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The Effect of *Chrysanthemum coronarium* L. Fractions on the Antioxidant Activity of the Liposomal Phospholipid Membrane

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This research was designed to investigate the effect of *Chrysanthemum coronarium* L. (CC) fractions on the antioxidant activity of the liposomal phospholipid membranes. The sample CC was extracted and fractionated to five different types, methanol (CCMM), hexane (CCMH), ethylacetate (CCMEA), butanol (CCMB), and aqueous (CCMA) fractions. The antioxidant activity of CC fractions in oxidized dilinoleoylphosphatidylcholine (DLPC) liposomes was examined by spectrophotometry measuring conjugated dienes. The antioxidant activity of CC fractions in oxidized DLPC liposomes was compared with two well-known antioxidants, α -tocopherol and BHT. The oxidation index of five CC fractions exhibited weaker antioxidant activity than of BHT in oxidized DLPC liposomes, however, showing similar antioxidant activity compared with α -tocopherol, which has known as a potent antioxidant, in the systems. The CCMM and CCMA of the CC fractions in oxidized DLPC liposomes showed rather effective than α -tocopherol after 2h. These results strongly indicate that bioactive substances in CC fractions have a kind of function as potent antioxidants against biomembrane oxidation.

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The Effect of *Daucus Carota* L. Seed on the Thermotropic Behavior of Dipalmitoylphosphatidylcholine

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In this study, We performed to investigate the thermotropic behavior of *Daucus Carota* L. seed (DCS) fractions in phosphatidylcholine (PC) liposomes using high-sensitivity differential scanning calorimetry (nano-DSC). We used dipalmitoylphosphatidyl choline (DPPC) bilayers which make most stable liposomes among the other phosphatidylcholine. We prepared five differential types samples, denoted here as DCSMH, DCSMM, DCSMEM, DCSMB and DCSMA. Compared to the other fractions of *Daucus Carota* L. Seed, the DCSMH and DCSMEA fractions markedly affected the thermotropic properties of DPPC liposomes, broadened and shifted the thermograms of transition to lower temperatures. The incorporation of DCSMH and DCSMEA in DPPC liposomes were preferentially located in the hydrophobic core of DPPC bilayers, Where it reduced the lipid packing orderness (cooperative unit) in the gel state compared to it in the liquid-crystalline state. These results suggest that the activities of the *Daucus Carota* L. Seed extracts to enhance the fluidity of the liposomal membrane have implication in their biological activities.