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## Analysis of migrated 1-hexene and 1-octene from polyethylene food packaging into food simulants by HS-GC-MS

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Polyethylene (PE) is used in greater volume worldwide than any other plastic as food packaging. This might be due to PE is cheap, durable, flexible and easy to use. The polyethylene is manufactured by polymerizing ethylene with  $\alpha$ -olefin monomers such as 1-butene, 1-hexene and 1-octene. Food contact materials may contain trace amounts of residual monomers during the formulation or manufacturing process. However, ethylene and 1-butene are very volatile and easily lost from processed PE polymer. 1-hexene and 1-octene could be migrated into the food when PE food packaging is used for cooking and storing. Therefore, it is necessary to determine migration levels of 1-hexene and 1-octene from food contact materials for food safety. The aim of this study was to determine 1-hexene and 1-octene from PE food contact materials by head space-gas chromatography-mass spectrometry (HS-GC-MS). Migration tests with three food simulants, deionized water, 4% acetic acid and 50% ethanol were examined at 70°C and 100°C for 30 min under the Korea regulation. Analysis of migration amounts of 1-hexene and 1-octene from samples was performed by HS-GC-MS (selected ion monitoring mode, HP-1 column). The method was validated by measuring the limit of detections (LODs), the limit of quantifications (LOQs), recovery, precision and uncertainty. Based on the optimized method, we monitored the migration of 1-hexene and 1-octene from PE food packaging materials such as food packaging films, wraps, bags and containers. All the samples were collected from manufactures and retail stores. The result of this study can be used as valuable data for the safety control of the PE food contact materials in Korea.

### Biography

Se-Jong Park is a Scientific Officer in Food Safety Evaluation department at Ministry of Food and Drug Safety (MFDS), South Korea. Her research focuses on food packaging safety. She has led projects involving development analytical methods, risk assessment and migration of hazardous substances from food packaging materials.

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