



ELSEVIER

Contents lists available at ScienceDirect

Data in Brief

journal homepage: www.elsevier.com/locate/dib

Data Article

Data supporting the absence of FNR dynamic photosynthetic membrane recruitment in *trol* mutants



Lea Vojta, Hrvoje Fulgosi*

Laboratory for Molecular Plant Biology and Biotechnology, Division of Molecular Biology, Institute Ruder Bošković, 10 000 Zagreb, Croatia

ARTICLE INFO

Article history:

Received 2 December 2015

Received in revised form

5 February 2016

Accepted 18 February 2016

Available online 26 February 2016

Keywords:

Photosystem I

FNR

TROL

Dynamic interaction

ABSTRACT

In photosynthesis, the flavoenzyme ferredoxin:NADP⁺ oxidoreductase (FNR) catalyses the final electron transfer from ferredoxin to NADP⁺, which is considered as the main pathway of high-energy electron partitioning in chloroplasts (DOI: <http://www.doi.org/10.1111/j.1365-313X.2009.03999.x> [1], DOI: <http://www.doi.org/10.1038/srep10085> [2]). Different detergents and pH treatments of photosynthetic membranes isolated from the *Arabidopsis* wild-type (WT) and the loss-of-function mutants of the thylakoid rhodanase-like protein TROL (*trol*), pre-acclimated to either dark, growth-light, or high-light conditions, were used to probe the strength of FNR-membrane associations. Detergents β -DM (decyl- β -D-maltopyranoside) or β -DDM (n-dodecyl- β -D-maltopyranoside) were used to test the stability of FNR binding to the thylakoid membranes, and to assess different membrane domains containing FNR. Further, the extraction conditions mimicked pH status of chloroplast stroma during changing light regimes. Plants without TROL are incapable of the dynamic FNR recruitment to the photosynthetic membranes.

© 2016 The Authors. Published by Elsevier Inc. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

* Correspondence to: Division of Molecular Biology, Institute Ruder Bošković, Bijenička cesta 54, HR-10 000 Zagreb, Croatia. Fax: +385 1 4561 177.

E-mail address: fulgosi@irb.hr (H. Fulgosi).

<http://dx.doi.org/10.1016/j.dib.2016.02.044>

2352-3409/© 2016 The Authors. Published by Elsevier Inc. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

Specifications Table

Subject area	Biology, Biochemistry
More specific subject area	Protein interactions
Type of data	Western blots
How data was acquired	SDS-PAGE, Western transfer, ECL
Data format	Raw and analysed
Experimental factors	<i>Arabidopsis thaliana</i> (L.) ecotype Columbia (Col-0, WT) plants and <i>At4g01050</i> knock-out mutant line, <i>trol</i> , were grown either in dark or under 80 $\mu\text{mol photons m}^{-2} \text{s}^{-1}$ (GL) or 250 $\mu\text{mol photons m}^{-2} \text{s}^{-1}$ (HL), respectively. Intact <i>Arabidopsis</i> chloroplasts were isolated from 3–4 week old plants and analysed by using SDS-PAGE for TROL-FNR complex stability.
Experimental features	For TROL-FNR complex dynamics investigation, thylakoids were isolated from intact <i>Arabidopsis</i> chloroplasts, separated by ultracentrifugation into insoluble and soluble fractions, treated by nonionic detergents at different pH, analysed by SDS-PAGE, Western transfer, immunodecorated with α -FNR antibody, and finally detected by semiquantitative ECL.
Data source location	Zagreb, Croatia
Data accessibility	Data is supplied in this article

Value of the data

- Data assess alternative membrane binding and release of chloroplast FNR, or its association with different membrane complexes.
- Recruitment of FNR to thylakoids was tested on WT or *trol* *Arabidopsis* plants pre-acclimated to different light conditions.
- Biological function of FNR-membrane association in the context of photosynthetic electron flow regulation was addressed.

1. Data

The data indicate that the absence of TROL protein influences the dynamic membrane association properties of chloroplast FNR. Thylakoids were isolated from plants acclimated to different light regimes by using buffers of different pH and containing either nonionic detergents decyl- β -D-maltopyranoside (β -DM) (Fig. 1b), or n-dodecyl- β -D-maltopyranoside (β -DDM) (Fig. 1c), or no detergent (Fig. 1a). The inclusion of β -DM or β -DDM was used to probe the stability of FNR binding to thylakoid supramolecular complexes and to assess different membrane domains containing FNR. The dynamism of TROL-FNR interaction was evaluated by quantifying FNR distribution between the membrane and the soluble fractions.

2. Experimental design, materials and methods

2.1. Plant material and growth conditions

Arabidopsis thaliana (L.) ecotype Columbia (Col-0) plants and *At4g01050* knock-out mutant line, *trol* [1], were grown on potting substrate (Stender, Germany) in the growth chamber (Kambič, Slovenia).

Download English Version:

<https://daneshyari.com/en/article/174787>

Download Persian Version:

<https://daneshyari.com/article/174787>

[Daneshyari.com](https://daneshyari.com)