

基于傅里叶红外光谱重组技术的食用油检测改进研究 Improved Application of FTIR Spectral Reconstitution Technique in Edible Oils Analysis

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关键词: 食用油 傅里叶红外光谱 光谱重组技术 光谱分析

摘要: 以食用油、无色矿物精油 (OMS)、六羰基铬为试验材料, 利用二维相关振动光谱技术对FTIR光谱重组 (SR) 检测中OMS特征吸收峰取代光谱标记物进行评价研究。结果表明在单一菜籽油体系中, 有9个相关吸收峰可用于TVF预测定量分析。考虑不同因素影响, 相关吸收峰减至4个。最优相关吸收峰测定OMS体积分数相关性好于标记物特征吸收峰, 受混合样品极性变化影响较少。在食用油和OMS混合物中既可用光谱标记物也可用OMS溶剂本身相关吸收峰来扣除混合样品光谱中OMS部分。 Edible oils, odorless mineral spirits (OMS), chromium hexacarbonyl (spectral marker) taken as raw materials, by using spectral reconstitution (SR-FTIR), the marker's ability to predict the true volume fraction (TVF) of OMS was evaluated and 2-D correlation spectroscopy was employed as a means to determine whether solvent bands could substitute for the marker. The results indicated 9 spectral wavelengths can be used to quantify the TVF in a single system of rapeseed oil. However, with the introduction of additional variables, including differing oil types and the presence of free fatty acids, the number of useful wavelengths was reduced to 4. The optimal wavelength exceeds the marker band in predicting OMS TVF and was insensitive to polarity changes associated with TVF changes. It was demonstrated that a very consistent, representative edible oil spectra can be derived using either marker or solvent wavelengths to remove the solvent spectral contribution.

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