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IDENTIFICATION OF CHEMICAL COMPOUNDS PRESENT IN MILK PACKAGING

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Multilayer materials are widely used in food packaging industry. These materials combine various types of plastic film materials or non-plastic films materials (aluminium foil, paperboard, among others) with a polymeric adhesive. It is very important to know the composition of the food packaging materials and identify the compounds that could migrate from the material into the food, with the objective of ensuring that they do not represent a risk for the health of the consumers. Since milk and dairy products are the main components of our diet, in the present study, five samples of milk multilayer packaging (three of whole milk and two of semi-skimmed milk), purchased in a local supermarket, were selected to analyse.

For that purpose, a screening approach was applied to simply and rapidly determine the identity of potential migrants in the packaging by means of solvent extraction technique with subsequent analysis by gas chromatography with mass spectrometry (GC-MS).

Packaging materials were extracted with acetonitrile and the resulting extracts were analyzed using a Trace 1300 Series Gas Chromatograph with a Trace ISQ LT mass detector and an AI 1310 autosampler. The chromatographic conditions were as follows: an ZB-5MS (30 m x 0,25 mm x 0,25 µm) column was used. Helium was used as carrier gas. Samples were injected in splitless mode and an oven temperature gradient from 40°C to 300°C was used.

Full scan MS data revealed, after the comparison of the sample mass spectra with available mass spectral libraries, the presence of several compounds such as dibutyl phthalate (DBP), benzophenone (BP), diethyl phthalate (DEP), butylated hydroxytoluene (BHT), bis(2-ethylhexyl)adipate (DEHA) and octocrylene among others. Further confirmatory analysis was performed using commercially available standards.

Acknowledgement: The study was financially supported by the Ministerio de Economía y Competitividad, Fondo Europeo de Desarrollo Regional (FEDER), and by "Agencia Estatal de Investigación", Ref.No. AGL2015-69609-P "MIGRAEXPO" (MINECO/FEDER, UE).