

## ABSTRACT

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### **MICROENCAPSULATION OF ANTHOCYANIN EXTRACT FROM ROSELLE (*Hibiscus sabdariffa* L.) CALYX USING SPRAY DRYING METHOD**

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Roselle (*Hibiscus sabdariffa* L.) is one of the plants known to be rich in anthocyanin. The application of microencapsulation technique with spray drying method is conducted to protect the core material and active compounds from degradation and external damage. The aim for this research was to produce microcapsules from roselle calyx extract using spray drying method, also to determine the preferred ratio of maltodextrin and whey protein isolate based on physicochemical characteristics of microcapsules produced, and the effect of pH and temperature towards the stability of the microcapsules. This research consisted of three stages. In the preliminary stage, dried roselle calyx was extracted using combination of ethanol, aquadest, and citric acid. The extract had yield of 73.48%, moisture content 39.44%, pH 2.53, total anthocyanin content 38.85 mg/L, and color intensity with wavelength peak of 522nm and absorbance of 2.414. In the first research stage, the roselle extract was encapsulated using maltodextrin and whey protein isolate as coating agent with spray drying method. The chosen microcapsule with ratio of maltodextrin and whey protein isolate of 1:0 had color intensity with absorbance of  $0.453 \pm 0.01$ , yield of  $66.60 \pm 4.04\%$ , moisture content of  $11.04 \pm 0.56\%$ , solubility of  $81.40 \pm 5.39\%$ , total anthocyanin content of  $10.33 \pm 0.25$  mg/L, and efficiency encapsulation of  $92.12 \pm 2.63\%$ . In the second research stage, the chosen microcapsule stability was analysed for total anthocyanin content and color intensity. The higher the temperature and pH values, the total anthocyanin and the color intensity of microcapsule decreased, with the best microcapsules were obtained at pH 2-6 and temperature below 70°C.

Keywords: microencapsulation, roselle extract, spray drying, maltodextrin, whey protein isolate

References: 91 (2002-2022)