



Physicochemical, Functional, Fatty Acids Profile, Health Lipid Indices, Microstructure and Sensory Characteristics of Walnut-Processed Cheeses.

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Foods, 10, 2274 (2021).

مكان النشر

Abstract: In the present study, processed cheeses fortified with walnut paste (a high source of omega- 3 fatty acids) were developed and characterized. In order to identify the best cheese formulation, the effects of different proportions of walnut paste (0, 5, 10, and 15%) on cheese physicochemical, functional, fatty acids profile, health lipid indices (atherogenic and thrombogenic), microstructure, and sensorial characteristics were studied. Results showed that walnut-added samples had significantly ($p \leq 0.05$) higher levels of acidity, protein, fat, and ash contents with lower meltability and oil separation index compared to the control. Processed cheeses with walnuts contained significantly ($P \leq 0.05$) higher percentages of MUFAs, and w-3 PUFAs (mainly α -linolenic acid) and significantly ($P \leq 0.05$) lower amounts of SFAs (mainly myristic, palmitic and stearic acids) and w6/w3 ratio. Scanning Electron Micrograph of processed cheese containing walnut paste showed uniform distribution of walnut in the protein matrix. Processed cheeses made with 5 or 10% walnut paste presented the most acceptable sensory properties. These results indicated that walnut paste supplementation can be used as a nutritional strategy to increase concentrations of human health-promoting fatty acids in processed cheeses while maintaining good sensory and technological properties.

Key Words: functional processed cheese; omega fatty acids; walnuts; atherogenic index; thrombogenic index