

DETERMINATION OF GLUFOSINATE AMMONIUM IN OIL MATRIX (Part 1)

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This test method is the determination of glufosinate ammonium residue in oil matrix.

DEFINATION

Glufosinate ammonium is the common name for ammonium-2-amino-4-(hydroxymethylphosphinyl)-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 solubility 1370 mg litre⁻¹ and 0.16 mg litre⁻¹ at 20°C in water and acetone, respectively.

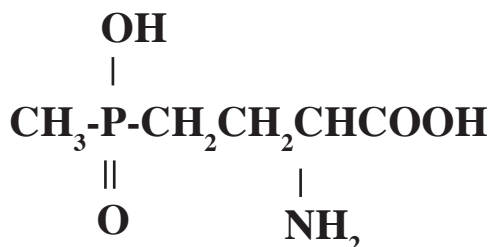


Figure 1. Structure of ammonium-2-amino-4-(hydroxymethylphosphinyl)-butanoate.

PRINCIPLE

The method involves extracting the residue from the oil matrix using accelerated solvent extraction (ASE) followed by high performance chromatography using a MS/MS detector (*Figures 2 and 3*). Pressurized liquid extraction (PLE) is a sample



Figure 2. Accelerated solvent extractor.



Figure 3. High performance liquid chromatography with MS/MS detector.

preparation technique that uses elevated temperature and pressure with liquid solvents to achieve fast and efficient extraction of the analyte from the oil matrix. PLE has been shown to have several advantages over other techniques in time required, solvent use, automation and efficiency. A fat retainer is used to retain the lipid in an oil matrix and a clear extract obtained using this technique.



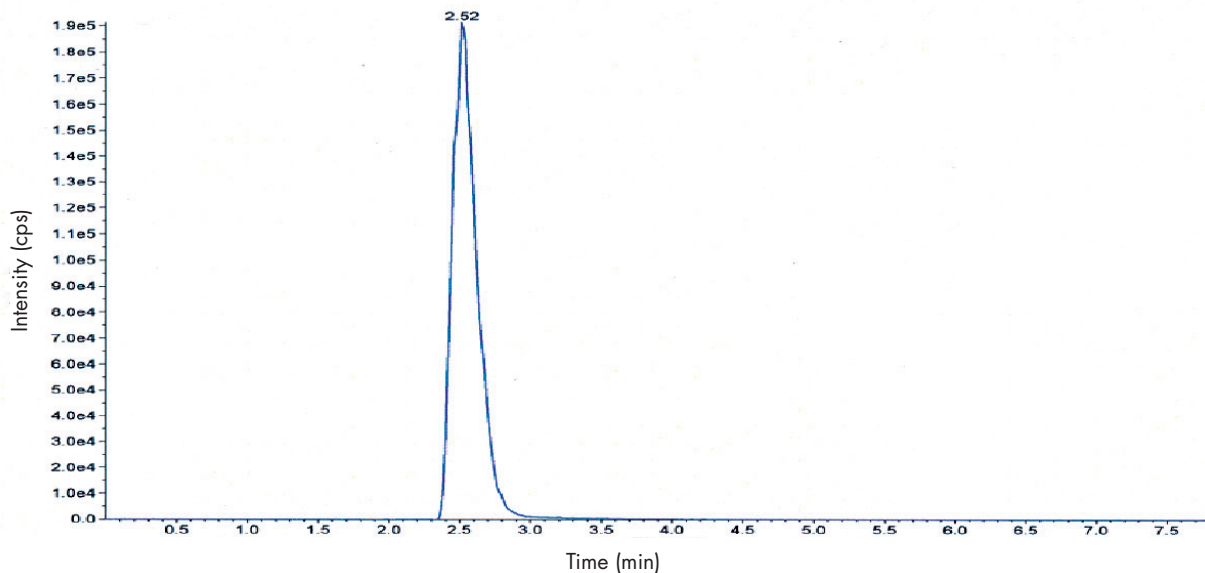


Figure 4. Chromatogram of standard glufosinate ammonium.

RECOVERY

Recovery of glufosinate ammonium in the range 10.0 – 1000.0 $\eta\text{g g}^{-1}$ is 82% -105%, with a coefficient of variation of < 10% for high concentrations and < 15% for low concentrations. The limit of detection is 5.0 $\eta\text{g g}^{-1}$.

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