DETERMINATION OF ACETAMIPRID IN CRUDE PALM OIL USING LC-MSMS

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497

MPOB INFORMATION SERIES • ISSN 1511-7871 • JUNE 2009 MPOB TS No. 71

The use of pesticides is always associated with the risk of food contamination. In order to monitor and minimize the risk of pesticide residues in foods, it is necessary to develop effective and reliable analytical methods for the detection of these pesticide residues so that appropriate action and prevention measures can be taken.

Acetamiprid is a neo-nicotinoid insecticide that is effective against sucking insects such as aphids, and chewing insects such as Coleoptera and some Lepidoptera. Analysis of acetamiprid residue involves the use of expensive and sophisticated instruments such as the Liquid Chromatography Tandem Mass Spectrometry, LC-MSMS (*Figure 1*). This has hindered members of the industry from carrying out the analysis by themselves or by commercial laboratories.

Understanding the need for a huge capital outlay in setting up an LC-MSMS, MPOB is now offering this service to help the industry to carry out the analysis of acetamiprid in crude palm oil (CPO). Details of the service are presented here.

TECHNICAL FACTS

The method is a simple one and can be easily carried out by any trained laboratory personnel. It only involves a one-step clean-up procedure which is through solid phase extraction.

The method highlighted here has been internally validated and has passed all the validation criteria. Features of this method include the following:

- the analysis is linear in the range of 5.0-90.0 ppb, with a correlation (r^2) better than 0.99;

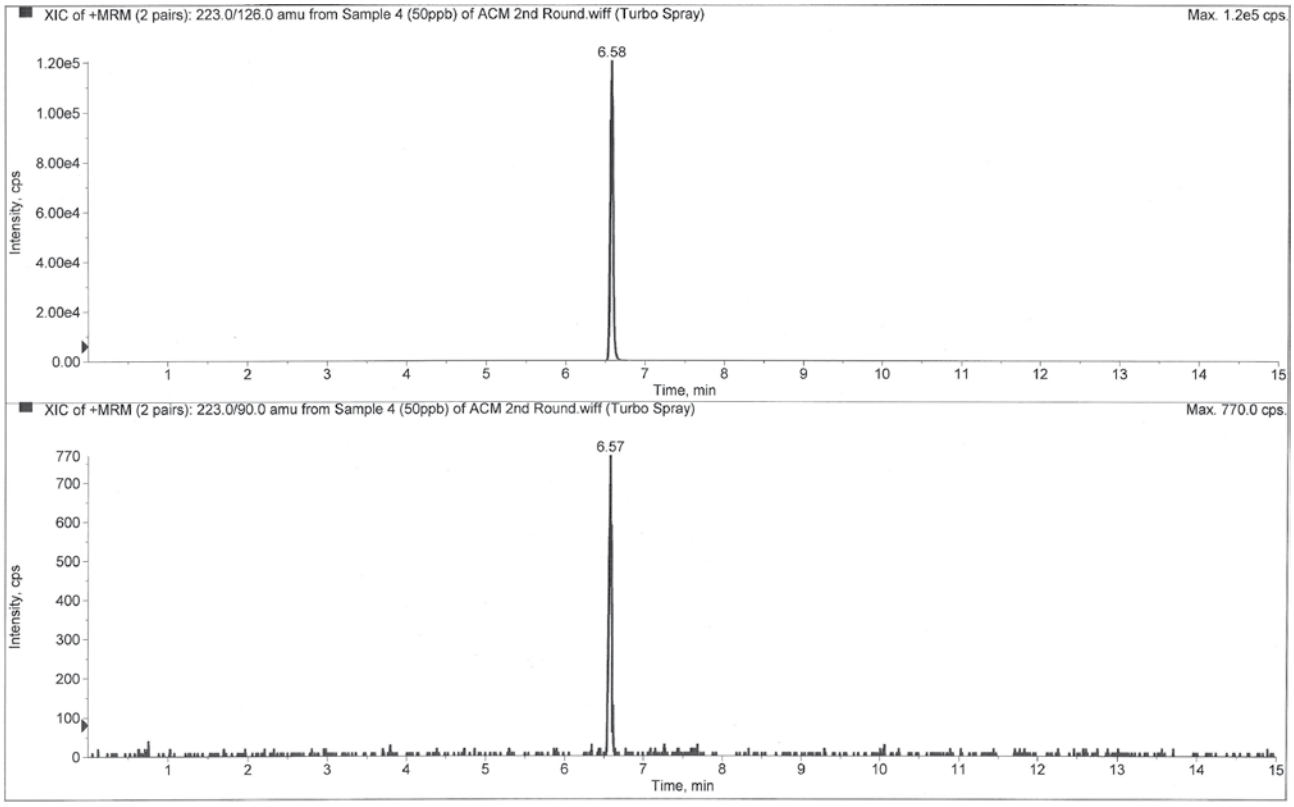

Figure 1. LC-MSMS chromatograms of acetamiprid.

ISSN 1511-7871

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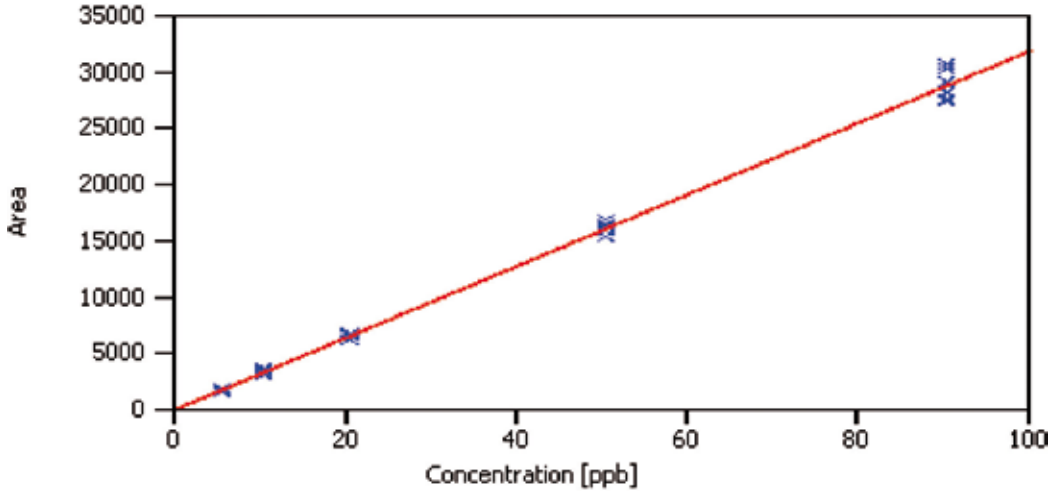

Figure 2. Acetamiprid calibration curve (at 5-90 ppb).

- method recoveries ranged from 71.9%-100.3% for spiked samples at the 10 ppb and 50 ppb concentration levels;

- the coefficient of variation (CV%) of the intra-assay and intermediate precision determined for CPO samples spiked at three concentration levels (0.015, 0.030 and 0.060 $\mu g\ ml^{-1}$) were below 5%. Inter-day precision for CPO spiked at 0.015 $\mu g\ ml^{-1}$ however show an acceptable value of 13.1% (González and Herrador, 2007); and

- Method's limit of detection (LOD) and limit of quantification (LOQ) were estimated from calibration curve (*Figure* 2) and the values were 4.0 ppb and 10.0 ppb, respectively.

REFERENCE

A GUSTAVO GONZÁLEZ and M ANGELES HERRADOR (2007). *Trends in Analytical Chemistry, 26(3).*

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