Food Technol. Biotechnol. *47* (2009) 275-280.

ISSN-1330-9862
FTB-2191

original scientific paper

Photochemistry of PSII in CYP38 *Arabidopsis thaliana* Deletion Mutant

*Hrvoje Lepeduš[1], Ana Tomašić[2], Snježana Jurić[2], Zorana Katanić[3], Vera Cesar[3] and Hrvoje Fulgosi[2]**

[1]Agricultural Institute Osijek, Južno predgrađe 17, HR-31000 Osijek, Croatia
[2]Ruđer Bošković Institute, Bijenička 54, HR-10000 Zagreb, Croatia
[3]Department of Biology, University of J.J. Strossmayer in Osijek, Trg Lj. Gaja 6, HR-31000 Osijek, Croatia

Received: October 30, 2008
Accepted: March 31, 2009

Summary

Chloroplast protein CYP38 is a cyclophilin-like peptidyl-prolyl cis-trans isomerase involved in photosystem II (PSII) assembly. It also serves as a regulator of thylakoid protein phosphatase. In this work the efficiency of PSII in CYP38 deficient *Arabidopsis thaliana* M13 plants has been analyzed by measuring *in vivo* chlorophyll *a* (Chl *a*) fluorescence transient (OJIP test). Significant differences in overall photosynthetic performance (PI_{ABS}), absorption (ABS/RC), trapping (TR_0/RC), electron transport (ET_0/RC), and dissipation (DI_0/RC) were observed between *A. thaliana* M13 and the wild type (WT) plants. Increased Chl a and Chl b levels, as well as decreased Chl *a*/Chl *b* ratio were measured in M13 plants, indicating the adjustment of PSII antenna for increasing light absorption capability. Based on the obtained results, it can be concluded that the deficiency in CYP38 protein leads to impaired function of PSII due to the conversion of a certain fraction of active reaction centres to dissipative ones. This leads to a decrease in overall photosynthetic performance (PI_{ABS}) in M13 plants. Such effect was due to lowering of TRo/DIo parameter, which was influenced mostly by significant increases in energy dissipation (DI_0/RC) and in trapping of electrons (TR_0/RC) per active reaction centre.

Key words: porifera, chlorophyll fluorescence, photosystem II, photosynthesis regulation, OJIP test, TLP40

*Corresponding author: E-mail: fulgosi@irb.hr

PDF Full Text

Last Updated: 09/15/2009 01:37:30