



Opponent's Review on Master Thesis

Faculty:	Faculty of Fisheries and Protection of Waters
Institute:	Research Institute of Fish Culture and Hydrobiology
Student:	Bc. Pavla Linhartová
Branch of Study:	Fishery
Title of the Thesis:	The effect of xenobiotics on DNA integrity and physiology of fish spermatozoa
Opponent of the Thesis:	prof. dr hab. Paweł Brzuzan
Opponent's occupation:	Department of Environmental Biotechnology, University of Warmia and Mazury in Olsztyn, Poland

Thesis Assessment

Assess the thesis using the following word scales. Justification.

Topic Selection and Significance of the Thesis: (2) Appropriate and significant topic

Comments: The thesis is a valuable contribution to the ongoing research about how different anthropogenic chemicals may have adverse effects on the environment. It weaves together coverage of the science that underlies physiological and molecular basis of chemical toxicity and, to some extent, toxic chemical risk assessment. Putting emphasis on the issue of toxicity screening using fish (two species) sperm the author has carefully selected information that shed light on adverse effects caused by 4 xenobiotic compounds.

Formulation of the Thesis Objectives: (2) Objectives properly formulated

Comments: Author focuses on different effects (genotoxic and physiological) of 4 xenobiotic compounds towards spermatozoa of two model fish species (sterlet and brook trout).

Processing Method: (1) Perfectly chosen and formulated

Comments: It is a well planned and executed study with results that merit attention.

Data and Information Application: (2) Used data are current, information application is sufficient with regard to the topic

Comments: Author provides a brief introduction to the topic which I think needs some amendments. For example, a table summarizing available data on analysis (and pathways) of

exposure for the tested chemicals (or their analogs) would better describe the objectives of the study (why to study these compounds?).

General Approach to the Solution: (2) Correct approach to the solution, some steps inadequate

Comments: The methodology used (tested compounds, the exposure, sperm motility and velocity recording and evaluation, assessment of DNA damage, evaluation of oxidative stress indices, SOD and ATP assays, protein expression analysis) seems to me correct and has been previously evaluated; author refers many data to papers (of her co-authorship) that have been published recently.

Author's Theoretical Background: (1) The author quoted significant authors and knows the theory of the issue

Comments: To me the author is a motivated young student and highly interested in the topic of the thesis. The references cited in the thesis are properly selected and help judging the importance of the results.

Work with Professional Literature (Quotations, Standard): (2) The author complied with the quotation standard with several exceptions

Comments: Some references are not included in References list (e. g. Lenz et al. 1989, Lee et al. 1993), four other should be specified with letters "a" and "b" (Linhartova et al. 2013, Zhou et al. 2006).

Language Level: (2) The language level of the thesis is standard

Comments: However, the manuscript should be carefully revised for English spelling, lots of small mistakes, which would be too many to mention all. Check carefully the table of contents. Check also the brook trout species latin name throughout the thesis.

Accuracy of the Formulations and Work with Professional Language: (1) The author knows extensive terminology and is perfectly able to use it

Comments: The language of the thesis is concise and accurate.

Formal Arrangement – General Impression: (2) The thesis is correct in formal terms, the general impression is good

Comments: The thesis is split into two general parts: the thesis "*sensu stricte*", on the effects of 4 tested compounds on brook trout spermatozoa, and the copies of 4 papers that have been published recently (with P. Linhartova as a co-author) relating to the effects of same compounds on sterlet spermatozoa. The first part includes the introduction, methodology, results and is followed by discussion, conclusions and references. For me that part (on brook trout) is a well organized text body and would be sufficient as an MS thesis. Unfortunately, the author often makes between-species (brook trout vs. sterlet) comparisons, particularly in results and discussion section, referring to her previously published papers. This makes the navigation between data difficult, and does not allow for judgment of significance of the differences between species responses or basal levels of

some of the studied parameters (as author did); the correlation values and their significance are not included in that part of the thesis, though it is announced on p. 23. As for using statistics, I had a problem with almost all graphs. For me, the standard error bars did not indicate significant differences between treatments (e.g. graphs 5 and 6). Moreover, did you transform your % values for ANOVA?

Satisfaction of the Thesis Objectives: (2) The thesis objectives have been satisfied including the partial ones

Comments: All tasks were performed.

Conclusion Statement: (2) The conclusion is well stated and significant for further use

Comments: It is really convincing and shows the interesting point about the study.

Professional Contribution of the Thesis and its Practical Application: (2) The thesis is well applicable in professional and practical terms

Comments: Indeed, the use of sperm of brook trout and sterlet for in vitro assays may provide an efficient means for evaluation of genotoxic and physiological effects of environmental contaminants.

Rating and Recommendation

Recommended rating of the thesis Very good

I recommend the thesis for defense YES

Questions for the Defense

Question for defense 1: What premises account for „going molecular” in toxicity studies?

Question for defense 2: Briefly characterize potential pathways of exposure and "at risk" populations of vinclozolin.

Further Comments, Opinions and Suggestions for the Defense or for Further Application of the Thesis:

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Date: 03 June 2013



Signature of the Thesis Opponent