



Editor:
Wasu Pathom-aree,
Chiang Mai University, Thailand

Article history:
Received: May 12, 2020;
Revised: July 1, 2020;
Accepted: October 12, 2020;
<https://doi.org/10.12982/CMUJNS.2021.045>

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Research article

Effect of Foam-Mat Drying Conditions on Antioxidant Activity, Total Phenolic Compound, Anthocyanin Content and Color of Purple-Fleshed Sweet Potato Powder

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Abstract This research was aimed to study chemical properties (antioxidant activity, total phenolic compound and anthocyanin content) and color of foam-mat dried purple-fleshed sweet potato powder affected by 2 drying methods (tray drying and vacuum drying) and 3 drying temperatures (50, 60 and 70°C). The foaming process of purple-fleshed sweet potato used carboxymethyl cellulose (1%) mixed with hydroxy propylcellulose (1%) as a foaming agent. The results showed that different drying methods and temperatures affected qualities of foam-mat dried purple-fleshed sweet potato powder significantly ($P < 0.05$). Vacuum drying method at 70°C showed antioxidant activity, total phenolic compound and anthocyanin content in foam-mat vacuum-dried powder than tray-dried one at 70°C. The results also showed that increasing temperature led to an increase in anthocyanins and antioxidant activities of the samples ($P < 0.05$) because low oxygen and drying time condition could avoid the oxidation reaction. Therefore, their low phytochemical content loss during vacuum drying could be considered from the high intense of purple color (low b^* value). Results of this study suggested that foam-mat drying by vacuum method at 70°C could retain higher quality of purple-fleshed sweet potato powder, in terms of phytochemical content as well as antioxidant capacities. This study has indicated that, under the experimental conditions, obtain for highly nutrition powder characteristics and applying for food ingredients.

Keywords: Antioxidant activity; Anthocyanin content; Foam-mat drying; Purple-fleshed sweet potato powder; Total phenolic compound

Funding: The authors wish to thank the King Mongkut's University of Technology North Bangkok. The contract no. KMUTNB-62-NEW-12 for financial support.

Citation: Jakkranuhwat, N. and Kunchansombat, P. 2021. Effect of foam-mat drying conditions on antioxidant activity, total phenolic compound, anthocyanin content and color of purple-fleshed sweet potato powder. CMUJ. Nat. Sci. 20(2): e2021045.