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 Author: [ADVANCED](#) | Volume Page
 Keyword: |

[TOP](#) > [Available Issues](#) > [Table of Contents](#) > [Abstract](#)

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[\[PDF \(232K\)\]](#) [\[References\]](#)

Cytotoxicity Evaluation of Oil Fumes in Rat Hepatocytes Using a Model System for Deep-fat Frying

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Although the carcinogenic effect of fumes produced during deep-fat frying has been well investigated, other toxic effects of these fumes have been little studied. In this study, a mixture of moisture and volatile compounds generated from a model system for deep-fat frying was collected for cytotoxicity evaluation using a series of connected ice and dry-ice traps. A system consisting of water-spraying-and-heating oil units was used as a model system for deep-fat frying. Chemical analysis of the trapped materials indicated that the main components were carbonyl compounds, and cytotoxicity evaluation revealed their cytotoxic activity on normal rat hepatocytes. The results of high-performance liquid chromatography analysis and cytotoxicity evaluation indicated that the main cytotoxic substances may be volatile aldehydes. The collection system used in this study could be useful to elucidate the toxicity of fumes generated from actual frying procedures.

Keywords: [frying](#), [oil](#), [cooking fumes](#), [oxidation](#), [hepatocyte](#)
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