Optimisation of stir-bar sorptive extraction (SBSE), targeting medium and long-chain free fatty acids in cooked ham exudates

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Abstract

The purpose of our research was to optimise the extraction conditions of the stir-bar sorptive extraction (SBSE) targeting the identification of lipid compounds particularly medium and long-chain free fatty acids in cooked cured pork ham exudates. The analytical conditions of extraction (including sample volume, extraction time, stirring speed, pH and dilution of the sample) were checked using the Simplex method approach. As a result of the SBSE optimisation, improved detection limits and linear ranges for hexanoic, heptanoic, octanoic, nonanoic, decanoic, dodecanoic and tetradecanoic fatty acids were obtained. When comparing results with those obtained by the commonly used SPME methodology, optimisation of SBSE achieved better results for volatile compounds of low volatility, such as medium and long-chain free fatty acids, whereas compounds with high volatility and polarity were only detected by SPME. SBSE also confirmed its potential as a tool to help identify undesirable contaminants/residues in meat products.