



INHIBITION OF LIPID PEROXIDATION AND RADICAL SCAVENGING ACTIVITY OF SYNTHESIZED CURCUMIN AND BISDEMETHOXYCURCUMIN IN FOOD SYSTEMS

Vinh Tien Nguyen¹, Hao Minh Hoang¹✉

¹Faculty of Chemical and Food Technology, Ho Chi Minh City University of Technology and Education, 01 Vo Van Ngan Street, Thu Duc District, Ho Chi Minh City, Vietnam.

✉ haohm@hcmute.edu.vn

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ABSTRACT

In this study, curcumin and bisdemethoxycurcumin (BDMC) were synthesized using a patented procedure and tested *in vitro* for inhibition of lipid peroxidation and for radical scavenging activities. At the same 0.14 mM concentration, the order of the inhibitory effect on lipid peroxidation was 2,6-di-tert-butyl-4-methylphenol (BHT) > curcumin > BDMC (97% > 89.7% > 73.4%, respectively). Curcumin also showed activities in scavenging hydrogen peroxide and DPPH radicals stronger than BDMC due to the presence of two methoxy groups in the curcumin molecule. However, BDMC showed higher ABTS⁺ cationic radical scavenging activity. Curcumin was then chosen to be used and tested for antioxidant effects in two food systems. At the same molar concentration, curcumin is about 25% less effective than BHT in inhibiting crude fish oil peroxidation. Starch films containing curcumin showed DPPH scavenging activities lower than those of free curcumin due to the protecting effect of gelatinized starch and the slow release of curcumin from the film.
