Přírodovědecká fakulta
Faculty of Science

Jihočeská univerzita v Českých Budějovicích
University of South Bohemia in České Budějovice

OPPONENT'S REVIEW ON BACHELOR/~~DIPLOMA~~* THESIS

Name of the student: **Laura NÜBL**

Thesis title: An analysis of fungal exudate and carbon use efficiency
Supervisor: RNDr. Travis B. Meador, Ph.D.

Referee: Ing. Pavla Fojtíková, Ph.D.
Referee`s affiliation: **The University of South Bohemia in České Budějovice, Faculty of Science**

	Point scale[1]	Points
(1) FORMAL REQUIREMENTS		
Extent of the thesis (for bachelor theses min. 18 pages, for masters theses min. 25 pages)**, balanced length of the thesis parts** (recommended length of the theoretical part is max. 1/3 of the total length)**, logical structure of the thesis**	0-3	2
Quality of the theoretical part (review) (number and relevancy of the references, recency of the references)	0-3	1
Accuracy in citing of the references (presence of uncited sources, uniform style of the references, use of correct journal titles and abbreviations)	0-3	2
Graphic layout of the text and of the figures/tables	0-3	2
Quality of the annotation	0-3	1
Language and stylistics, complying with the valid terminology	0-3	2
Accuracy and completeness of figures/tables legends (clarity without reading the rest of the text, explanation of the symbols and labeling, indication of the units)	0-3	2
Formal requirements – points in total		12
(2) PRACTICAL REQUIREMENTS		
Clarity and fulfillment of the aims	0-3	2
Ability to understand the results, their interpretation, and clarity of the results, discussion, and conclusions	0-3	2
Discussion quality – interpretation of the results and their discussion with the literature (absence of discussion with the literature is not acceptable)	0-3	1
Logic in the course of the experimental work	0-3	2
Completeness of the description of the used techniques	0-3	3

* Choose one

[1] Mark as: 0-unsatisfactory, 1-satisfactory, 2-average, 3-excellent.

Experimental difficulty of the thesis, independence in experimental work	0-3	3
Quality of experimental data presentation	0-3	2
The use of up-to-date techniques	0-3	3
Contribution of the thesis to the knowledge in the field and possibility to publish the results (after eventual supplementary experiments)	0-3	1
Practical requirements – points in total		19
POINTS IN TOTAL (MAX/AWARDED)	**48**	**31**

Comments of the reviewer on the student and the thesis:

The bachelor thesis presents findings on exudates and growth of axenic fungal cultures under regulated growth conditions. A short theoretical introduction provides basic information on the topic under study. It is not clear from the theoretical introduction whether the topic studied in the presented bachelor thesis is based on the findings of previously published works. Also, it is not obvious on which published data the methodology of the thesis is based. The thesis contains a really wide range of experimental data. The experimental part of the bachelor thesis is very extensive, a number of processes and techniques were used within the thesis. Unfortunately, the negative impact of such a wideness is seen on quality. A number of workflow steps have not been optimized. The thesis does not include acknowledgements and so it is not possible to distinguish whether all data were collected and evaluated within one laboratory or in a collaboration with other laboratories. The interpretation of the measured data does not lead to very specific conclusions. The content of the thesis does not correspond much to the Abstract of the thesis where it is stated: “This thesis addresses the incorporation and exudation of carbon by individual, axenic fungal cultures, with a focus on developing a protocol for characterization and identification of those compounds“.

There are quite a lot of weaknesses in formal requirements - examples: the list of abbreviations is not alphabetically sorted, some abbreviations (SOC, SIC) are not included at all, some abbreviations are not correct (TDC versus TCD, EI means electron ionization (electron impact ionization is no longer used today)), there is an inconsistency in unit notation, no space between a number and the corresponding unit, a division of a number and the corresponding unit across the line, no references to particular tables and figures within the text, the citation format is not consistent - if there are multiple citations, they are not separated, some citations listed with one name and et. al., while others list all authors, for citation 3 the author is completely missing, etc. Also figures and tables contain quite a lot of mistakes, examples: Figure 3 - no magnitude is given for the x-axis, only the unit; Figure 5: no given unit and incorrect unit.

Suggestions and questions, to which the student has to answer during the defense. Mistakes, which the students should avoid in the future:

Suggestions: I recommend prioritizing the quality of the experimental part over the scope for future work. Pay much more attention to the text of the thesis.

Questions:

1. Can you please specify the units for Absorbance. Is it really cm^{-1} as stated in the text?
2. According to chapter 3.3 Sample Processing: Is the extraction procedure based on a previously published procedure? Have you verified the repeatability of the extraction? Is there any reason to use argon to dry samples instead of nitrogen, which is two to three times cheaper? Similarly, for derivatization, is the procedure based on a previously published one? Has the efficiency of derivatization reactions been studied?
3. According to chapter 4.1.2 Carbon Use Efficiency: There are no data for AD (Aspergillus dimorphicus). Could you please add and compare with other species?
4. According to chapter 4.2 Antioxidant Assay: Why didn't you use multipoint calibration? According to Recommendation for Bioanalytical Method – at least six non-zero calibration levels covering the expected range are required (FDA, Guidance for Bioanalytical Method Validation 2018). What is the lowest limit of quantification of your method? Please provide the equation of the calibration curve.
5. According to chapter 4.5.2 Trimethylsilylated TME: In your work the minimum requirement for identification via the NIST library was 25 % match between spectra. Is it really enough to do the identification?

Conclusion:

In conclusion, I

r e c o m m e n d / ~~d o n o t r e c o m m e n d~~*

the thesis for the defense and I suggest the grade Very good (2) **.**[2]

In České Budějovice date 1st June 2022

Pavla Fojtíková

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signature

[2] You can suggest a grade, which can be modified during the defense based on the presentation. However, if the reviewer is not present at the defense, the grade will not be counted. Grades: excellent (1). Very good (2), Good (3), Unsatisfactory/failed (4).