

Non-Target GC-MS Analysis for the Identification of Semi-volatile Compounds in Polymeric Coatings Intended to Come in Contact with Food

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Abstract: Polymeric coatings are used in the food contact surface of metal cans to protect the food from corrosion. Migration of components from the food contact material to the food is a matter of concern from the food safety point of view, special attention has been paid to low molecular weight compounds and particularly to unknown compounds. Its identification is a current challenge in the food packaging field [1].

This study was focused on the identification of semi-volatile low molecular weight compounds present in polymeric coatings for metal food and beverage cans.

Different solvents were tried with the aim to extract compounds with different polarity present in the coating of metal cans. Samples were extracted under different conditions, both methanol and acetonitrile for 24h at 70°C, hexane for 4h at 60°C and a mixture of hexane: ethanol (3:1 % v/v) for 24 h at 20°C. The chromatographic separation was performed on a Rxi-5SilMS (30 m × 0.25 mm × 0.25 μm) column. Operating conditions were as follows: injector and transfer line temperature were 300°C. The ramp temperature was set from 40 to 300°C. The carrier gas was helium with a flow rate of 1 ml/min and data acquisition was done in full scan mode (35 and 500 m/z). Extracts were injected in splitless mode and the injection volume was 1 μL. The preliminary assays showed that esters and alkenes were among the most abundant compounds identified.

Keywords: screening, polymeric coatings, GC-MS, unknown compounds

References:

[1] EFSA Journal, 6(7):21r, 1-41.

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