



LIPID DEGRADATION IN OILSEEDS: PEROXIDE INDEX AS A QUALITY INDICATOR

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INTRODUCTION

Oilseeds are susceptible to lipid degradation, primarily through oxidation reactions that compromise their nutritional and sensory quality. In addition to oxygen exposure, the presence of natural lipases (endogenous enzymes found in seeds) can accelerate lipid hydrolysis, releasing free fatty acids that make oils more prone to oxidation. The present study aimed to evaluate the peroxide index in oilseeds, analyzing the influence of air exposure and the initial effects of oxidative degradation.

MATERIAL AND METHODS

A total of four samples were analyzed: two samples of Brazil nuts (*Bertholletia excelsa*) and two samples of walnuts (*Juglans regia*). For each type of oilseed, one sample was purchased in bulk and the other was commercially packaged (supermarket).

The samples were stored at room temperature and exposed to air. The peroxide index (PI) was measured initially and then again after 5 and 14 days. The methodology for peroxide quantification was based on the analytical standards of the Adolfo Lutz Institute.

A 5 g sample was used, to which 30 mL of an acetic acid:chloroform solution (3:2) and 0.5 mL of saturated potassium iodide were added. The mixture was then left to stand, protected from light, for 1 minute. Subsequently, 30 mL of distilled water and 0.5 mL of starch solution were added, and titration was carried out using sodium

thiosulfate (0,01 N) until the blue coloration disappeared.

RESULTS

The initial PI for the packaged walnuts was 1.21 mEq/kg, increasing slightly to 1.22 mEq/kg after five days and to 1.26 mEq/kg after fourteen days. For bulk walnuts, the PI was 1.00 mEq/kg immediately after opening, rising to 1.46 mEq/kg after five days and reaching 1.60 mEq/kg after fourteen days. As for the packaged Brazil nuts, the PI was 3.41 mEq/kg at the initial measurement, increasing to 3.77 mEq/kg after five days and to 4.80 mEq/kg after fourteen days. In the bulk Brazil nuts, the initial value was 2.81 mEq/kg, with a slight increase to 2.84 mEq/kg after five days and 2.97 mEq/kg after fourteen days.

CONCLUSIONS

The results demonstrate a gradual increase in the peroxide index over the 14-day period for all samples, indicating ongoing lipid oxidation. Overall, both exposure to air and storage conditions significantly influence the oxidative stability of oilseeds, highlighting the importance of proper packaging and storage to preserve nutritional quality.

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