

EFFECT OF FRUIT EXTRACTS ON OXIDATIVE STABILITY OF SELECTED EDIBLE OILS

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ABSTRACT

Oxidation of oil is a major challenge in food processing sector which leads to deterioration of quality. Though, synthetic antioxidants are effective in preventing rancidity of oils, these substances show adverse health effects. Thus, the present study aimed to utilize natural antioxidant extracted from Hinembilla (*Antidesma alexiteria*) and Lovi (*Flacourtia inermis*) to retard the rancidity of selected edible oils. Extracts were prepared with 70% ethanol using ultrasound-assisted extraction. The antioxidant efficacy of extracts were measured using 2,2-diphenyl-1-picrylhydrazyl (DPPH) radical scavenging capacity and Folin-Ciocalteu method was used to measure total phenolic content (TPC). Free fatty acid (FFA) content and peroxide value (PV) of sunflower oil (SO) and virgin coconut oil (VCO) were measured at 3 days intervals after addition of extract at three different concentration levels viz 500, 1,000 and 2000 ppm. α -tocopherol(500ppm) was used as positive control and the experiment was continued for 21 days at $65\pm 1^\circ\text{C}$. Antioxidant activity (IC_{50}) and TPC of hinembilla and lovi extracts were $135.33\pm 4.49 \mu\text{g mL}^{-1}$, $6.77\pm 0.03 \text{ mg Gallic Acid Equillant per gram extract}$ and $227.14 \pm 4.12 \mu\text{g mL}^{-1}$, $4.87\pm 0.01 \text{ mg GAE per gram extract}$, respectively. FFA content and PV of both oils were increased with the time. FFA content and PV of SO (FFA:0.14%; PV:12.23 meq kg^{-1}) and VCO (FFA:0.22%; PV:1.19 meq kg^{-1}) at 2000 ppm level of Hinembilla extract were significantly lower ($p<0.05$) than those of positive control; SO with α -tocopherol (FFA:0.22% ; PV:17.94 meq kg^{-1}) and VCO with α -tocopherol (FFA:0.29% ; PV:1.39 meq kg^{-1}) after 21 days. FFA content and PV of SO (FFA:0.09% ; PV:12.38 meq kg^{-1}) and VCO (FFA :0.28% ; PV;1.19 meq kg^{-1}) with added Lovi peel extract at 2000 ppm were significantly lower ($p<0.05$) than those of positive control; SO with α - tocopherol (FFA:0.21% ; PV:17.93 meq kg^{-1}) and VCO with α -tocopherol (FFA:0.28%; PV:1.38 meq kg^{-1}) after 21 days. In conclusion, Hinembilla extract had a positive impact on oxidative stability of selected oils at both 1,000, 2,000 ppm levels and lovi extract had positive impact at 2000 ppm level. Hence, *A. alexiteria* and *F. inermis* fruits serve as an excellent source of antioxidant which can be effectively used to stabilize the oxidation of edible oils.

Key- words: Antioxidant, *A. alexiteria*, DPPH, Peroxide value, DPPH, Virgin coconut oil