

Abstract

Sunlight is one of the most important sources of energy on the Earth. Photosynthesis is responsible for the absorption and conversion of light into chemical energy. The ability to do so along with the green plants the purple bacteria have. It is the large pigment-protein complexes incorporated into the cell's membrane absorb light. In this work the light-harvesting complex (LH complex), which a cell is capable to produce and incorporate into membrane in low light conditions is studied . In addition to proteins LHC-2 contains molecules of carotenoids and bacteriochlorophyll (BChl).

The main task of the work is to compare the structures of the complexis LH-2 extracted from the comon purple bacteria and the bacteria with the suppressed synthesis of carotenoids. The comparison is performed by means of laser Raman spectroscopy which allows to identify structural differences of both protein molecules and pigment's molecules.

The assembling of carotenoid-free LH-2 and the functioning sufficient for their life are important as the object of the research despite the fact that in earlier works it was believed that carotenoids play a key role in those processes. By now, the fall in the molecule's quantum yield under the constant absorption and fluorescence spectra has been found out. However neither explanation of that fact, nor any data on the structural features of the object of research does not exist. This work has been carried out to identify those specific features and outline the way for further structural studies.