



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:

Thesis title: Identification of Glycosylated Tick Proteins Containing Immunogenic Epitopes

Supervisor: RNDr. Ján Štěřba, Ph.D.

Referee: Dr. Adriana Rathner

Referee's affiliation: Institute of Biochemistry, JKU Linz, Austria

	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	3
Graphic layout of the text and of the figures/tables	0-3	2
Quality of the annotation	0-3	3
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		18
(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	3
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* Choose one

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

Completeness of the description of the used techniques	0-3	3
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	3
Practical requirements – points in total		26
POINTS IN TOTAL (MAX/AWARDED)	48	44

Comments of the reviewer on the student and the thesis:

Goals of this master thesis were the identification of the glycosylation patterns in tick proteins on the example of three tick cell lines. Aims were clearly stated and followed throughout the practical work as well as in the thesis outline. The structure of the thesis corresponds well to the guidelines provided by the respective faculty. Extent of the thesis is more than sufficient (92 pages) and the chapters are clearly divided thematically. Student can work properly with citations and also their number is large enough. The content of individual chapters is properly structured with clear distinctions between them. I appreciate that the thesis was written in English language however there is still some room for improvement (proper word order, sometimes a verb is missing, use of correct prepositions, articles). These are not major issues, but it would make it more comfortable for the reader to follow.

During the practical work, Mrs. Dvornikova has faced some issues, e.g. with the affinity purification or the fluorescence microscopy experiments – she was able to optimize an alternative method for the purification of glycosylated proteins using magnetic/agarose beads. Unfortunately, it was not possible to obtain more data from the fluorescence microscopy besides the experiments with sialic acid. This thesis provides a nice systematic study of the three epitopes in various tick cell lines. Student obtained data which demonstrate the substantial differences between the glycosylation patterns of proteins of hard and soft ticks which was consistent in all of the experiments.

Suggestions and questions, to which the student has to answer during the defense.

Mistakes, which the students should avoid in the future:

Questions:

- What could be the potential mechanism of the lectin binding enhancement by divalent cations (chlorides which were used in the thesis)?
- Do you have any explanation for why the affinity purification approach did not work? - What could be the protein around 70kDa which was detected across the 3 cell lines in the experiments for the sialic acid (p. 50, Fig. 16)?

Suggestions:

- In the Introduction, one of the references is used in abundance compared to others (Seeberger 2022)
- When working with abbreviations, one should first introduce it in the text at least once before using it. This was not the case for a lot of them, they were only listed in the List of Abbreviations which makes following the text extremely cumbersome.
- In Fig. 1 it would be nice to have description of all elements (what are the red and blue proteins, respectively?)
- Materials in Chapter 4.1. would be better organized as a table rather than a simple list
- For the chemicals used, it would be nice to make a list where also the manufacturer is stated rather than giving this information throughout the text and only for some of them.

Conclusion:

In conclusion, I **Adriana Rathner**
r e c o m m e n d

the thesis for the defense and I suggest the grade 1.¹

In **Linz, AT** date **16.5.2023**

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signature

¹ 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).