

## **MIKROEMULSI WATER IN OIL FIKOSIANIN *Arthrospira platensis* DENGAN VIRGIN COCONUT OIL SEBAGAI FASE MINYAK**

### **INTISARI**

Penelitian ini bertujuan untuk menentukan formula mikroemulsi *water in oil* yang stabil sebagai pembawa fikosianin dengan VCO sebagai fase minyak dan mengetahui stabilitas serta kualitasnya selama penyimpanan. Fikosianin didapatkan melalui ekstraksi *freezing-thawing* dari *Arthrospira platensis*. Penentuan formula stabil dilakukan dengan formulasi mikroemulsi W/O menggunakan konsep HLB (*hydrophilic-lipophilic balance*) dan pengujian stabilitas penyimpanan 24 jam, sentrifugasi, serta pemanasan oven pada 60°C. Fikosianin ditambahkan dalam formula mikroemulsi stabil pada konsentrasi 25, 50, 75, 100, dan 150 ppm. Penyimpanan mikroemulsi fikosianin dilakukan selama 28 hari pada ruang gelap. Stabilitas dan kualitas mikroemulsi fikosianin dapat diketahui melalui pengujian stabilitas 24 jam serta pengujian kadar fikosianin, antioksidan, turbiditas, dan peroksida pada hari ke-0, ke-7, ke-14, ke-21, dan hari ke-28 selama penyimpanan. Mikroemulsi W/O stabil pada HLB 7 dengan kombinasi surfaktan 53% Span 80, 36% Span 20, dan 11% Tween 80 pada proporsi air : surfaktan = 20%:80% serta penambahan 77,5% dan 80% VCO. Konsentrasi fikosianin yang dapat ditambahkan adalah 25, 50, dan 75 ppm pada formula 80% VCO serta 50, 100, dan 150 ppm pada formula 77,5% VCO. Stabilitas dan antioksidan terbaik pada konsentrasi fikosianin 75 ppm dengan 80% VCO. Penambahan fikosianin secara keseluruhan tidak memberikan pengaruh signifikan pada uji peroksida. Aktivitas antioksidan, kadar fikosianin, dan turbiditas mikroemulsi stabil selama penyimpanan dengan laju pembentukan peroksida yang rendah.

Kata kunci : antioksidan, *Arthrospira platensis*, fikosianin, VCO, stabilitas

**WATER IN OIL MICROEMULSION OF PHYCOCYANIN FROM *Arthrospira platensis* WITH VIRGIN COCONUT OIL AS THE CARRIER OIL**

***ABSTRACT***

This research aimed to determine the stable water in oil microemulsion formulas as phycocyanin carriers with VCO as the oil phase and to study the stability as well as the quality during storage. Phycocyanin was obtained through freezing-thawing extraction out of *Arthrospira platensis*. The stable formula determination was done by W/O microemulsion formulation using the HLB (hydrophilic-lipophilic balance) concept and 24-hour stability test, centrifugation test, as well as oven heating test at 60°C. Phycocyanin was added to the stable microemulsion formulas at the concentrations of 25, 50, 75, 100, and 150 ppm. Phycocyanin microemulsion storage was done for 28 days in the dark room. The stability and quality of the phycocyanin microemulsion was analyzed through the 24-hour stability test and phycocyanin level test, antioxidant test, turbidity test, as well as peroxide test on the first day, the 7th day, 14th day, 21st day, and the 28th day during storage. Stable W/O microemulsion formulas were obtained at HLB 7 with the combination of 53% Span 80, 36% Span 20, and 11% Tween 80 surfactant at the water : surfactant proportion = 20%:80% and the addition of 77,5% and 80% VCO. Phycocyanin could be added in the 80% VCO formula at the concentrations of 25, 50, and 75 ppm, meanwhile 77,5% VCO formula was added by 50, 100, and 150 ppm phycocyanin. 75 ppm concentration of phycocyanin in 80% VCO formula showed the best antioxidant activity and stability. The addition of phycocyanin overall did not have a significant effect on the peroxide test. The antioxidant activity, phycocyanin level, and turbidity of microemulsion were stable during storage with a low rate of peroxide formation.

**Keywords :** antioxidant, *Arthrospira platensis*, phycocyanin, VCO, stability