

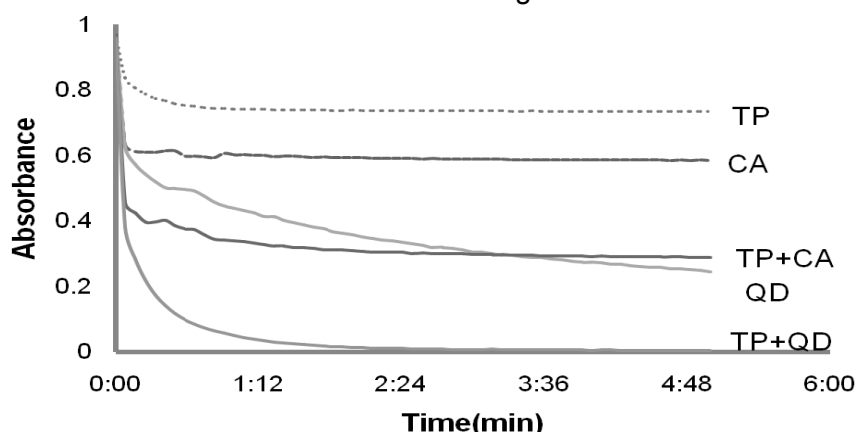
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α -Tocopherol and Ascorbic acid enhance the 1,1-Diphenyl-2-picrylhydrazyl (DPPH) radical scavenging activity of some phenolic antioxidants

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Antioxidants play a vital role in the protection of biological molecules from oxidative damage. Due to the wide range of oxidation-reduction potentials of biological molecules that are prone to oxidative damage, a single antioxidant may not effectively provide protection against oxidative damage. In the present study, DPPH radical scavenging activity of some commonly found phenolic antioxidants in plant-based foods was monitored. In addition, the effect of α -tocopherol (TP) and ascorbic acid (AA) on the rate of DPPH radical scavenging of selected phenolic antioxidants was investigated for mixtures containing TP or AA and phenolic antioxidants with 1:1 molar ratio. The rate of the scavenging of DPPH radical by TP, AA, quercetin dehydrate (QD), caffeic acid (CA), ferulic acid (FA), vanillic acid (VA), (TP + QD), (TP + CA), (TP + VA), (TP + FA), (AA + QD), (AA + CA), (AA + VA) and (AA + FA) were monitored colorimetrically at 517 nm. A significant enhancement of the DPPH radical scavenging activity by TP or AA was not observed for FA or VA. The percentage values of the decrease in the intensity of absorbance after 2 mins for the systems, TP, AA, QD, CA, (TP + QD), (TP + CA), (AA + QD) and (AA + CA), are 23 ± 0.3 , 26 ± 0.5 , 63 ± 0.3 , 39 ± 0.3 , 100 ± 0.3 , 67 ± 0.3 , 91 ± 0.3 and 72 ± 0.3 respectively. The systems that showed positive rate enhancements with TP are shown Figure 1.



The intensity of the absorbance of the DPPH radical decreases with the scavenging of the radical and the rate of this decrease can be used as a measure of antioxidant activity. The results indicate that a significant enhancement of the rates of DPPH radical scavenging activity can be achieved by mixing CA, and QD with TP or AA. This synergistic effect of TP and AA on the rate of DPPH radical scavenging activity may be important in further studies of nutritional research.