

Effect of some plant extracts in reducing autoxidation of selected edible oils during storage

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There is growing interest in using antioxidants from natural sources to mitigate oxidative deterioration in food systems during processing and storage. Extracts of many plant materials have been reported to have varying degrees of antioxidant activities in fat and oils. The present study was carried out to evaluate the anti-oxidative effects of natural extracts from rosemary, oregano and pomegranate peel powder for stabilising virgin coconut oil (VCO), sesame oil (SSO) and sunflower oil (SO) during accelerated storage.

Oil samples containing extracts at 2% (w/w) were stored in an oven at 60°C. Samples were drawn out on days 0, 1, 3, 5, 7, 14, 21 and 28, flushed with nitrogen and stored at -18°C until analysis. Oil devoid of any extract was used as the control for each oil system. The level of oxidation was assessed by measuring peroxide value (PV) and thiobarbituric acid reactive substances (TBARS).

Results revealed that both PV and TBARS values gradually increased with storage in all oils indicating a gradual oxidation of oils with time. A significant ($P < 0.05$) inhibition of oxidation as a result of incorporation of additives was observed in all oils. The stability of oils increased in the order: sunflower oil < sesame oil < virgin coconut oil. Generation of primary as well as secondary oxidative products was higher in sunflower oil (PV: 1.33 - 5.38 meq/kg, TBARS: 68.27 - 104.12 meq MA/kg) than in SSO and VCO. The inhibition exerted by anti-oxidative extracts against development of primary oxidative products as measured by PV was significantly ($P < 0.05$) higher in SO followed by VCO and SSO. The inhibition exerted against development of TBARS was higher in VCO as compared to SO and SSO. It can be concluded that anti-oxidative extracts, namely pomegranate peel powder, oregano and rosemary, can be effectively used to mitigate auto-oxidation of edible oils during accelerated storage.

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