

## **The effect of oven drying, dehydrator drying and freeze-drying process on physicochemical properties of beetroot (*Beta vulgaris L. Var. Pablo*)**

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Beetroot (*Beta vulgaris L.*) is a root vegetable with numerous nutritional and health benefits. However, processing such as drying can induce negative changes in some beneficial properties of beetroot. The aim of this study was to evaluate the effect different drying methods on physicochemical properties of beetroot. Fresh Pablo (FP) beetroot was sliced evenly and subjected to Oven Drying (OV) at 70°C for 6h, Dehydrator (DH) at 70°C for 9h and Freeze-Drying (FD) at -59°C for 24h. Colour, moisture content, rehydration capacity, texture and water activity of the samples were determined. Total Antioxidant Capacity (TAC), Total Betalains Content (TBC), Total Phenolic Compounds (TPC) was also analyzed. Drying methods changed product physicochemical properties and decreased the level of bioactive compounds at different rates. Colour change was calculated as 3.35±1.69 (OV), 5.02±2.02 (DH) and 3.60±1.97 (FD) from 7.66±3.06 (FP). Moisture contents (g/100g dry matter) were 8.15±0.61 (OV), 7.50±0.51 (DH) and 14.36±4.77 (FD) from 473.06±208.25 (FP). Water activities were 0.329±0.026 (OV), 0.299±0.065 (DH) 0.375±0.004 (FD) from 0.983±0.008 (FP). Firmness (g) recorded were 10709±5646 (OV), 5925±3266 (DH) and 6031±1701 (FD) from 10280±5646 (FP). Further research is needed to optimize drying conditions and investigate the use of different pre-processing technologies and combinations of drying methodologies that will help to maintain product quality.

### **Biography**

Abubakar Sani Ali is a PhD student in Food Science and Technology at the University of Lincoln. The title of his thesis is "The Effect of Drying Processes on Bioactive compounds, Physicochemical Properties, Microstructure and Organoleptic assessment of Beetroot." His research focuses on the effect of oven drying, dehydrator drying and freeze drying on beetroot. He holds MSc in Food Safety and Quality management from Royal Agricultural University, UK and BSc. in Agriculture from Bayero University Kano, Nigeria. Currently, he is an assistant in student project and has spoken at a few conferences within the University and awarded with best poster presenter and has written two manuscripts.

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