

Oxidative stability of polyunsaturated fatty acids of n-3 designer eggs under different cooking methods

ABSTRACT

Variation in the extent of cooking time, temperature and heating source may greatly affect the polyunsaturated fatty acid (PUFA) double bond stability in eggs. A study was carried out to determine the oxidative stability of PUFA content of designer eggs subjected to different cooking methods. A total of 160 eggs of 4 commercial brands were obtained: A: conventional, B: DHA Gold[®], C: LTK[®], and D: Safegg[®], and equally and randomly assigned to 4 cooking methods: (i) no cooking, (ii) boiling, (iii) frying, and (iv) microwaving. The results showed that brand and cooking method significantly influenced the PUFA content in the eggs. B had the highest n-3 and n-6 PUFA contents, and the lowest n-6/n-3 PUFA ratio compared to brands A, C, and D. The brand B had the lowest malondialdehyde (MDA) concentration compared to other brands. All methods of cooking increased MDA content ($P < 0.05$). The n-6/n-3 PUFA ratio was not affected by cooking method only in brands C and D ($P > 0.05$). In conclusion, boiling appeared to be the most and microwaving the least suitable method of cooking for eggs, as measured by PUFA and MDA content.

Keyword: Cooking; Designer egg; Yolk; PUFA; MDA