615/E2

Stabilization of sunflower oil by Pomegranate (*Punica granatum* L.) peel extract

Dilini Bopitiya[1] and Terrence Madhujith[2]

[1]*Postgraduate Institute of Science, University of Peradeniya, Peradeniya*
[2]*Department of Food Science & Technology, University of Peradeniya, Peradeniya*

Oxidation of edible oils leads to generation of numerous oxidation products most of which bear toxic effects. Therefore, it is important to improve the stability of oils and fat-rich food systems. Addition of natural antioxidants retards the oxidative reactions of edible oils. In this background, the objective of the present study was to evaluate the efficacy of peel extracts of three different varieties of pomegranate (*Punica granatum* L.) as a source of natural antioxidant mixture in stabilizing stripped sunflower oil (SFO) subjected to accelerated storage conditions. Pomegranate varieties grown in Sri Lanka namely, *Nayana*, *Daya*, and *Nimali* were used to obtain extracts. The acetone extracts of peel were added into preheated (60 ^{o}C) stripped SFO, at a concentration of 2.00 % (w/w). α-Tocopherol at 2.00 % (w/w) was used as the reference antioxidant and oil devoid of any additive was used as the control. The oil samples (6.00 ± 0.05g) containing peel extracts and α-tocopherol were maintained at 60 ^{o}C. The level of oxidation of the oil samples was assessed on the day 0, 1, 3, 5, and 7. Peroxide Value (PV), Thiobarbituric Acid Reactive Substances (TBARS), Conjugated Dienes (CD) and Conjugated Trienes (CT) of the oil samples were determined. The PV of oil samples containing *Daya, Nayana*, and *Nimali* peel extracts increased 2.17, 2.17, and 2.19 fold, respectively as of the 7th day, while the oil containing α-tocopherol showed a 3 fold increase and the control oil sample showed a 3.52 fold increase. The corresponding fold increase of TBARS was 2.01, 2.01, 2.00, 4.00, and 4.50. The corresponding fold increase of CD was 1.30, 1.30, 1.30, 1.89, and 2.23, while the corresponding fold increase of CT was 0.04, 0.04, 0.04, 0.20, and 0.13. The results showed that all the pomegranate peel extracts were effective in mitigating oxidation of SFO. It is important to note that the peel extracts were more effective than α-tocopherol in retarding oxidation of SFO. The antioxidative effect of peel extracts of different varieties tested did not exhibit a significant ($p > 0.05$) difference. The results revealed pomegranate peel extracts from all three Sri Lankan varieties to be potent antioxidants for stabilization of SFO.

Acknowledgments: National Research Council (Grant No: NRC 0945), Bauddhaloka Mawatha. Colombo 07.
Department of Agriculture, Regional Research Station, Mankandura.

madujith@yahoo.com Tel: 0812395306