

Use of Antioxidants to Prevent Oxidation in Palm Oil Enriched with Heme Iron: A Model for Iron Fortification in Baked Products.

Mercedes Alemán, Carla Nuchi, Alba Tres, Rafael Codony, Nutrition and Food Science Department, University of Barcelona, Barcelona, Spain

The aim of this study is to evaluate the effect of adding antioxidants in order to prevent oxidation in palm oil enriched with heme iron and subjected to heating, as model for iron fortification in baked products. Several antioxidants having different mechanisms of action were selected: tocopherol extract (0 and 500 mg/kg), ascorbyl palmitate (0 and 500 mg/kg) and citric acid (0 and 300 mg/kg), and combined by a factorial design ($2 \times 2 \times 2$). The palm oil added with the antioxidants and a heme iron ingredient was heated as in a typical bakery processing (10 minutes at 220°C). Then, during 200 days, the system was maintained at room temperature in the dark and in order to follow the oxidation some parameters were measured. Peroxide and lipid hydroperoxide values were monitored as primary oxidation markers, and *p*-anisidine value was used as secondary oxidation marker. The results showed that ascorbyl palmitate and their combination with citric acid were the most effective treatments to delay oxidation in the studied matrix, while the tocopherol extract was not effective. The *p*-anisidine value did not change much during 200 days, showing that this oxidation parameter was not suitable to monitor the oxidation in a palm oil matrix..