



Přirodovědecká
fakulta
Faculty
of Science

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

Supervisor's statement on bachelor thesis

Name of the student: Simona Fišerová

Study program: Biological Chemistry

Department/Institute: Institute of Chemistry, Faculty of Sciences, University of South Bohemia

Thesis title: The effects of *Ixodes ricinus* tick serpin on the cytotoxic function of natural killer cells

Supervisor: Mgr. Jaroslava Lieksovská, Ph.D.

Supervisor's affiliation: Department of Medical Biology, Faculty of Sciences, University of South Bohemia

The topic of student project was chosen based on a need to functionally characterize a tick salivary serpin IRS-4 which had an inhibitory effect towards protease granzyme B *in vitro*. Granzyme B is a compound of lytic granules of natural killer (NK) cells and cytotoxic T cells. It was hypothesized that the IRS-4 could, through inhibition of NK cells and cytotoxic T cells function, affect the spreading of tick-borne encephalitis virus.

The project required optimization of calcein-AM release method which has been chosen for assessment of cytotoxicity of NK cells. First it was planned to work with sorted NK cells, however attempts to obtain pure NK cells by sorting were unsuccessful therefore Simona continued with a whole population of spleen cells from mouse injected with Poly (I:C) as it was done in past in our and others lab. She optimized successfully the method by testing several parameters which could affect the efficiency of the method. Afterwards she analyzed the effect of serpin on cytotoxic activity of NK cells. No effect of IRS-4 on NK cells cytotoxicity was observed.

The project Simona has got to solve was straightforward however not easy and questions which arose during her stay would require more time and perhaps more enthusiasm involved. As a student of two faculties the time for laboratory work was of course limited. I consider this a problem. Another obstacle was the limited source of IRS-4. Due to Simona's long lasting periods of absence in the lab some experimental conditions had to be tuned repeatedly. Nevertheless Simona thoroughly discussed with me all details of experimental procedure and then she performed experiments by herself with exception to animal handling. I appreciate Simona's work. She fulfilled first two aims of her project and the third one was not fully completed due to a corona crisis. Few experiments which were planned

would perhaps clarified more how IRS-4 influences population of spleen cells. Simona was working carefully and overall I was satisfied with her experimental work.

What I found harder was the time when she started writing her thesis. It turned out that keeping better record of what she have done could saved much of her and my time. Especially chapters like Materials and Methods and Results required quit a lot of corrections from my side. However finally she tuned it to satisfactory level and I believe she has learnt some important rules/things during writing her thesis. Finally, Simona's work with literature I evaluate as average.

In conclusion I recommend the thesis of Simona Fišerová for the defence.

In České Budějovice 17. 7. 2020

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