Abstract

Aim: Optimum conditions of umbu juice spray drying were selected using inlet air temperature ($T$), feed flow rate ($F$) and 10-DE maltodextrin concentration ($C_{MD}$) as independent variables, and water activity, moisture content, hygroscopicity and phenolic compounds retention as responses.

Methods: Powders water activity was determined with a water activity metre, moisture content and hygroscopicity gravimetrically, total phenolics spectrophotometrically, apparent and absolute density, porosity and solubility by standard methods, particle size by laser diffraction, and morphology by Scanning
Electron Microscopy. Nectars sensory analysis was based on acceptance, purchase intention and multiple comparison preference tests. Powder stability was checked at 25 °C varying water activity and storage time in the ranges 0.1–0.3 and 30–90 days, respectively.

**Results:** Powders prepared at $T = 110 \, ^\circ\mathrm{C}$, $F = 0.84 \, \text{L/h}$, $C_{MD}=10\%$ and $T = 140 \, ^\circ\mathrm{C}$, $F = 0.60 \, \text{L/h}$, $C_{MD}=10\%$ gave the best microparticles and sensory results. The former showed properties suitable for industrial production.

**Conclusion:** These findings may promote umbu powder industrial exploitation.

**Keywords:** *Spondias tuberosa Arr. Cam.*, umbu, spray drying, maltodextrin, microparticles, atomisation by drying, sensory evaluation, physicochemical characterisation

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**Additional information**

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**Disclosure statement**

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