

Oxidative Stability of Muffin Formulated With Cherry Extract As Active Ingredient

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Structured Abstract

Background: In response to the rising consumer demand for clean-label and natural food products, this study delves into the potential of plant extracts, particularly cherry extract, as a substitute for synthetic antioxidants in baked goods. The primary objective was to explore the antioxidant properties of cherry extract and its impact on the oxidative stability of muffins, aligning with the growing need for more natural and healthful food options.

Methods: The research methodology includes the use of antioxidants assay such as Total Phenolic Content, Total Flavonoid Content, Ferric Reducing Antioxidant Power and 2,2-Diphenyl-1-picrylhydrazyl (DPPH) to come up with cherry's antioxidant properties and also the use of method of Peroxide Value and Thiobarbituric Acid Number to measure the oxidative stability of the incorporated muffins.

Results: Total Phenolic Compound was determined using Follin-Ciocalteu reagent and the result indicated TPC for sweet cherry extract was 11.12 mg GAE/g and 17.36 mg GAE/g for sour cherry extract. The results of TFC for sweet cherry and sour cherry were 65.39 QE/g and 51.62 QE/g respectively. The antioxidant activities were compared with synthetic antioxidant which was ascorbic acid. For DPPH, scavenging effects of extracts and ascorbic acid decreased significantly in the order of ascorbic acid, sweet cherry extract and sour cherry extract with the percentage of 97.21, 92.82 and 93.24 respectively at 1000 ppm. Meanwhile for FRAP assay, sour cherry extract at 1000 ppm was comparable to 200 ppm of BHT. Thus, 1000 ppm of sour cherry extract was chosen to be incorporated into muffin and be compared with BHT at 200 ppm. Oxidation analysis was performed on muffin that were prepared using three formulas which were sample without the addition of extract (control), sample with BHT and sample with sour cherry extract. Lipid oxidation analysis was carried out by determining the peroxide value (PV) which varied from 2.580 to 8.325 meq/ kg respectively and TBA Value which varied from 0.189 to 24.092 respectively at the end of the storage.

Conclusion: In conclusion, although BHT continues to be the most potent antioxidant, the results indicate that sour cherry extract is a good natural substitute to improve the oxidative stability of muffins.

Keywords: Cherry, Natural Antioxidants, Muffins, BHT, Oxidative Stability

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