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ABSTRACT BOOK

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PC11: Identification of Potential Migrants in Food Packaging and Subsequent Quantification in the Contained Food

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In the food packaging industry plastic materials are commonly used due to their well-known properties such as flexibility and low-cost, among others. These packaging materials can transfer chemicals into the food which may affect not only the safety but also the quality of the packaged food. From the food safety point of view, it is generally accepted that low molecular weight substances (< 1000 Da) are an issue of concern since they can be absorbed through the gastrointestinal tract and could represent a risk for the consumers' health. In this work, the potential migration of chemicals from the plastic food packaging into the food was investigated. A total of seven samples of fatty dry foods including snacks based on cereals and cookies were selected and analyzed. In a first step a GC-MS screening of an extract of the packaging was performed in order to identify potential migrants. A great variety of substances including phthalates and other plasticizers (e.g. acetyl tributyl citrate, diethyl phthalate, di-n-octyl phthalate), slip agents (e.g. erucamide), photoinitiators (e.g. benzophenone) and UV filters (e.g. octocrylene) among others were detected. In the second part of the work, the packaged foods were analyzed. For that purpose samples were pooled, homogenized and extracted. Two different extraction solvents, acetonitrile and hexane were assayed, best recoveries were obtained with acetonitrile. Analysis of the samples was performed by LC-MS using electrospray ionization (ESI) in positive mode. The separation of the analytes was achieved on a Kinetex Biphenyl 100A (100 mm * 3 mm *2.6 µm) column and using a gradient of water and methanol acidified with 0.1% formic acid as mobile phase. The proposed method showed an adequate linearity, and acceptable recoveries. The r^2 values and the percentages of recovery obtained were 0.9999, 0.9998, 0.9999, 0.9999, 0.9998 and 0.9977 and 130.95%, 84.45%, 73.53%, 96.10%, 103.33% and 80.09% for acetyl tributyl citrate, diethyl phthalate, di-n-octyl phthalate, erucamide, benzophenone and octocrylene, respectively. Benzophenone was found in 43% of the analyzed samples; among the phthalates diethyl phthalate was found in almost all samples at a concentration around 0.15 mg/kg, whereas di-n-octyl phthalate was only found in one sample.

Keywords: *migration, food based cereals, GC-MS, LC-MS*