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Biochemical clustering and the influence of root pulp colour on the starch, Beta-carotene, and Vitamin C content of 51 cassava genotypes in Burkina Faso

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ABSTRACT

Objective: To support efforts to improve the nutritional quality of cassava tubers in Burkina Faso.
Methodology and results **:** The plant material used consisted of the fresh pulp roots of 51 cassava genotypes. Data was collected on eight biochemical traits such as : Moisture (MT), Hydrogen ion concentration (pH), Total titratable acidity (TTA), Total sugars (TSR), Reducing sugars (RSR), Vitamin C (VTC), Starch (STC) Beta-carotene (BTA); Analysis of variance revealed highly significant differences among genotypes. Hierarchical cluster analysis (HCA) grouped the 51 genotypes into three clusters. Yellow pulp roots genotypes are rich in beta-carotene (2.41 ± 0.11 mg/g) than white pulp roots (1.05 ± 0.0911 mg/g) and cream pulp roots (0.79 ± 0.0811 mg/g). But white pulp roots contain more vitamin C and starch than beta-carotene. The starch content is highest in white pulp roots (26.87 ± 0.2511 mg/g), than cream (24.44 ± 0.2111 mg/g), and yellow (20.94 ± 0.2811 mg/g) pulp roots.
Conclusion and application of results : This study found that genotypes with white pulp roots are rich in starch, and that genotypes with yellow pulp root are rich in beta-carotene. Starch-rich genotypes can be processed into atiéké. Beta-carotene-rich genotypes can also be processed into food products rich in provitamin A. The genetic diversity observed among cassava genotypes offers opportunities for selecting new cassava varieties with superior nutritional quality in Burkina Faso.

Keywords : Cassava, genotypes, starch, beta-carotene, Vitamin C, Burkina Faso.