Effects of emulsion gels containing bioactive compounds on sensorial, technological and structural properties of frankfurters

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Tatiana Pintado[1], Ana María Herrero[1,*], Claudia Ruiz-Capillas[1], Mehdi Triki[2], Pedro Carmona[3], Francisco Jiménez-Colmenero[1].

[1] Institute of Food Science, Technology and Nutrition (ICTAN-CSIC), Madrid, Spain.
[2] LAVASA-ENIS: Laboratory of Food Analysis, Valorization and Security of the School of Engineers of Sfax, Tunisia.
[3] Institute for the Structure of Matter (CSIC), Madrid, Spain.

[*] Corresponding author: ana.herrero@ictan.csic.es

Abstract

Emulsion gels prepared with olive oil, chia, and cold gelling agents (transglutaminase, alginate, or gelatin) were used as fat replacers in reduced-fat frankfurter formulation. Nutritional advantages, sensory analysis, technological properties, and microbiological populations of frankfurters were evaluated along with their lipid structural characteristics over chilled storage. Frankfurters with emulsion gels showed significant improvements in fat content (lower saturated fatty acid, higher mono- and polyunsaturated fatty acid contents) and had good fat and water-binding properties. The presence of an emulsion gel reduced lightness and redness, but increased yellowness. Textural behavior of samples was significantly affected by the presence of emulsion gels and by storage. Sensory properties were not affected by the incorporation of emulsion gels, and all frankfurters were judged acceptable. Attenuated total reflectance–Fourier transform infrared spectroscopy results showed that samples with emulsion gels involve more lipid–protein interactions. Frankfurters with emulsion gels showed good stability to oxidation during storage and contained lower levels of microorganism than reduced-fat control at 85 days.