

D₁-D₂-Cyt b₅₅₉复合物与33 kD 蛋白重组时光谱性质研究

谭晓宏、杜林方、张年辉
四川大学生命科学学院

将分离纯化的菠菜光系统II D₁-D₂-Cyt b₅₅₉反应中心复合物和33 kD外周蛋白按摩尔比1:1或2:1的比例进行体外重组, 监测重组过程中的室温可见光区吸收光谱和荧光发射光谱的变化。结果表明: 重组过程中, 样品的室温可见光区吸收光谱几乎无变化, 但室温荧光发射光谱却有明显的变化, 蛋白质内源荧光和叶绿素荧光的强度都有先增加后降低的现象, 暗示33 kD蛋白与D₁-D₂-Cyt b₅₅₉复合物在形成稳定的重组复合物之前, 存在一个复杂的蛋白构象变化过程, 重组时33 kD蛋白与反应中心复合物的结合, 可能影响了反应中心D₁或D₂色素蛋白所结合的叶绿素a等色素分子的微环境。

CHARACTERIZATION OF THE SPECTRA CHANGE DURING RECONSTITUTION OF THE D₁-D₂-Cyt b₅₅₉ COMPLEX WITH THE 33 kD PROTEIN

The 33 kD protein and the PSII reaction center D₁-D₂-Cyt b₅₅₉ complex were isolated from photosystem II particles of spinach (*Spinacia oleracea* L) respectively, then they were reconstituted according two kinds of proportion (33 kD protein:reaction center = 1:1 / 2:1). The absorption spectra and the fluorescence spectra of the reconstitution mixture were investigated during the reconstitution progress at room temperature. The results showed that no changes of the absorption spectra of the reaction mixture were observed, however, the fluorescence emission spectra altered markedly. The fluorescence emission maximum either excited at 278 or 295 and 436 nm increased firstly, then decreased. The results suggested that the reconstitution reaction is a complicated process and the binding of 33 kD protein to PSII reaction center D₁-D₂-Cyt b₅₅₉ complex may affect the microenvironment of chlorophyll a molecular in the D₁ or D₂ protein.

关键词

光系统II (PS II); D1-D2-Cyt b559反应中心复合物(D1-D2-Cyt b559 reaction center complex); 33 kD蛋白(33 kD protein); 重组(Reconstitution); 光谱性质(Spectra characters)