

# Changes in hexanal, thymoquinone and tocopherols levels in blends from sunflower and black cumin oils as affected by storage at room temperature

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The aim of this study was to investigate the oxidative stability (OxS) of oil blends formulated from sunflower oil (SO) and cold pressed black cumin oil (BCO) stored at room temperature for 6 months. Blends (5%, 10% and 20%, w/w) of BCO with SO were prepared. Progression of oxidation was followed by measuring peroxide value (PV), conjugated dienes (CD) and conjugated trienes (CT). Changes in the thymoquinone and tocopherols levels of oils and blends during storage were also recorded. In addition, hexanal was identified and measured using the headspace/solid phase microextraction-gas chromatography/mass spectrometry (HS/SPME-GC/MS). Inverse relationships were noted between PV and OxS at termination of storage. Levels of PV, CD and CT in SO and blends increased with an increase of storage time. SO:BCO (80:20, w/w) blend had lower values of PV, CD and CT than the other blends during storage. Hexanal content was not significantly affected in blends and SO during storage. SO:BCO (80:20, w/w) blend contained the highest thymoquinone and  $\gamma$ -tocopherol content among the blends. BCO improves OxS of SO and enrich the blends with thymoquinone and tocopherols. Stability of blends were better than SO, most likely due to changes in the amounts of thymoquinone and tocopherols found in BCO.

**Keywords:** Oil blends, stored oils, rancidity, conjugated diene, conjugated triene, oxidation.