On the characteristics of the visible chemiluminescence following free radical lipid peroxidation

Lissi, E. A.

Cáceres, T.

Llesuy, S.

Solari, L.

Boveris, A.

Videla, L. A.

The characteristics of the visible luminescence that follows the lipid peroxidative process were investigated either in the autoxidation of rat brain homogenates or in the azo-bis-arnidinopropane initiated lipid peroxidation of erythrocyte plasma membranes and liver microsomes. In these systems the luminescence decay observed after total inhibition of the lipid peroxidation is not an iron-catalyzed process, and follows a complex kinetics comprising fast and slow components. The slow component of the decay lasts for several hours at 27°C and amounts to nearly half of the total intensity measured prior to the inhibition of the oxidative process by propyl gallate. The addition of thiols (diethyldithiocarbamate, penicillamine or dithiothreitol) to a lipid peroxidizing system inhibits the chain oxidation and catalyzes the dark decomposition of one (or several) of the luminescence precursors, following first order kinetics. The effect of temperature on the slow luminescence decay corresponds