

ABSTRACT

Mei Diana Sonatha (00000007222)

OPTIMIZATION OF ANTIOXIDANT ACTIVITY AND SENSORY ACCEPTABILITY OF JAVA TEA-BASED FUNCTIONAL DRINK ENRICHED WITH RED FRUIT OIL EMULSION

Thesis, Faculty of Science and Technology (2017)

(xv + 66 pages: 12 tables, 24 figures, and 20 appendices)

Antioxidant activity of Java tea-based functional drink rapidly decreased along with storage time. Some studies showed that red fruit (*Pandanus Conoideus* Lam.) oil has high antioxidant activity that is mainly contributed from its carotenoids compound. Therefore, in this research, red fruit oil was aimed to optimize antioxidant activity and sensory acceptance of the drink. However, red fruit oil has low solubility in water and the alternative was by making it as an O/W emulsion. The emulsion was prepared by different carboxymethylcellulose (CMC) concentration (1.00% and 1.50%) and different red fruit oil concentration (10%, 15%, and 20%). Viscosity, particle size, stability, total carotenoid, and total phenolic content were analyzed for all emulsions produced. The results showed that emulsion with the mixture of 1.5% CMC and 20% red fruit oil was considered as the best formula which had total carotenoid of 72.9255 ± 1.3348 ppm, total phenolic content of 2.0420 ± 0.0261 mg GAE/g, stability of $91 \pm 1\%$, viscosity of 3709 ± 57 cP, and particle size of 42.81 ± 0.48 μm . Optimization was done by Response Surface Methodology (RSM). It was found that concentration of red fruit oil emulsion had significant effect towards total carotenoid, total phenolic content, aroma, color, taste, and overall acceptance of Java tea-based functional drink. The optimum concentration was 5.858% which increased total carotenoid and total phenolic content of control drink from 0.3691 ± 0.1347 to 5.2791 ± 0.0465 ppm and 0.2716 ± 0.0120 to 0.4008 ± 0.0056 mg GAE/g, respectively, but lower the aroma, taste, and overall acceptability of the drink.

Keywords : carotenoid, functional drink, Java tea, phenolic, red fruit oil, response surface methodology, sensory

References : 58 (1994 – 2017)