

## ABSTRACT

### ANTIOXIDANT ACTIVITY OF *p*-METHOXYCINNAMIC ACID IN O/W NANOEMULSION SYSTEM WITH VIRGIN COCONUT OIL (VCO) AS OIL PHASE

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The aim of this research was to determine influence of nanoemulsion system with Virgin Coconut Oil (VCO) as oil phase to antioxidant activity of *p*-methoxycinnamic acid (pMCA) and influence of comparison of oil phase (VCO) and aqueous phase to antioxidant activity of pMCA. Formulas were adopted from Winarso's research, they were formula 1 (oil phase : aqueous phase = 1:20), and formula 2 (oil phase : aqueous phase = 1:27,5). Vitamin E was chosen as control positif of antioxidant assay. Nanoemulsion pMCA 0,2%b/b, nanoemulsion vitamin E 5%b/b, nanoemulsion combination 5% vitamin E and 0,2% pMCA were made, so was blank nanoemulsion as control of system. Scavenging capacity was evaluated using free radical 2,2-diphenyl-1-picrylhydrazyl (DPPH) method. Samples were reacted to DPPH 0,0025% in the dark or dim light during 30 minutes then measured by Spectrofotometer uv-vis at wavelength 516 nm. Scavenging capacity of each nanoemulsi, pMCA solution and vitamin E solution were compared. The scavenging capacity is: pMCA solution 2,75±0,17%, Vitamin E solution 12,13±0,53%, F1-NE blank 21,42±1,19, F1-NE pMCA 22,26±1,70%, F1-NE Vit.E 25,56±0,32%, F1-NE vit.E pMCA 26,79±0,63%, F2-NE blank 16,91±1,25, F2-NE pMCA 17,44±1,33%, F2-NE Vit.E 21,80±1,50%, F2-NE vit.E pMCA 22,46±0,94%. It was showed that there was no influence of nanoemulsion system to antioxidant activity of pMCA ( $>0,05$ ) and formula (1:20) had scavenging capacity higher than formula 2 (1:27,5) ( $<0,05$ ).

Keyword: antioxidant, *p*-methoxycinnamic acid, virgin coconut oil, DPPH, nanoemulsion, scavenging capacity