

ABSTRAK

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PENGARUH RASIO BAHAN PENYALUT DAN SUHU *INLET SPRAY DRYER* TERHADAP KARAKTERISTIK MIKROKAPSUL EKSTRAK BUNGA TELANG (*Clitoria ternatea* L.)

Skripsi, Fakultas Sains dan Teknologi (2019)

(xv + 81 halaman, 7 tabel, 22 gambar, 14 lampiran)

Bunga telang (*Clitoria ternatea* L.) memiliki kandungan komponen bioaktif dan antosianin sehingga berpotensi sebagai pewarna alami. Aplikasi penggunaan bunga telang pada produk pangan masih terbatas karena antosianin dan komponen bioaktif dari bunga telang bersifat tidak stabil dan sensitif terhadap pH, suhu, maupun cahaya. Tujuan dari penelitian ini ialah untuk mempertahankan senyawa antosianin pada ekstrak bunga telang dengan metode mikroenkapsulasi. Penelitian dilakukan dalam dua tahap. Pada penelitian pendahuluan, dilakukan ekstraksi bunga telang dengan pelarut etanol. Pada penelitian utama dilakukan mikroenkapsulasi ekstrak bunga telang dengan perlakuan rasio bahan penyalut (maltodekstrin: *Whey Protein Isolate* 1:0, 1:1, 0:1) dan suhu *inlet spray dryer* (130, 150, 170 °C), kemudian dilakukan analisis terhadap kadar air, *powder recovery*, kandungan antosianin, efisiensi enkapsulasi, kandungan fenolik, kelarutan, ukuran partikel, serta *color measurement*. Ekstrak bunga telang yang dihasilkan memiliki rendemen sebesar 17,09%, kadar air 22,58%, kandungan antosianin 939,31 mg/L, kandungan fenolik 44,28 mg GAE/sampel, dan aktivitas antioksidan IC₅₀ 853.74 ppm. Dari hasil penelitian didapatkan bahwa rasio bahan penyalut dan suhu *inlet spray dryer* berpengaruh terhadap karakteristik mikrokapsul yang dihasilkan. Mikrokapsul ekstrak bunga telang yang terbaik ialah mikrokapsul dengan bahan penyalut *Whey Protein Isolate* dan suhu *inlet spray dryer* 150 °C dengan kadar air 4,65%, *powder recovery* 50,75%, kandungan antosianin 50,10 mg/L, efisiensi enkapsulasi 97,30%, kandungan fenolik 10,65 mg GAE/g sampel, kelarutan 83,67%, ukuran partikel 1,22 µm, nilai L* 63,40, hue 211,25°, dan aktivitas antioksidan IC₅₀ 10.058,21 ppm.

Kata Kunci: Mikroenkapsulasi, Bunga Telang, Antosianin, Komponen Bioaktif, *Spray Drying*

Referensi: 116 (2000-2018)

ABSTRACT

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EFFECT OF COATING MATERIAL RATIO AND SPRAY DRYER INLET TEMPERATURE ON THE CHARACTERISTICS OF BUTTERFLY PEA FLOWER (Clitoria ternatea L.) EXTRACT MICROCAPSULE

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Clitoria ternatea L. commonly known as butterfly pea contain a great variety of bioactive compounds and its flower petals containing anthocyanins thus it has a potential to be a natural food colorant. Butterfly pea flower is still rarely used in food products because the anthocyanins and the other bioactive compounds are unstable and sensitive to pH, temperature, or light. The aim of this research is to retain the anthocyanin compounds of butterfly pea flower extract with microencapsulation. This research is divided into two stages. In the preliminary stage, butterfly pea flower were extracted using ethanol as the solvent. In the main stage, the butterfly pea flower extract was encapsulated by using different coating material ratio (maltodextrin and Whey Protein Isolate with ratio 1:0, 1:1, 0:1) and spray dryer inlet temperature (130, 150, 170°C). The microcapsules were analyzed for its moisture content, powder recovery, anthocyanins content, encapsulation efficiency, phenolics content, solubility, particle size, and color measurement. The result demonstrated that the yield of butterfly pea extract was 17.09%, moisture content 22.58%, anthocyanins content 939.31 mg/L, phenolics content 44.28 mg GAE/g sample, and IC₅₀ 853.74 ppm. From this research, it was found that coating material ratio and spray dryer inlet temperature affect on the characteristics of butterfly pea extract microcapsule. Butterfly pea extract microcapsule which encapsulated using Whey Protein Isolate at 150 °C gave the greatest result with moisture content 4.65%, powder recovery 50.75%, anthocyanins content 50.10 mg/L, encapsulation efficiency 97.30%, phenolics content 10.65 mg GAE/g sampel, solubility 83.67%, particle size 1.22 µm, lightness L* 63.40, hue 211.25°, and antioxidant activity IC₅₀ 10.058.21 ppm.

Keywords: Microencapsulation, Clitoria ternatea L., Anthocyanins, Bioactive Compounds, Spray Drying

Reference: 116 (2000-2018)