

ORIGINAL RESEARCH

Factors Associated with Formation and Uptake of Toxic Aldehydes in Foods During Deep Fat Frying; A Review

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Abstract

Deep-fried foods are associated with toxic aldehydes and therefore, ingestion of such foods is linked with increased risks of pathogenesis and progression of non-communicable diseases like cancers, neurological disorders, and cardiovascular diseases among other chronic conditions. Particularly, the α and β -unsaturated aldehydes are shown to be highly oxidative, cytotoxic, mutagenic, and carcinogenic when ingested. This paper reviewed current studies on factors that promote the generation of toxic aldehydes during deep fat frying and the factors that would promote the uptake of these toxic aldehydes into fried foods. A literature search was performed using Boolean operators from Google scholar, PubMed, and HINARI for articles published between 2014 and 2021. Findings showed that higher frying temperatures with longer frying durations, the chemical composition of the frying oil i.e., the ratio of saturated fatty acids (SFA), monounsaturated fatty acids (MUFA) and polyunsaturated fatty acids (PUFA) and type, the concentration of vitamin E in the oil, the number of times frying oil is reused before discarding, the make and shape of the frying pan potentially influence generation and uptake of toxic aldehydes into fried foods. In conclusion, there is growing evidence that deep frying practices, type of frying oil, food and frying pan used can influence generation of toxic aldehydes while on the other hand, only scanty evidence on factors influencing the uptake of toxic aldehydes in fried foods is available. While the current findings are informative, they are still some limitations regarding their usage as there were no oil-specific studies that investigated all the factors influencing generation of toxic aldehydes in totality

Key words: Toxic aldehydes, generation, formation and uptake, deep fat frying, deep fried foods, toxic aldehydes uptake, α , and β -unsaturated aldehyde.