

萃取與檢驗食材中二甲基黃及二乙基黃之探討

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一、前言

二、分析含界面活性劑之薑黃樹脂中非法含二甲基黃之刑事健全性案例討論

三、以 LC 搭配 photodiode array detector (PDA) 及軌道阱高解析質譜儀測定加工豆干中非法添加二甲基黃及二乙基黃

四、以 LC 串聯質譜儀同時檢測雞蛋中動物用藥、飼料添加劑及非法染料

五、結論

摘要

食品的顏色是食品品質的重要指標，並影響消費者接受程度。開發以高效液相層析儀 (high performance liquid chromatography, HPLC) 串聯質譜儀，測定含界面活性劑 (polysorbate 80) 薑黃樹脂中二甲基黃 (dimethyl yellow) 之方法，偵測極限 (limit of detection, LOD) 為 12 $\mu\text{g}/\text{kg}$ ，定量極限 (limit of quantification, LOQ) 為 50 $\mu\text{g}/\text{kg}$ ，搭配液液萃取、凝膠滲透層析 (gel permeation chromatography, GPC) 及固相萃取 (solid phase extraction, SPE)，其平均回收率為 56.1%。開發一種檢測豆類製品中二甲基黃及未知染料之方法，以超音波輔助萃取並使用光電二極陣列偵測器 (photodiode array detector, PDA)、高解析度質譜 (high resolution mass spectrometer, HPLC-HRMS)、GPC 及 NMR 純化此未知染料並測定其結構，LOD 為 2 $\mu\text{g}/\text{kg}$ ，LOQ 為 4 $\mu\text{g}/\text{kg}$ ，回收率為 82-93%，並首次在國內食品中發現二乙基黃。開發適用於雞蛋中動物用藥、抗球蟲藥和非法染料的分析方法。包括 sulphonamides, tetracyclines, sudan I-IV 和 dimethyl yellow 等 120 多種動物用藥及染料，將樣品以超音波輔助萃取搭配 SPE，以 HPLC-MS/MS 分析，回收率為 75-108%，決定極限 (limit of decision, $\text{CC}\alpha$) 及偵測能力 (detection capability, $\text{CC}\beta$) 分別為 2.25-1156 $\mu\text{g}/\text{kg}$ 及 2.04-1316 $\mu\text{g}/\text{kg}$ 符合 European Decision 2002/657/EC (2002) 之要求。

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