

Antioxidant capacity of diethyldithiocarbamate in a metal independent lipid peroxidative process

Zanocco, A. L.

Pavez, R.

Videla, L. A.

Lissi, E. A.

2,2'-Azobis-[2-amidinopropane] initiated lipid peroxidation of egg yolk phosphatidyl choline liposomes was measured by oxygen uptake and the emitted visible luminescence. Lipid peroxidation involved a chain process (kinetic chain length = 49 ± 11) and its rate was independent of added Fe ions. Diethyldithiocarbamate (DDC) behaved as an efficient inhibitor in the μM range, being able to trap 1.05 ± 0.25 free radicals per added molecule. The efficiency of DDC was also independent of Fe addition to the system. These results indicate that DDC is able to trap the chain carrying free radicals, showing that this compound, besides being a powerful metal chelator, is also an efficient free radical scavenger. It is proposed that the relevant step in this process involves an electron transfer from DDC to the peroxy radical $\text{LOO}\cdot + \text{DDC} \rightarrow \text{LOO}^- + \text{DDC}\cdot$ followed by protonation of LOO^- and dimerization of the $\text{DDC}\cdot$ radical. © 1989.