DETERMINATION OF GLUFOSINATE AMMONIUM IN OIL MATRIX USING A MODIFIED QuEChERS-BASED METHOD

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The current methods for determining pesticide residues in food are time-consuming, expensive and labour intensive. An improved method has been developed by MPOB – QuEChERS, an acronym for quick, easy, cheap, effective, rugged and safe. The method is applicable to a wide range of herbicides and foods , using the LC MS/MS technique to simultaneously identify and quantify a large number of herbicides in foods.

Glufosinate ammonium is the common name for ammonium-2-amino–4-(hydroxymethylphos phinyl)-butanoate ($C_5H_{15}NO_4P$), sold commercially as Basta. The structure is shown in *Figure 1*. The crystals are colourless with a melting point of 216°C. The molecular weight is 198.16 and the solubility 1370 mg litre^{-1} and 0.16 mg litre^{-1} at 20°C in water and acetone, respectively.

PRINCIPLE

The oil sample is weighed and added with deionized water and dichloromethane in a polypropylene centrifugal tube. Then, the mixture is spiked with an internal standard and vortexed to homogeneity. Extraction is performed by incubation in a water bath for 30 min and the mixture then centrifuged for 10 min at 2500 rpm. Then, high performance liquid chromatography with mass spectrometry (LCMS/MS) detector is used for analysing the residue (*Figure 2*).

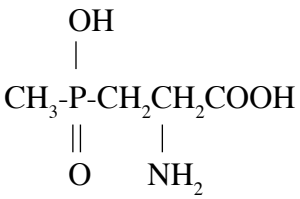

Figure 1. Structure of ammonium-2-amino-4-(hydroxymethylphosphinyl)-butanoate.

Figure 2. High performance liquid chromatography with MS/MS detector.

RECOVERY

The recovery of glufosinate ammonium from spiked samples is 77%-109%. The coefficient of variation (CV) is <10% for high concentrations and <13% for low concentrations. The limit of detection is 0.002 mg kg^{-1}.

Figure 3. Chromatogram of standard glufosinate ammonium.

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