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A preliminary study on the utilization of coconut paring residue as an antioxidant and a food preservative

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Coconut paring is the brownish outer layer of the coconut kernel, which is removed when desiccated coconut is produced. Coconut Paring Residue (CPR) is the residue remaining after expulsion of coconut oil from the coconut parings. The present study was conducted to evaluate the potential of the ethanolic extract of CPR as an antioxidant mixture capable of preserving edible oils and milk. Phenolic compounds of CPR were extracted using ethanol: water (70:30 v/v) solvent system as 70% ethanol has shown the highest oxygen radical absorption capacity for the phenolic mixture. Total phenolic content and antioxidant activity of CPR extracts were measured using Folin-Ciocalteu and α, α -diphenyl- β -picrylhydrazyl (DPPH) free radical scavenging assays respectively. The potential of the phenolic extract to inhibit lipid oxidation in soybean oil, sesame oil, sunflower oil and palm oil was determined by monitoring peroxides using ferric thiocyanate method. Microbial count was used to evaluate the ability of the phenolic extract to inhibit or delay the action of microorganisms in milk. All the tests were conducted in duplicates. Total phenolic content of the coconut paring residue extract was 1947 ± 12 mg/kg as gallic acid equivalents. The phenolic extract showed higher antioxidant activity between the concentration range 5-90 $\mu\text{g/mL}$ and lower IC_{50} value (10.40 ± 0.36 $\mu\text{g/mL}$) compared to the ascorbic acid standard. Peroxide values of the phenolic-added oil samples were lower than those of the control with no added extract during the storage time period of 15 days. Colony Forming Units of yeast and molds per mL of milk (CFU/mL) were estimated using test samples with phenolic extract at 200 $\mu\text{g/mL}$. Milk without phenolic extract served as the control. The initial CFU count in both control and test samples was $4.5 \times 10^4 \pm 2.1 \times 10^4$ CFU/mL and the CFUs on the day two were $4.6 \times 10^9 \pm 1.7 \times 10^9$ CFU/mL and $2 \times 10^8 \pm 1.41 \times 10^8$ CFU/mL, respectively. The results suggest that the phenolic extracts of CPR can be used for improving the shelf life of edible oils and milk.

Keywords: Coconut paring residue, Oxidative stability, Peroxide value, Phenolic extract, Shelf-life

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