

Raman Study of the Human Erythrocyte Membrane Lipids

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The use of Raman spectroscopy as a probe of membrane structure and function is well established. Some works, concerning liposomes as a model for biological membranes, successfully determine their structures and alterations under external factors [1-3]. In biological membranes the bilayer structure is much more complicated because it contains not only phospholipids but also proteins, glycoproteins, carotenoids and other molecules. Additionally there exist many varieties of biological membranes [4, 5]. Biological membranes separate a cell from the outside and also separate cell components from the surrounding medium. They are not static but functionally active structures and actively participate in various biological functions.

In our current work we consider mainly the human erythrocyte membrane. The present study includes observations of the erythrocyte membrane structure involved in specific interactions with chosen antimalarials. The presence of a drug modulates the membrane structure. The frequency, intensity and linewidth changes of specific Raman bands are sensitive to the membrane structural alternations, lipid packing constraints and mobilities of their polar headgroups and hydrocarbon chain moieties, which define the bilayer matrix.

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