

Efficient Procedure for Pre-Column Derivatization of Fatty Acids with Emphasis on Short-Chain Carboxylic Acids

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Keywords: Short-chain carboxylic acid; Derivatization method; 2,4-dibromoacetophenone; HPLC; Biological materials; Fatty acids

An original derivatization method for short-chain carboxylic acids (SCAs), including volatile fatty acids (VFAs), lactic and succinic acids, followed by reversed-phase (RP) HPLC with photodiode array detection has been described. Initially, all acids present in the samples were converted into sodium salts (RCOONa); then, derivatization of RCOONa was carried out with an excess of 2,4-dibromoacetophenone and triethylamine. Under such conditions, all acids were converted into derivatives with chromophoric groups. Their high molar absorptivity and absorbance maximum located close to 259 ± 2 nm make them ideally suited for RP-HPLC analysis with UV detection. All derivatized acids were substantially retained on the C_{18} column. The proposed procedure provides a simple and sensitive analytical tool for quantification of SCAs, especially VFAs, in biological samples. As acid derivatization is carried out at $45 \pm 2^\circ\text{C}$ for only 60 min, the proposed procedure can be used for determination of polyunsaturated fatty acids.