Reviewer assessment

Author of thesis: Martin Löffelmann

Title: Development and characterization of drug resistant cancer cell lines to the metal chelating compounds with selective anticancer activity

Type of thesis*: Bachelor

	Evaluation criteria	Grades						
		A	B	C	D	E	F	Non-evaluable
1	Scope of thesis, chapters proportion	x						
2	Review quality (i.e. quality and accuracy, number of references used)	x						
3	Objectives achievement	x						
4	Accuracy and completeness of figures and tables legends (i.e. understandability, consistency, abbreviation explanation, correct using of units)	x						
5	Accuracy of references using (i.e. absence of references quoted in text and list of references, formal stylistic consistency)	x						
6	Accuracy of summary in Czech and English	x						
7	Graphic quality of text and figures		x					
8	Language and stylistic quality, using of valid/ standard terminology and nomenclature	x						
9	Choice of appropriate experimental methods		x					
10	Comprehensibility and conciseness of used methods description				x			
11	Quality of experimental data processing				x			
12	Results interpretation			x				
13	Discussion (results summary and its implementation in the context of current research/knowledge)		x					

Note1: if impossible to apply, use "non-evaluable"
Note2: mark with "X"
Note3: final grade is based only on evaluable (A-F) items
*- select "Bachelor" or "Master of Science"

Final Grade (A-F)	**B**

Please, attach your comments and questions as well as reasons for your evaluation at the next page (pages)

First part of this bachelor thesis was very well done. It´s obvious that student is able to work with information and he understands the connections among them.

Second part of thesis could be better designed. There are some unclear steps in methodology, which should not happen. There is also space for improvement in data evaluation.

Questions and notes:

- **MDR is not the only type of drug resistance in cancer. Do you know the other types? What is the difference among them?**
- **Do you think that inhibitors of P-glycoprotein are good target for overcoming MDR?**
- **Why did you choose cell lines CCRF-CEM a HCT116 for your experiments?**

Page 28: MTS test

- Why did you use such a high concentration of cells for MTS test? We standardly use concentration 4.10^4 cells/ml in the case of CCRF-CEM cell line and $2{,}7.10^4$ for HCT116. Sensitivity of cells depends on its concentration – you can get false higher IC50
- I´ll prefer information about reaction volume instead of number of cells you seeded
- Your compounds for MTS test treatment were diluted into 100% DMSO? I am missing this information. If you use 10 ul of compound in 100% DMSO and your reaction volume is 100 ul, you´ll get final concentration of DMSO 10% - this concentration will kill all your cells
- "10 ul 1,6% DMSO were added as a control" – which control? Positive/ negative? Did you use also another control?
- Why did you decide to use three dilution series, when it covers same range of concentrations?

Page 29: Development of resistant cell lines

- Why did you decide to make two different treatments – in 50% and 70% confluency. In the case of adherent cells, 50% confluency is very low and cells are extremely sensitive. Why you didn´t use same concentration of cells and just different concentrations of compounds (2xIC50, 5xIC50)?
- Did you do triplicates in one plate, or you used three different plates?

Page 34/35: Results

- You write in the text about IC50 value for selected and parental cells and there is a link to figure 7. But figure 7 shows survival rate, not IC50
- Figure 8 – if you want to show increase in IC50 value? Why you didn't show IC50 value? You can make table with IC50 for parental and selected cell lines and then show the ratio. It will be immediately clear, if there has been increase or decrease of resistance

Conclusion: Thesis is recommended to defence

Olomouc , date: 28.6.2020

Signature: Mgr. Lenka Řeháčková