

Screening of Volatile Compounds in Beverage Cans Using Purge and Trap (P&T) Technique Coupled to GC-MS

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ABSTRACT: It is well known that packaging materials can be a potential source of contaminants. The migration of chemicals from packaging to food and beverages is one of the main concerns for food safety authorities [1].

In the present study, a screening method was performed to investigate potential volatile migrants from polymeric can coatings of beverages. The sample was directly analyzed using a purge and trap (P&T) system. This technique allows to concentrate the volatiles in a sorbent material. A Teledyne Tekmar Stratum P&T was used and the experimental conditions were as follows: sample temperature, 90 °C; purge flow, 40 mL/min; purge time, 20 min; desorb time, 2 min; desorb temperature, 250 °C; and desorb flow, 400 mL/min. The GC-MS analysis was carried out using a Finnigan Trace Gas Chromatograph Ultra with a Finnigan Trace DSQ mass detector. The volatile compounds were separated on a Rxi-624Sil MS (30m x 0.25mm x 1.40 µm) column and with an oven program from 45 to 250 °C. The mass spectrometer was operated under electron impact ionization and data acquisition was performed in full scan (m/z range of 20-500). Compounds detected in samples were identified by using commercial mass spectral libraries.

Ten can samples were analysed for their potential volatile migrants. A wide variety of compounds including alcohols, ethers, aldehydes and some phthalates such as diethyl phthalate were identified. Only compounds with the best matches found during the library search were considered for the study.

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References

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