

Effects of methyl parathion on model membrane fluidity: polarization of diphenylhexatriene and intramolecular excimerization of a pyrene derivative

Janusz Błasiak

The interaction of the organophosphorus insecticide methyl parathion (*O,O*-dimethyl *O*-4-nitrophenyl phosphorothioate) with dimirystoylphosphatidylcholine (DMPC) liposomes has been investigated by steady-state fluorescence polarization of 1,6-diphenyl-1,3,5-hexatriene (DPH), a probe located at the bilayer center, and by intramolecular excimerization of 1,3-di(1-pyrenyl)propane (Py(3)Py), a probe distributed in the outer regions of the bilayer. Polarization of DPH was increased by the insecticide in the fluid phase, but not altered in the gel phase. Methyl parathion caused a shift in the middle temperature of the phase transition toward lower temperature and broadened the range of transition. Intramolecular excimerization of (Py(3)Py) was also affected by methyl parathion-I/I, excimer to monomer intensity ratio decreased in the fluid phase, whereas it remained unchanged in the gel phase. When liposomes were enriched with 20 mol% cholesterol, there were no changes in their thermotropic behavior as evaluated by DPH and changes monitored by DPH were much smaller than those detected in liposomes made of pure DMPC.