Abstract

PsbO protein is one of the essential extrinsic subunits of photosystem II, a protein complex that is embedded in thylakoid membranes of chloroplasts. PsbO is important in stabilizing manganese cluster, a structure that break down water molecules and evolves oxygen. *Arabidopsis thaliana* encodes for two isoforms which functions have not yet been clearly explained. Up-to-date information of PsbO1 and PsbO2 come from experiments using T-DNA insertion mutants *psbo1* and *psbo2*. Finding viable double mutants *psbo1 psbo2* had brought up questions about actual expression levels of mutated genes in *psbo1* and *psbo2* mutants. This is what led us to creating *psbo1cr* and *psbo2cr* knock-out mutant lines using the CRISPR-Cas9 mutagenesis and then comparing them to the frequently used T-DNA insertion mutants *psbo1* and *psbo2*. We performed a comparison of basic phenotype characteristics, chlorophyll *a* fluorescence parameters and immunodetection of PsbO1 and PsbO2 proteins. Even though we might have observed slight expression of mutated genes in *psbo1* and *psbo2* lines, our results show that measured parameters of *psbo1cr* and *psbo2cr* are identical to those of *psbo1* and *psbo2*.

Key words: PsbO, photosystem II, CRISPR-Cas9, mutagenesis, *Arabidopsis thaliana*