Title
DPH FLUORESCENCE LIFETIME DISTRIBUTIONS IN OXIDIZED CARDIOLIPIN VESICLES

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Abstract
DPH fluorescence lifetime experiments were carried out on 100 nm unilamellar vesicles consisting of 1-palmitoyl, 2-lineoyl, phosphatidylcholine (PLPC) containing 2-10% of cardiolipin or cardiolipin-hydroperoxides. Cardiolipin was selected because it is found exclusively in the mitochondrial membranes and has been shown to be easily oxidized by a variety of free radical processes. A biexponential decay was observed for all vesicles. Upon increasing the temperature from 10 to 35°C a temp. dependent decrease in the DPH lifetime values was observed. Addition of cardiolipin-hydroperoxides to the vesicles produced an increase in both the long and short lifetime. Distribution analysis also showed an increase in lifetime center, an increase in fractional intensity as well as an increase in the distribution width of the short lifetime component. Low levels of lipid peroxidation may cause structural "defects" or disordering in the membrane, which in turn may influence the bilayer location of DPH and may decrease its mobility perpendicular to the membrane plane, thus decreasing the averaging motion and increasing the values for the lifetime centers and the fluorescence distribution width. This work was supported by NIH grant RR03155.