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Assessment of oxidative changes in tobacco seed oil stored at different conditions

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Abstract

Aim: Alternative uses of tobacco have gained importance in recent times to sustain crop for non-conventional and economically viable application in food and industries. One of the alternative promising use of tobacco is seed oil having nutritive, pharmaceutical and industrial utility.

Methodology: Experiments were conducted to study the extent of oxidative alterations in tobacco seed oil subjected to ambient and sunlight storage, for a period of 90 days and compared with sunflower and groundnut oils. The magnitude of oxidative changes was monitored by periodical measurement of peroxide value (PV), free fatty acids (FFA), p-anisidine value (pAV), conjugated trienes (CT), conjugated dienes (CD) and iodine values (IV).

Results: Peroxide values significantly increased from 15 days of storage (1.13 meq kg^{-1}) reaching maximum value (8.45 meq kg^{-1}) at 90 days. Photo-oxidation (4.82 meq kg^{-1}) was significantly higher than auto-oxidation (3.80 meq kg^{-1}). The peroxides were significantly different among the three oils with the highest in tobacco seed oil (5.06 meq kg^{-1}) followed by sunflower oil (4.29 meq kg^{-1}) and groundnut oil (3.58 meq kg^{-1}). The pAV increased significantly with increase in days of storage attaining maximum value of 13.84 at 90 days. pAV in tobacco seed oil (7.27) and sunflower oil (7.18) were at a par and were significantly higher than groundnut oil (5.36). Tobacco oil at 90 days of storage showed 2.9% and 7.19% higher content of CD over sunflower oil in photo and auto-oxidations respectively. FFA content in tobacco seed oil (0.153%) and sunflower oil (0.150%) were at a par and were significantly higher than groundnut oil.

Interpretation: The oxidative changes in tobacco seed oil showed nearly similar trends with that of sunflower oil. The results showed that even though tobacco seed oil contains higher levels of unsaturated fatty acids, tobacco oil can be stored like any other edible oils.

