

Antioxidant synergism between ethanolic *Centella asiatica* extracts and α -tocopherol in model systems.

Abstract

The synergistic antioxidant effects of ethanolic extracts of *Centella asiatica* (CE), and α -tocopherol have been studied. The types of interactions exhibited by CE and α -tocopherol combined at different ratios were measured using three assays: 2,2'-azino-bis(3-ethylbenzothiazoline-6-sulphonic acid) diammonium salt (ABTS) radical-scavenging capacity, the β -carotene bleaching system and liposome peroxidation assays. Fixed-fraction isobolographic analysis was used to detect any inducement of the antioxidant activity compared with the individual activities of CE and α -tocopherol. Of all synergistic combinations of CE and α -tocopherol, only fraction 2/3 showed the synergistic combination that fits well in three different assays and can be explained by the regeneration of α -tocopherol by CE despite the interaction effect of β -carotene present in the analytical assay. This phenomenon involved complex interactions between CE and α -tocopherol to exhibit different degrees of interactions that eventually increased antioxidant activity.

Keyword: Synergism; Ultrasound; α -Tocopherol; Isobolographic analysis.