Double emulsions to improve frankfurter lipid content: impact of perilla oil and pork backfat

Journal of the Science of Food and Agriculture (2016) 96, 900-908

María Freire[1], Ricard Bou[1,*], Susana Cofrades[1], María Teresa Solas[2], Francisco Jiménez-Colmenero[1].

[1] Institute of Food Science, Technology, and Nutrition (ICTAN-CSIC), E-28040 Madrid, Spain.
[2] Facultad de Biología (UCM), Ciudad Universitaria, E-28040 Madrid, Spain.

[*] Corresponding author: ricard_bou@ictan.csic.es

Abstract

BACKGROUND: The technology involving the use of water-in-oil-in-water double emulsions (DEs) offers an interesting approach to improve the fat content of foods. With this aim, the effect on frankfurter properties of replacing pork backfat with two different DEs prepared using perilla oil and pork backfat as lipid phases was assessed. This strategy was compared with straightforward addition of the lipid source and addition by means of an oil-in-water (O/W) emulsion.

RESULTS: As compared with all-pork-fat frankfurters, the ones with perilla oil had a higher proportion of *n*-3 polyunsaturated fatty acids. Reduced-fat frankfurters had similar water- and fat-binding properties irrespective of the lipid source or the technological strategy used to incorporate it. Moreover, the oil source but not its mode of incorporation determined the oxidation levels of frankfurters. In reduced-fat samples, except in the case of frankfurters formulated with a perilla oil-in-water emulsion, hardness was unaffected either by the type of fat or by its mode of incorporation. The replacement of pork backfat by perilla oil reduced the overall acceptability of products when perilla oil was added by means of the O/W emulsion and DE approaches.

CONCLUSION: This technology is suitable for labelling meat products with specific nutritional and health claims.