

The Determination of Organolead (tetraethyllead) in Grape Wine by Gas Chromatography-Mass Spectrometry

RU-CHIA SHIH, SYR-SONG CHEN, YA-MIN KAO, CHIEU-CHEN CHENG AND SHIN-SHOU CHOU

Food Chemistry Division

Abstract

A simple detection method based on gas chromatography-mass spectrometry (GC-MS) was developed for the residual determination of organolead (tetraethyllead) in white wine and red wine. Tetraethyllead was extracted from wine samples with sodium acetate buffer solution and n-heptane, followed by GC-MS analysis. Tetraethyllead was separated by a capillary column of VF-5ms (30 m ×25 mm i.d., 0.25 μm) using helium as carrier gas and determined by ITMS detector. The average recoveries of tetraethyllead spiked into 5 g of samples at the levels of 0.05, 0.10 and 0.20 ppm were in the range of 99.9 ~ 113.9% for white wine, and 99.3 ~ 109.9% for red wine. Coefficients of variation were 3.2 ~ 7.3% and 2.1 ~ 3.7%, respectively. The detection limit of method was 0.04 ppm. No residue of tetraethyllead was detected in ten wine samples which were purchased from wine stores in Taiwan.

智慧藏