

Modifications in cytochrome c challenged with *tert*-butyl hydroperoxide and SIN-1 in the presence of phosphatidylcholine (PC) and phosphatidilglycerol (PG) vesicles

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Cytochrome c is a small periferic hemeprotein located in the mitochondrial intermembrane space where it acts as an electron carrier and, when released to the cytosol, triggers the apoptosis process. Recent research disclosed a peroxidase activity of cytochrome c that could be correlated with electrostatic interactions with cardiolipin and consequent tertiary structure alterations. We study here cytochrome c structural changes promoted by interactions with PC (1.0 mM)/PG (0.1 mM) vesicles by circular dichroism (CD) and alterations of the iron spin state by low temperature EPR. CD spectral studies revealed that despite alterations in the far (208 nm) and near (282 nm) UV, the vesicles unaffected the α -helix (37%), β -sheet (26%), random protein contents (37%), whereas the Soret bands (405 and 416 nm) underwent significant collapse. Low temperature EPR studies in the presence of SIN-1, a peroxynitrite generator in aerated medium, and of *tert*-butyl hydroperoxide, both in the presence and absence of vesicles and of oxygen, showed reduction of the heme iron to iron-II by superoxide species and possibly re-oxidation of iron-II by peroxide-generated free radicals. In conclusion, it seems that the vesicle lipids protect cytochrome c against oxidative damage and bleaching caused by peroxides. SUPPORT: FAPESP; CNPq; IFS, Milênio Redoxoma.