

Development and Harmonization of Analytical Methods for Microplastics in Food

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Abstract

Microplastics have emerged as contaminants of global concern, and their occurrence has been reported in various foods. However, differences in sample preparation, particle size thresholds, analytical techniques, and data reporting limit the comparability of results, highlighting the need for reliable and harmonized analytical methods.

The Ministry of Food and Drug Safety (MFDS) of the Republic of Korea has conducted research to develop and standardize analytical methods for microplastics in food. Since 2022, studies have covered salt, omega-3 products, snack foods, and processed seafood products, using analytical techniques including micro-Fourier transform infrared spectroscopy (μ -FT-IR), Raman spectroscopy, and pyrolysis-gas chromatography/mass spectrometry (Py-GC/MS).

For salt, a preliminary analytical procedure was developed using sample preparation, filtration, optional density separation, and μ -FT-IR analysis to characterize microplastics by particle number, size, polymer type, and morphology. Method performance was evaluated in terms of selectivity, recovery, and precision.

Recent discussions at CCMAS45 also emphasized the need for harmonized analytical approaches for microplastics in food. International collaboration and inter-laboratory validation will be important for establishing reliable and comparable methods to support future monitoring, exposure assessment, and science-based food safety management.

Keywords: Microplastics; Food; Analytical Methods; Method Validation; Harmonization; Food Safety