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[\[PDF \(193K\)\]](#) [\[References\]](#)**Frying of Nutritious Foods: Obstacles and Feasibility**[Dina DANA](#)¹⁾ and [I. Sam SAGUY](#)¹⁾*1) Institute of Biochemistry, Food Science and Nutrition, Faculty of Agricultural, Food and Environmental Quality Sciences, The Hebrew University of Jerusalem*

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Frying is an important cooking process due to the unique palatability and sensory characteristics of fried foods. Fried foods contain a considerable amount of fat, and have a negative perceived image due to their high caloric value and increased consumer awareness of the relationship between food, nutrition, and health. Oil consumption and especially saturated fat, is considered as one of the principal factors increasing health risks of heart disease, cancer, diabetes, and hypertension. The mechanism of oil uptake during frying is complex and affected by numerous factors, such as product and oil composition, surface-active agents, etc. Frying oil undergoes three main deleterious reactions: oxidation, hydrolysis and thermal decomposition, resulting in the formation of numerous constituents. The latter affect the organoleptic characteristics of the fried product, and could pose health risks. Frying has a significant role in the overall nutritional value of the product. Compared to other cooking methods, retention of water-soluble vitamins and vitamin E could be higher after frying. Due to the deterioration of oil after prolonged frying, regulations on the maximum levels of polar compounds and polymer concentration have been utilized. Nevertheless, an alarming number of oil samples collected from restaurants and fast food outlets in Europe failed to comply with regulations. Frying has only a marginal affect on the concentration of trans fatty acids. Yet, due to their possible connection with heart disease, the initial concentration of hydrogenated fats (that could reach 50%) should be considered. The relationships between frying and carcinogenesis and mutagenesis are inconclusive. Cyclic fatty acid monomers, which can be formed during frying, were proven harmful only in some studies. Exposure to malondialdehyde (MDA) during typical consumption of fried food constituted no actual health hazard, although MDA is known to be a very potent

mutagen and carcinogen. Heterocyclic amines, formed during fish and meat frying, were related to higher cancer incidence, but only in concentrations which were higher by several orders of magnitude than those formed in typical frying. It is concluded that based on information to date, and using good manufacturing practices, fried foods pose no significant health hazard in a balanced diet.

Keywords: [oil uptake](#), [quality](#), [regulation](#), [carcinogenesis](#), [mutagenesis](#), [health](#)

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