

Reference of bachelor work

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Oxygen evolution during photosynthesis in sunflower and tobacco using carbon dioxide comprising either ^{12}C or ^{13}C as substrate

This bachelor work represents a classical study on field of plant physiology and plant biochemistry. Due to carbon isotope discrimination occurring during carboxylation, we can deduce ca. 3 % reduction of NADPH demand in Calvin cycle, and implicitly overreduction of electron transport chain on acceptor side of Photosystem II, i.e. lower activity of Hill reaction. Unfortunately, the oxygen measurements are not so precise to achieve any exact conclusion. Nevertheless I think that **the submitted work meets the requirements for bachelor work**.

To help as reviewer, I have many notes, and questions to author of work, because the presentation of experimental data, the work with text, is not so good in the thesis.

Firstly, I guess the annotation, abstract, maybe some figures, and conclusions as the most important text files of thesis, so every word must be carefully considered: I don't agree with abbreviation of Helianthus, and Nicotiana in Annotation paragraph. Also the cultivar of W38 (is it a cultivar?) must be noted. In Abstract there is probably a typing error because the sunflower is C3 plant!?

In List of Abbreviations, it is not clear for me, what difference is between "activity", and "amount" of RuBisCO.

In paragraph of Introduction, I have found the incorrect description of absorption. Please, describe me what spectrum of light should be after reflection of white light beam on hypothetic chlorophyll crystal surface. The second "physical" error is in lifetimes of chlorophyll excited states. Also description of carotenoids is very wrong: 40 atoms of carbon? The protective role only?? Not clear why author is writing about photosynthetic pigments (1.1.2) only, but not about Photosystem II, and/or about its oxygen evolution minimally.

To the figures: there is no references (Mayer; Lehninger). The figure 2 has no link to the text of paragraph 1.1.3 (it is a scheme of photorespiration). The references of Lichtenthaler (1981), and Hudson (1991, page 21) is incorrect.

To the tables of results, I want to note, that numbers of means and standard deviation must be rounded off values; i.e. not 14620.36 ± 4673.38 , but 14600 ± 4700 for example.

In the course of thesis defence, I want to discuss these questions:

1. What is wild-type tobacco? Is it (can it be) cultivar or not?
2. What is carbon isotope discrimination occurring during carboxylation in higher plants? And how discrimination can disturb the regulation of electron transport chain in thylakoid membranes? Or even oxygen evolving complex of Photosystem II, and its activity?
3. Please describe (shortly) chlorophyll excited states (S_2 , S_1 , T_1), and its lifetimes.

I propose to evaluate the submitted work by mark of 2.

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