

Influence of different antioxidants and pack materials on oxidative stability of cold pressed poppy seed oil

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The aim of this study was to determine the oxidative stability of cold pressed poppy seed oil (PSO) samples. The PSO samples prepared by adding BHA, tocopherol and oryzanol, were also filled into polyethylene terephthalate (PET), amber glass (AG) and transparent glass (TG) packaging materials. The samples were stored at 4 and 20°C for 9 months and the color differences, free fatty acidity, peroxide value (PV), UV absorbance (K_{232} and K_{270}) and oxidative induction time (OIT) were monitored. As expected, the oil oxidation process was affected by storage temperature, hence the samples stored at 20°C oxidized faster than the samples stored at 4°C. This study revealed that BHA was more effective against oxidation than the other antioxidant additives. Moreover, the samples packaged with AG materials had lower PV values and higher OIT values than the other samples. There was high correlation between PV and OIT ($r = 0.88$; $p = 0.01$) and K_{232} and OIT ($r = 0.84$; $p = 0.01$) measurements. In conclusion, the OIT values obtained from DSC measurements can be applied as an accurate and effective method just as standard titration and UV absorbance methods.

Keywords: antioxidant, induction time, packaging, oxidation, storage, calorimetry

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