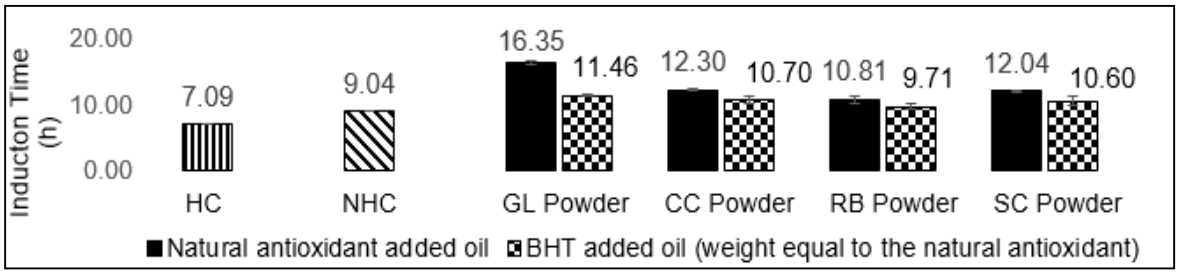
925/E2/Poster

Determination of thermal stabilities of guava leaf, coconut cake, rice bran and sesame cake extracts

C M Senanayake, Kapila N Seneviratne*, Bimali M Jayawardena and W C Prasadani
Department of Chemistry, University of Kelaniya, Kelaniya

Thermal stability of an antioxidant is important for a food system to function effectively under processing conditions. The objective of the study was to evaluate the antioxidant activities of thermally treated natural antioxidants. In this study, guava leaves (GL), coconut cake (CC), rice bran (RB) and sesame cake (SC) were selected as the natural sources of antioxidants. Phenolic compounds were extracted using ethanol/water (70:30 v/v). Total phenolic contents were determined using Folin-Ciocalteu method. Phenolic concentration of the extracts or butylated hydroxyl toluene (BHT) was adjusted to 40 µg/mL and heated at 100 ^{O}C for 1 hour in a special sealed tube. Antioxidant activity of the



heated and non-heated extracts was evaluated using DPPH assay. Effect of the heated phenolic antioxidants on the oxidative stability of stripped sunflower oil was determined using the Rancimat Apparatus. Heated control (HC, stripped sunflower oil heated at 100 ^{O}C for 1 h), non-heated control (NHC) and sunflower oil enriched with the antioxidants (heating sunflower oil with 1.0 g of natural source of antioxidants or equivalent amount of BHT at 100 ^{O}C for 1 h) were used for the test. According to the results, total phenolic contents as gallic acid equivalents (GAE g/kg) vary in the order, GL extract (21.25 ± 2.09) > RB extract (2.60 ± 0.23) > SC extract (1.31 ± 0.03) > CC extract (0.26 ± 0.04). Thermal stabilities of antioxidants evaluated in terms of antioxidant activities using DPPH assay are 92 ± 3 %, 85 ± 10%, 75 ± 7%, 77 ± 2%, and 52 ± 2% for GL, CC, RB, SC extracts and BHT respectively. According to the results of the Rancimat test (Figure 1), all the natural antioxidant added oils show a higher induction time than its respective BHT added oils.

Figure 1. Induction times of stripped sunflower oil without (control) and with added antioxidants

The tested natural phenolic antioxidants are more thermally stable than BHT. Hence they will be better alternatives for BHT in high temperature cooking.

Keywords: Antioxidants, oxidative stability, rancimat test, stripped oil, thermal stability

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kapilas@kln.ac.lk Tel: +94 714458393