

O17: Iron chelating activity of dithiolethiones compounds

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Abstract:

Transition metal ions have a great importance in the generation of oxygen free radicals in living organisms. Iron exists in two distinct oxidation states; ferrous ion (Fe^{2+}) and ferric ion (Fe^{3+}). The ferric ion (Fe^{3+}) is the relatively biologically inactive form of iron. However, it can be reduced to the active Fe^{2+} , depending on the conditions, particularly pH [1], and oxidized back through Fenton type reactions, with production of hydroxyl radicals; or Haber-Weiss reactions with superoxide anions [2]. The production of these radicals can lead to lipid peroxidation, protein modification and DNA damage.

In this study, the chelating of ferrous ions by different dithiolethiones [PDTT (CH_3SO_4^-)], [PDTT], [TDTT(I)], [TDTT(CH_3SO_4^-)], [PDTT(I)] and Ascorbic Acid was estimated by the phenanthroline assay. Phenanthroline can quantitatively form complexes with Fe^{2+} .

The results show that The metal scavenging effect of those samples decreased in the order of [PDTT(CH_3SO_4^-)] > [PDTT] > Ascorbic Acid > [TDTT(I)] > [TDTT(CH_3SO_4^-)] > [PDTT(I)]

References:

- 1-Strlic M, Radovic T, Kolar J, Pihlar B (2002). Anti- and prooxidative properties of gallic acid in Fenton-type systems. *J. Agric. Food Chem.* 50: 6313–6317.
- 2-Kehrer JP (2000). The Haber–Weiss reaction and mechanisms of toxicity. *Toxicol.* 149: 43–50.