

The study of state transitions in *phyA* and *phyB* mutants of *Arabidopsis thaliana*

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Photosynthetic apparatus of higher plants developed adaptation mechanisms to respond light changes. State transitions is one of these mechanisms. It presents redistribution of a moving part of external antenna of light-harvesting complex of photosystem II (LHCII). As a result the LHCII-LHCI-PSI supercomplex is formed. The supercomplex consists of LHCII mobile proteins associated with photosystem I.

It is known that state transitions are regulated by redox state of plastoquinone pool of thylakoid membranes. We assume that cytoplasmic photoreceptors may also be involved in regulation of state transitions. We exposed *phyA* and *phyB* mutant *Arabidopsis thaliana* plants to blue and red light during 2 hours. In this lines formation of the LHCII-LHCI-PSI supercomplex was detected under both blue and red light, while in the wild-type plants formation of the supercomplex occurred only at blue light. Therefore, there is disruption of state transitions in *phyA* and *phyB* mutants exposed to red light. Our data demonstrate for a first time a role of phytochromes A and B in regulation of state transitions.

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