ABSTRACT

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OPTIMIZATION OF SPRAY DRYING TEMPERATURE AND FILLER CONCENTRATION TO ANTIOXIDANT ACTIVITY IN JAVA TEA (*Orthosiphon sp.*) BASED EFFERVESCENT POWDER DRINK

(xiv + 130 pages: 9 tables; 12 figures; 29 appendices)

Java tea is one of medicine plants common in Indonesia. The java tea based drink has been developed, its antioxidant activity and sensory acceptability was also been optimized. However, the antioxidant activity was found to be gradually decreased during storage. Powder form may give better stability of the antioxidant activity. This research is designed to determine the spray drying temperature and filler concentration in order to develop java tea based effervescent powder drink having optimal antioxidant activity and sensory acceptability. Five different concentrations of filler (X-14.14, X-10, X, X+10, and X+14.14%) and five different spray drying temperatures (Y-14, Y-10, Y, Y+10, and Y+14°C) were used as the treatments. The powder yield, antioxidant activity and sensory acceptability of all treatments were investigated and optimized using Response Surface Methodology (RSM) program. Physical characteristics of effervescent powder drink, including dissolving time, foam volume, pH, total soluble solid, moisture content, and ash content were analyzed and compared to 5 commercial products as standard. The data showed that the increase of drying temperature reduced the java tea based drink powder yield and antioxidant activity. On the other hand, filler concentration positively correlated with java tea based drink powder yield and antioxidant activity. Sensory acceptability (color, flavor, taste, and overall) was not affected by those factors. Java tea based effervescent powder drink processed with optimal drying condition ((X-15°C drying temperature and (Y-9)% filler) was found to be higher antioxidant activity (59.84%) than the java tea based drink itself (53.33%). The optimal java tea based effervescent powder drink has better sensory acceptability than its primary drink, but could not compete one of commercial effervescent powder drink tested.

Keywords: java tea, *Orthosiphon sp.*, antioxidant, effervescent powder drink

References: 59 (1986-2012)