

## A rapid liquid chromatography method for determination of glyphosate in crude palm oil with fluorescence detection

### ABSTRACT

A rapid and simple method for the determination of glyphosate in crude palm oil (CPO) was developed and validated using high performance liquid chromatography with fluorescence detector. Glyphosate was derivatized with 9-fluorenylmethylchloroformate (FMOC-Cl) and then separated using a C18 reverse phase column with potassium dihydrogen phosphate and acetonitrile as the mobile phase. A linear correlation was obtained for the concentration of glyphosate from 0.05-1.5  $\mu\text{g mL}^{-1}$  with a correlation coefficient of 0.9998. The average recovery obtained for glyphosate ranged between 80% and 100% at five fortification levels with the relative standard deviation (RSD) of less than 3% of all cases. The limit of detection and limit of quantification for glyphosate were 0.05 and 0.1  $\mu\text{g/g}$ , respectively. The method will facilitate palm oil trade through quality assurance in terms of glyphosate residues in palm oil products and also to counter any issues related to food safety for palm based products.

**Keyword:** Palm oil; Glyphosate; Herbicide; Recoveries; HPLC; Fluorescence