

Oxidation Study of Conjugated Linoleic Acid During Storage of Cereal-Based Snacks in an Oxygen-Free Atmosphere

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Several studies show that an effective dose of 3.7 g/d of positional isomers 9*c*, 11*t* and 10*t*, 12*c* (50:50) of conjugated linoleic acid (CLA) have a beneficial effect on reducing body fat. However, the contribution of CLA to the diet only reaches 0.3 g/d. A strategy to achieve these 3.7 g/d could be adding CLA to selected foods. Snack foods are long shelf life products generally stored in the absence of oxygen, therefore the stability of the bioactive isomers must be ensured during this type of storage. It is well known that in presence of oxygen the formation of hydroperoxides at the beginning of CLA oxidation process is low, unlike the rest of fatty acids. However, the autooxidation process of CLA in absence of oxygen is still unknown. Therefore, the aim of this study was to observe the behaviour of CLA added to cereal-based snack samples during long storage (9 and 10 months) at two different temperatures (35°C and 15°C respectively) in absence of oxygen, and comparing the results with sunflower oil samples treated under the same conditions. The oxidative stability index of both oils was measured as induction time value by Rancimat assay (110°C and 9 L/h of airflow). Peroxide and TBA values were determined in absence of oxygen. In addition, chromatographic analysis was performed in order to quantify the bioactive isomers present during storage. Results showed that the stability of sunflower oil was higher (19.5±0.14 hours) than CLA (4.5±0.29 hours) in presence of oxygen. However, the increase of hydroperoxides started earlier in samples with sunflower oil than in those with CLA. Thus, the oxidation process of CLA and the rest of the fatty acids showed a different behaviour, not only in presence of oxygen, but also in an oxygen free atmosphere. On the other hand, chromatographic results showed that after oxygen free storage at 35°C and 15°C the bioactive isomers remained stable, and therefore their beneficial effect during storage in an oxygen free atmosphere could be assumed.