

Effect of extracorporeal circulation on structure of main components of animal plasma – ATR-IR and 2D-COS studies. Part II: Presence of antithrombotic drugs

Autorzy

Sylvia Olsztyńska-Janus

Mirosław Antoni Czarnecki

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Streszczenie

An application of extracorporeal circulation (ECC) requires using antithrombotic drugs to maintain blood fluidity and prevent thrombotic complications. The molecular mechanism of this process is not fully elucidated; therefore, we undertook an examination of the effect of antithrombotic drugs (aspirin and clopidogrel) on changes in the structure of the main plasma components during ECC. The spectral variations were monitored using ATR-IR (Attenuated Total Reflection Infrared) spectroscopy and analyzed by moving-window approach and twodimensional correlation spectroscopy (2D-COS). For samples subjected to anticoagulant therapy, we observed a much higher extent of spectral changes, as compared with the control samples. The most significant changes were observed for the bands from water and amide moieties. The obtained results demonstrate high sensitivity and reliability of ATR-IR spectroscopy coupled with advanced numerical analysis for monitoring variations in the structure and composition of blood plasma during ECC

Słowa kluczowe

Extracorporeal circulation, Clopidogrel, Aspirin, Plasma, Proteins, Water, ATR-IR spectroscopy, Hydrogen bonding, Intermolecular interactions, Two-dimensional correlation spectroscopy

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