

MICROENCAPSULATION OF MAHKOTA DEWA PLANT EXTRACTS USING SPRAY DRYING TECHNIQUE

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Extended Abstract

Mahkota Dewa or Phaleria Macrocarpa (Scheff.) Boerl belong to Thymelaeaceae family is one of the famous herbal medicine. Although the plant is originated from the Island of Papua New Guinea (Irian Jaya) Indonesia, it also can be found in Malaysia. Traditionally, this herb was used as herbal drink either singly or mixed with other herb to cure the illness such as cancer, hypertension and diabetes mellitus by local people [1]. Several researchers including our own work have reported the extraction of bioactive ingredients from Mahkota Dewa using various extraction techniques such as soxhlet, subcritical water and supercritical carbon dioxide [2-5]. The liquid extract of the herbal product can be converted into solid form for better stability and easy handling [6, 7]. Moreover, the solid form of herbal extract has been reported to show longer shelf-life and more convenience as oral administration by consumers [7]. Several methods including spray drying can be utilized to produce solid form of herbal extracts [8-10]. This paper present the encapsulation of Phaleria Macrocarpa (Scheff.) Boerl or Mahkota Dewa by spray drying using maltodextrin. The bioactive compound from dried Mahkota Dewa was extracted using subcritical water extraction process before undergo spray drying process. Different spray drying parameters which were inlet dry air temperatures (100°C, 125°C, 150°C, 175°C and 200°C) and dry air flow rate (3.5 m/s, 3.7 m/s, 3.9 m/s, 4.1 m/s and 4.3 m/s) were investigated. The spray dried powder undergo antioxidant activity, moisture content analysis and particle size distribution analysis. Result suggest the inlet dry air temperature of 200°C at dry air flow rate 3.9 m/s produced particles with lowest the moisture content (11.34 %), smallest average mean particle size (60.585 µm) and acceptable antioxidant activity (92.19%) as the most suitable spray drying condition obtained in this work.

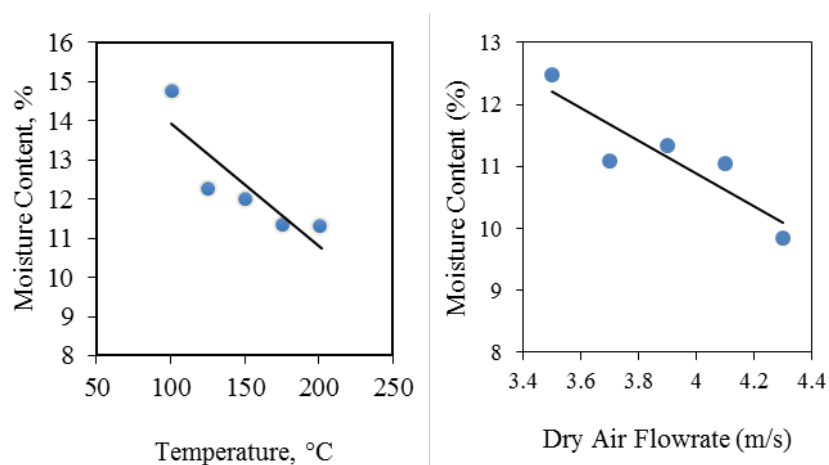


Fig. 1: Moisture content of spray dried powder at different (a) inlet dry air temperatures and (b) dry air flow rates

Keywords: Mahkota Dewa, Spray Drying, Maltodextrin, Microencapsulate.

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