

Dual impact of different drying treatments and ethanol/water ratios on antioxidant properties and colour attribute of jackfruit leaves (*Artocarpus heterophyllus* Lam.) Mastura variety (J35)

ABSTRACT

Artocarpus heterophyllus (jackfruit) leaves (JL) are a waste product that is commonly used as livestock feed. Jackfruit leaves have been revealed to possess many medicinal values such as antioxidant and anti-inflammatory properties. In this study, different drying treatments (shade (SD), sun (SN), and oven (OV)) and ethanol/water ratios (E/W) were investigated to evaluate the impact on drying kinetics, color, and antioxidant properties of jackfruit leaves. Results showed that the Newton model was the best fitted mathematical model for the JL drying kinetics. The moisture effective diffusivities ranged from 2.920×10^{-10} to 6.814×10^{-10} m²/s over the temperature range studied. Shade drying was able to preserve the green pigment better than OV and SN drying treatments. Treatment with ethanol/water ratio at 80% and oven-dried (OV80) revealed the highest phenolic content (195.05 ± 1.21 mg gallic acid equivalent (GAE)/g extract weight (EW)), flavonoid content (11.02 ± 0.17 mg artocarpin equivalent (AE)/g EW), and antioxidant activities (90% scavenging activity and reducing power of 1043.84 ± 5.28 μ M trolox equivalent (TE)/g EW) compared to SD and SN treatments. The OV80 also possessed the highest artocarpin, squalene, and β -sitosterol contents determined. The OV80 was selected for improving antioxidant and colour stability, and has the potential to be developed into functional biopolymer production.

Keyword: *Artocarpus heterophyllus* leaves; Drying; Newton model; Antioxidant; Aartocarpin