INTISARI

PENGARUH PENYIMPANAN EKSTRAK DAN MIKROKAPSUL FIKOSIANIN *Arthrospira platensis* DENGAN ENKAPSULAN GUM ARAB, MALTODEKSTRIN, DAN *WHEY PROTEIN ISOLATE* TERHADAP FOTOOKSIDASI

Penelitian ini bertujuan untuk mengetahui pengaruh penyimpanan ekstrak dan mikrokapsul fikosianin *Arthrospira platensis* dengan enkapsulan gum arab, maltodekstrin, dan *whey protein isolate* terhadap fotooksidasi. Konsentrasi bahan enkapsulan yang digunakan adalah 8,3% gum arab, 11,7% maltodekstrin, dan 5,2% *whey protein isolate*. Tahapan penelitian meliputi ekstraksi fikosianin dari *A. platensis*, pembuatan mikrokapsul fikosianin menggunakan metode *spray drying*, dan penyimpanan fotooksidasi selama 6 hari. Penelitian ini menggunakan Rancangan Acak Lengkap (RAL) dengan dua faktor, yaitu jenis sampel (ekstrak dan mikrokapsul) dan kondisi penyimpanan (gelap dan terang). Parameter yang diamati meliputi kadar fikosianin, efisiensi enkapsulasi, retensi fikosianin, aktivitas antioksidan, kadar air, warna, dan ukuran partikel. Hasil penelitian menunjukkan bahwa interaksi antara jenis sampel dan kondisi penyimpanan mempengaruhi stabilitas fikosianin selama fotooksidasi. Mikroenkapsulasi terbukti mampu mempertahankan stabilitas fikosianin selama fotooksidasi dibandingkan dengan ekstrak fikosianin tanpa enkapsulasi, dengan penurunan kadar fikosianin masing-masing sebesar 20,64% dan 74,80%. Stabilitas tertinggi ditemukan pada mikrokapsul yang disimpan dalam botol gelap dengan penurunan kadar fikosianin, efisiensi enkapsulasi, dan retensi fikosianin masing-masing sebesar 16,28%; 5,07%; dan 10,23%. Stabilitas terendah ditemukan pada sampel ekstrak fikosianin yang disimpan dalam botol terang, dengan penurunan kadar fikosianin sebesar 83,06%.

Kata kunci : *A. platensis*, gum arab, maltodekstrin, fotooksidasi, mikrokapsul fikosianin, *whey protein isolate*

ABSTRACT

Effect of Storage on Phycocyanin Extract and Microcapsules from *Arthrospira platensis* with Gum Arabic, Maltodextrin, and Whey Protein Isolate as Encapsulants under Photooxidative Conditions

This study aimed to investigate the effect of storage on phycocyanin extract and microcapsules *Arthrospira platensis* with gum arabic, maltodextrin, and whey protein isolate as encapsulants under photooxidative conditions. The concentrations of the encapsulants used were 8,3% gum Arabic; 11,7% maltodextrin; and 5,2% whey protein isolate. The research stages included phycocyanin extraction from *A. platensis*, microcapsule production using the spray drying method, and photooxidation storage for six days. A Completely Randomized Design (CRD) was employed with sample type (extract and microcapsule) and storage condition (light and dark) as factors. Observed parameters included phycocyanin concentration, encapsulation efficiency, phycocyanin retention, antioxidant activity, moisture content, color, and particle size. The results showed that the interaction between sample type and storage condition significantly affected phycocyanin stability during photooxidation. Microencapsulation was proven to better preserve phycocyanin stability compared to non-encapsulated phycocyanin extract, with decreases in phycocyanin concentration of 20,64% and 74,80%, respectively. The highest stability was observed in microcapsules stored in dark bottles, with reductions in phycocyanin concentration, encapsulation efficiency, and retention of 16,28%; 7,42%; and 38,05%. Conversely, the lowest stability was observed in phycocyanin extract stored in light-exposed bottles, showing a phycocyanin concentration decrease of 83,06%.

Keyword : *A. platensis*, gum arabic, maltodextrin, photooxidation, phycocyanin microcapsules, whey protein isolate