

## Optimization of Cavendish Banana Flour Production: Anti-Browning Treatments and Drying Temperature Method

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### Abstract

Flour is one value-added product that can be produced from off-grade Cavendish banana that otherwise goes to waste. This study evaluated the effect of anti-browning treatments and drying methods on flour quality. The browning Index (BI) and total phenolic content (TPC) of unpeeled unripe banana flour (UUBF) and peeled unripe banana flour (PUBF) from bananas soaked in 0% (control), 0.1%, 0.3%, and 0.5% citric acid (CA) and ascorbic acid (AA) were measured. Likewise, functional properties of oven- and freeze-dried flours were evaluated. The BI of UUBF treated with 0.5% CA and 0.5% AA was significantly lower than that of the control. Meanwhile, PUBF samples treated with CA and AA were not significantly different from the control. TPC was highest in 0.3% and 0.5% AA-treated UUBF (31.39 and 31.20 mg GAE/g, respectively) and in 0.5% AA and 0.3% CA-treated PUBF (19.22 and 19.30 mg GAE/g). As to drying method, freeze-drying produced significantly lighter colored flour, higher water and oil absorption capacity (173.55%, and 86.05%), and lower solubility (6.73%). Both treatments had similar effects on swelling power and syneresis tendency. The flours also had comparable resistant starch (77.46%–82.67%) and total starch (88.15%–93.09%) contents. From these results, the use of 0.5% CA or 0.5% AA is recommended for UUBF production to lessen browning, but these may or may not be used for PUBF production. Moreover, the freeze-drying method is recommended for banana flour production if light color and high absorption capacities are the desired qualities; otherwise, the conventional and less expensive oven-drying method can be used.