

Red Wine Phenolic Complexes and Their *In Vitro* Antioxidant Activity

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Phenolic complexes are a major group of polyphenols in aged red wine. The objective of this work was to evaluate the *in vitro* antioxidant activity of the phenolic complexes. Thus, red wine polyphenols were fractionated into various fractions including monomers, oligomers, polymers, anthocyanins, and complexes. The *in vitro* antioxidant activities of these fractions and other phenolic standards (catechin, epicatechin, quercetin, and malvidin 3-glucoside) as well as ascorbic acid were verified by DPPH[•] test. On the other hand, the variation of antioxidant activities during the reaction between epicatechin and malvidin 3-glucoside mediated by acetaldehyde in a model wine solution was also monitored. The results showed that both the phenolic complex fraction and newly formed condensation products between epicatechin and malvidin 3-glucoside maintain antioxidant activities as strong as those of their compositional phenolics. This work provides, for the first time, direct evidence about the *in vitro* antioxidant activities of red wine phenolic complexes.

KEYWORDS: Red wine; phenolic complexes; fractionation; *in vitro* antioxidant activities; DPPH test

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