

Oxidative stability, structural and textural properties of margarine enriched with *Moringa oleifera* leaves extract

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Abstract

Consumer's demand for more natural food formulations has driven the development of alternative food additives. This study falls within this challenge through valorisation of *Moringa oleifera* leaves grown in Algeria as a possible natural food additive. The application of Algerian *Moringa oleifera* leaves extract (MOLE) was evaluated as a substitute of vitamin E in margarine at various addition levels (400 ppm, 600 ppm and 800 ppm). The impact on margarine quality attributes was studied, namely oxidative stability, structural and textural structural properties. It was shown that addition of MOLE to margarine increased resistance towards oxidation, showing a higher antioxidant capacity as compared to vitamin E. Moreover, MOLE formulated in margarine served as an emulsifier decreasing water droplet size, which is desirable from a microbiological viewpoint. These observed effects can have a positive impact on margarine's shelf life. Furthermore, addition of MOLE leads to the formation of smaller fat crystals, resulting in a different microstructure. MOLE also increased the hardness of margarine by altering the crystallization process. Practical applications: MOLE represents a natural, food-grade additive that prevents lipid oxidation. It is a food ingredient that can contribute positively to margarine quality and to the development of clean-label food products.

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