

## **Filled hydrogel particles as a delivery system for n-3 long chain PUFA in low-fat frankfurters: Consequences for product characteristics with special reference to lipid oxidation**

*Meat Science* (2015) 110, 160-168

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### **Abstract**

This article examines the suitability of filled hydrogel particles for use as a delivery system for n-3 long chain PUFAs in low-fat frankfurters. Their effects on product characteristics over chilled storage were compared with those of frankfurters containing all-pork fat (control) or a comparable amount of fish oil (n-3 LCPUFA) incorporated in liquid form in an oil-in-water emulsion. In modified samples n-3 fatty acids ranged between 801.34 to 996.37 mg/100 g as opposed to 66 mg/100 g in all-pork fat product. As compared with the control, hardness and chewiness values were similar ( $P > 0.05$ ) in filled hydrogel frankfurter. The presence of fish oil favoured lipid oxidation to varying degrees depending on delivery system, in descending order: direct oil addition > oil-in-water emulsion > hydrogels. Sensory evaluation demonstrated the advantages, from a sensory point of view, of hydrogel filled particles as n-3 delivery systems in frankfurters.