

QuEChERS extraction and LC-MS/MS analysis for Bisphenol A (BPA) and its BADGE derivatives: food simulants vs food matrixes

Bonora A.¹, Garbini D.², Barbanera M.², Bonaga G.³

¹ Department of Chemistry, University of Bologna, Via Selmi 2 – 40126 Bologna (Italy)

² Coop Italia soc. coop., Via del Lavoro 6/8, 40033 Casalecchio di Reno – BO (Italy)

³ Department of Food Science, University of Bologna, Viale Fanin 40 – 40127 Bologna (Italy)

Current EU legislation concerning migration from food contact materials allows compliance tests to be carried out using food simulants.

For canned foods, typical migrants from internal coatings are BPA and BADGE derivatives, both submitted to SMLs.

Scope of this study was to compare the quantitation of these analytes in food simulants and in food. SPE extraction was replaced with a faster method (QuEChERS).

Two LC-MS/MS methods were optimized, respectively for BPA and BADGEs.

Analyses were carried out on several canned foods, as fish in olive oil or in brine, green vegetables, tomato sauce, pineapple in syrup, pet food, and on their cans with simulants.

Results reveal a significant discordance between food and food simulants contamination in over 40% of cases, with risk of underestimating the migration in food testing simulants alone. Moreover, the results for foods rich in protein are also affected by the well-known “BADGE disappearing effect”.