Přírodovědecká fakulta
Faculty of Science

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

OPPONENT'S REVIEW ON BACHELOR THESIS

Name of the student: Anna Gradl

Thesis title: Comparison of Irbesartan Microbial Transformation Processes in Pure Cultures and Consortia

Supervisor: RNDr. Alica Chroňáková, Ph.D.

Referee: Dr. Martina Slaninová Kyselková
Referee`s affiliation: Laboratory of Environmental Microbiology, Institute of Microbiology of the CAS, Vídeňská 1083, 142 20 Prague 4 - Krč

	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	3
Quality of the theoretical part (review) (number and relevancy of the references, recency of the references)	0-3	3
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	3
Quality of the annotation	0-3	3
Language and stylistics, complying with the valid terminology	0-3	3
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	3
Formal requirements – points in total		20
(2) PRACTICAL REQUIREMENTS		
Clarity and fulfillment of the aims	0-3	3
Ability to understand the results, their interpretation, and clarity of the results, discussion, and conclusions	0-3	3
Discussion quality – interpretation of the results and their discussion with the literature (absence of discussion with the literature is not acceptable)	0-3	3
Logic in the course of the experimental work	0-3	2

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

Completeness of the description of the used techniques	0-3	2
Experimental difficulty of the thesis, independence in experimental work	0-3	3
Quality of experimental data presentation	0-3	3
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	2
Practical requirements – points in total		24
POINTS IN TOTAL (MAX/AWARDED)	44	(0-48)[2]

Comments of the reviewer on the student and the thesis:

The presented Bachelor's thesis of Anna Gradl is a good quality work, from both formal and practical point of view. It is clearly written and contains only few typos, unusual expressions (e.g., *names* instead of *labels* in the legend of Fig. 11) and less comprehensive parts (specified in my questions below). The extent of the thesis is rather high (46 pages excluding references and supplements). The Introduction part contains relevant information on the effects of pharmaceuticals on the environment and their biodegradation by soil microorganisms, with focus on irbesartan. The Material and Methods part comprises all methods used in the thesis, though some aspects could be described in more detail (see my questions below). The Results are clearly presented, including figures and tables, and the Discussion part is well written, with relevant references to recent research in the field. I only missed a rationale for sequence analysis of bacterial consortia as none of them was able for irbesartan degradation.

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

Page 4. What is the mechanism by which antibiotics (e.g., tetracycline) reduce activities of soil microbial dehydrogenases and phosphatases? Is that just an indirect effect from reducing bacterial growth/proteosynthesis, or some direct effect of the antibiotics on the enzymes?

Page 10. It is not immediately clear what the values and letters in parentheses for each transformation product mean (e.g., 447.2508 m/z (J)), this should be explained where used for the first time. In addition, two different masses are stated for the product **J**, i.e., 447.2508 m/z and 446.2430 m/z - why?

Page 11. Please explain how the negative removal rates occur.

Page 19. Please, explain in detail how the bacterial consortia were "*captured*" from the soil S10.

Page 19. *Isolated DNA underwent PCR amplification*...It should be stated what was

[2] Enter the number of points awarded.

amplified and with which primers.

Page 20. Please, explain what was the purpose of the "control" that contained only the M9 medium. I do not understand the meaning...*in order to control the amendment procedures*.

Page 20. The preparation of consortia pre-culture is not very clear. Overall, I would recommend to make a schema to show the inoculation procedure and the system of controls and replicates, for bacteria, fungi and consortia.

Page 23. Why composition of bacterial consortia was assessed (by sequencing 16S rRNA genes) if they did not degrade irbesartan, and the compared media (M9 vs. LB) even did not contain any irbesartan?

Table 1. I do not think that *Mitochondria* would be a family within the order *Rickettsiales*.

Page 54. The reference *Košinová (2019)* does not seem to be complete. Is that some thesis?

Conclusion:

In conclusion, I

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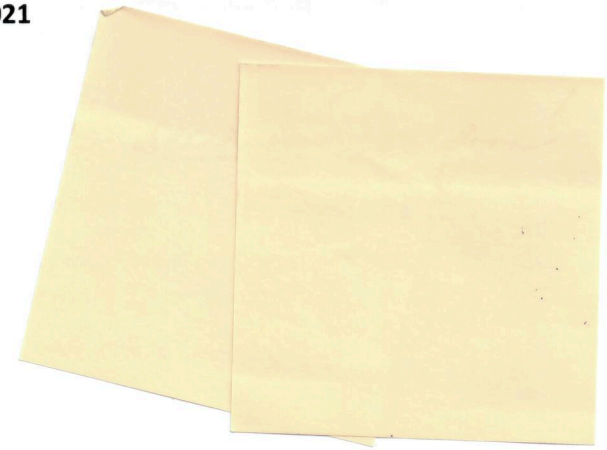
the thesis for the defense and I suggest the grade excellent (1) .[3]

In **Prague** date **8th June 2021**



[3] 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).