Influence of inhalation anesthetics on the chain-melting phase transition of DPPC liposomes. Near-infrared spectroscopy studies supported by PCA analysis.

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Streszczenie

Near-infrared (NIR) spectroscopy was applied for the first time to study the chain-melting phase transition of a lipid bilayer wall of dipalmitoylphosphatidylcholine (DPPC) liposomes in the presence of different inhalation anesthetics (enflurene, halothane, isoflurane, and sevoflurane). A good agreement with the literature data referred to anesthetic/DPPC membranes studied by many other techniques showed that NIR could be applied to the studies of lipid membranes as an alternative to commonly used mean-infrared (MIR) method. Relations between the temperature of the lipid phase transition of doped DPPC liposomes and the anesthetic concentration were estimated. The potency of disturbance of the lipid phase transition was compared between studied anesthetics

Słowa kluczowe

Near-infrared spectroscopy (NIR), principal component analysis (PCA), Attenuated total reflectance Fourier-transfer infrared spectroscopy (FTIR-ATR), DPPC liposomes, phase transition

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