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Effect of post-harvest drying temperature on bioactive compounds and antioxidant properties of sweet potato

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Statement of the Problem: Sweet potato (*Ipomea batatas*) is one among the staple food sustaining tuber crops. Extending its utilization by converting into flour through drying is a common practice. However, drying fresh sweet potato has some side effects on its final quality. A number of researches have been done on the effect of drying on quality of sweet potato. But comparisons made among different drying temperatures are very rare. The aim of this research is to study the effect of post-harvest drying on bioactive compounds and antioxidant properties of sweet potato flours.

Methodology: Fresh roots of orange fleshed (OFSP) and purple fleshed (PFSP) sweet potato varieties were cleaned, peeled, cut in to 3 mm uniform thickness slices and then dried in a cabinet hot air drier at three drying temperatures (55, 70 and 85 °C). To be used as a comparison slices were also freeze dried. All dried samples were then powdered. Flour extractions were analyzed for total phenolic content (TPC), total carotenoid content (TCC), total anthocyanin content (TAC), DPPH free radical scavenging activity and FRAP assay.

Findings: In OFSP, TPC, TCC and FRAP assay were significantly ($p < 0.05$) decreased in hot air treated samples than freeze dried once. There was no significant difference in DPPH free radical scavenging activity among all drying treatments and no significant difference among hot air treated samples in TPC. However, TCC steeply decreased with increasing in drying temperature. In PFSP, TPC and TAC were reduced significantly in samples dried at 70 and 85 °C, whereas, those dried at 55 °C showed much higher amount in TPC and TAC. DPPH free radical scavenging activity and FRAP assay were significantly enhanced in hot air dried samples. Positive correlations between bioactive compounds and antioxidant properties were also observed in both varieties.

Conclusion: From these results, drying sweet potato at 55 °C may be better recommended for retaining the bioactive compounds and antioxidant properties.

Biography

Fessehay Hdremeriam Desale has completed his BSc in Agricultural Engineering and was working as a Graduate Assistant for four years in the field of Post-Harvest Engineering in Department of Agricultural Engineering at Hamelmalo Agricultural College, Asmara, Eritrea. He has recently completed his MSc in Technology Management of Agricultural Produces from Mae Fah Luang University, Thailand.

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