Effect of absorbent in solid-phase extraction on quantification of phospholipids in palm-pressed fiber.

ABSTRACT

Palm-pressed fiber (PPF) is a by-product of palm oil milling and it has been found to contain a high percentage of phospholipids (PL). The aim of this work was to evaluate the best solid-phase extraction (SPE) method to purify PL from PPF. The purified PL were analyzed using high-performance liquid chromatography (HPLC) with an evaporative light-scattering detector (ELSD). The oil was extracted from PPF using the Folch method and classes of PL were purified using SPE. Different solvent phases and normal-phase SPE cartridges [silica (Si), aminopropyl-bonded silica (NH2) and diol-bonded silica (2OH)] at the same ratio of oil to sorbent mass were used to study the separation of PL from the extracted oil. The recovery of each standard PL was performed in a model oil system with the same amount of standard PL being added, and the repeatability of the SPE method was investigated. The isolation of PL by SPE diol cartridge and subsequent analysis by HPLC/ELSD have shown to be an accurate and reproducible analytical method for the determination of phosphatidylethanolamine, phosphatidylglycerol, phosphatidylcholine and lysophosphatidylcholine in PPF. This method provided a high yield and rapid separation of PL in PPF with less contamination from other lipid groups.

Keyword: Evaporative light-scattering detector; High-performance liquid chromatography; Palm-pressed fiber; Phospholipids; Solid-phase extraction.