main manufacturer was proposed because of depending on the device model, the purity of the solvents, the length and type of the column. The author has proposed a method for imidacloprid (IMD), SC 35% (insecticide) which has been registered in Iran. A report on the comparison of Bayer's analysis method with CIPAC reference was suggested for determining the a.i. content. The St preparation is used to weight (~0.1 mg) into a volumetric flask IMD St by Dr Ehrenstorfer /138261-41-3/99%. Dissolve in approx. 30 ml of CH_3CN, place the flask in an ultrasonic bath for 15 mins. Make up the flask with water to just below the calibration mark and mix. To prepare the pesticide sample, a sample was transferred to a volumetric flask containing IMD. Continue to work like a ST method. The condition and HPLC system are as follows: reversed-phase method with ODS-3, 5 µm, 250x4.6 mm (i.d) using a mobile phase consisting of acetonitrile/water, HPLC grade (v:v/2:8) at a flow rate of 2 mL/min and UV detection at 260 nm was used. Chromatograms obtained according to Bayer and our method is shown respectively. HPLC capability can be used to design a new optimal method. This method can be used for other formulations of IMD, such as EC.

Recent Publications

1. Al-Rimawi F (2016) A HPLC-UV Method for determination of three pesticides in water. International Journal of Advances in Chemistry 2(1):9-16.
2. Hafeez A, Iqbal S, Tawab I A, Bhutto A, Uddin R and Anwar F (2015) Liquid chromatographic separation and quantification of Imidacloprid in different modes of formulations. American-Eurasian J. Agric. & Environ. Sci., 15(12):2381-2386.
3. Hussan H N, Liu X, Dong F, Xu J and Zheng Y (2017) Simultaneous determination of six insecticides in Okra by UHPLC-MS/MS. J Chromatogr Sep Tech 8:370.
4. Samnani P, Vishwakarma K and Pandey SY (2011) Simple and sensitive method for determination of imidacloprid residue in soil and water by HPLC. Bull Environ Contam Toxicol. 86(5):554-558.
5. Tomlin C D S (2009) The Pesticide Manual, fifteenth Edition. British Crop Protection Council, United Kingdom.

Biography

Reyhaneh Sahba has completed her PhD in Chemistry and she works as an expert in the Pesticide Reference Laboratory at Plant Protection Organization of Iran for 11 years. Her work is to execute FAO and WHO orders regarding the quality and health of pesticides in the country.

rosay_ws@yahoo.com