

Benamkorn

University of South Bohemia in České Budějovice
Faculty of Fisheries and Protection of Waters
Institute of Aquaculture

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Confidential

Review of USB FFW PhD Thesis

Surname of the PhD student: Mgr. Petra Beránková	Name of supervisor: Prof. MVDr. Zdeňka Svobodová, Dr.Sc.
Title of PhD thesis: Genotoxic potential of foreign substances in ecosystems of surface waters	

REVIEWER:

Surname: Bláha	Institution: Masaryk University, Faculty of Science, Research Centre for Toxic Compounds in the Environment (RECETOX)
Name: Luděk	
Titles: doc. RNDr. Ph.D.	E-mail: blaha@recetox.muni.cz
Please describe your professional relationship to the PhD student: Petra Beránková studied her MSc studies in our Research Centre, I have been lecturer at several	Please describe your field of expertise: Aquatic ecotoxicology, In vitro and molecular toxicology, mechanisms of toxicity

QUESTIONNAIRE

Originality, scientific importance, prospects of the PhD thesis and benefits for basic or applied research

Evaluate its competitiveness in the international context and compare its level with the current state of the art in the field:

Good quality of the work, internationally competitive within the specific field - see my comments below.

Preparation of the PhD thesis, targets of the work and deliverables

Evaluate the overall level of preparation of the PhD thesis and the originality of the selected approaches; evaluate publications and whether the targets set in the PhD thesis correspond with the declared purpose of the thesis:

To my opinion, candidate could put more efforts into the thesis preparation - for more details see my comments below.

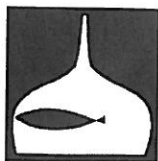
OVERALL COMMENTARY ON THE PhD THESIS

1. Research subject and quality of science

The dissertation thesis submitted for PhD defence of Petra Beránková deals with an important issue of genotoxicity and other types of toxicity present in the environment with special focus on chemicals contaminating river sediments. Genotoxins may cause various adverse effects in natural biota, and their research is worth from both scientific and practical aspects (such as remediation issues).

The present thesis contributed to the current status of the science methodologically by experimental investigation of different sediment processing, extraction and ecotoxicological characterization. Further, it provides an example of a site-specific risk assessment in the aquatic environment around the former factory producing lead batteries. A separated part (which is not mentioned among the aims/objectives of the thesis) deals with laboratory experiment with fish Chub, experimentally exposed to estrogen, androgen and their combination.

To the opinion of the referee, the quality of science presented in the thesis is at good level, and it contributes to the current state of the art in the field.



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2. Dissertation thesis - content and formal issues

The thesis has been submitted as a commented compilation of previously published or accepted papers. It is structured into 6 chapters + 2 annexes. The thesis is submitted in English, which is at good level. It could however be yet improved by e.g. using more traditional expressions (e.g. "danger of compound" should better be "hazard..." and some others).

While studying the thesis, I have had a problem to understand what was the actual role (and contribution) of Petra Beránková to presented work. In all cases, the papers were collaborative work of several authors, and it would be highly beneficial to have an overview of the candidate's role. This should be clarified during the thesis defence.

Chapter 1 provides an introduction and background information and at the end it contains definition of the thesis aims

Comments of the referee: This part is sufficiently elaborated but as a referee, I have some comments and suggestions related to both structure and content:

- several self-references are inappropriately used at general statements and topics
- content of the 1.4 chapter (Classification of Aquatic Ecosystems) contains several paragraphs, which are not fully relevant (e.g. p. 13 describing bioindication, fish, plants, bioaccumulation etc.)
- no disadvantages of the ecotox bioassays are discussed (and they should be)
- chapters 1.7 and 1.6 should be exchanged (genotox assays are a subgroup of toxicity tests)
- paragraph in current 1.7 section on WP2 assay seems to be copied (without further editing) from another text
- other plants than *V. faba* used for genotoxicity testing should be mentioned

Chapter 2-5 are original papers. Two papers published in journals impacted by ISI WOS (Acta Veterinaria - Beránková is the 1st author, Neuroendocrinol Lett - 2nd author), and 2 papers were published in Czech national journals (these two papers are present in Annexes in their original Czech versions, and their English translations - without Figures, Tables - are in Chapters 4-5; Beránková is the 1st author at both papers).

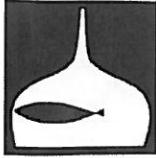
Comments of the referee:

Ad Chapter 2: - This paper has been published in Acta Vet but I have some concerns related to experimental design. The general hypothesis was related to Pb contamination but authors tested toxicity of organic extracts. Opinion of the candidate on this issue should be discussed during the defence.

- Figures 1 and 2 seem to show similar results but actual values substantially differ. (e.g. Fig 1a: Y-axis maximum 2.2, Fig 2a: Y-axis maximum 5). Candidate should comment and explain this difference during the defence.

Chapter 6 contains General discussion and additional information (e.g. CV etc.)

Unfortunately, List of references is provided only for the Chapters 1-5 (separate list of references for Chapter 1), and it is completely missing for Chapter 6, where General discussion is presented. This fact does not disqualify the thesis but I consider this a major problem, and the thesis should be amended/corrected before the final defence.



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3. General comments and discussion questions

1) Chapter 5 (study of Vtg induction in Chub) is not mentioned in the introduction/aims, and it is not discussed in the General discussion in Chapter 6, and its topic does not fit to the Title of the thesis. During the thesis defence, candidate should put efforts to explain this issue.

2) Several methods were used to test sediment toxicity. What is the candidate's opinion on the application of *V.faba* and other experiments with plants and/or algae? Any disadvantages, limitations? Interactions of toxicants and nutrients?

3) To my knowledge, current Czech legislation (dredged sediments) acknowledges other bioassays for sediment ecotoxicity testing than those mentioned in the thesis. Can candidate comment on these bioassays? What is their interpretation in terms of aquatic and terrestrial ecosystem?

4. Overall evaluation

I have found sever problems in the submitted thesis, which are listed above. To my opinion, missing list of references to the most important part of the thesis - i.e. General discussion - is a major problem, which should be improved before the final defence. Some other comments should also be explicitly addressed by the candidate during the PhD thesis defence (or if possible incorporated into the revised/modified text of the thesis). Nevertheless, submitted work demonstrate good expertise and research potential, of Petra Beránková. I recommend the thesis for the defence at the Examination Committee of the University of South Bohemia, and after successful defence, candidate can be awarded by "PhD" degree according to Czech legislation.

FINAL RECOMMENDATION

- can be recommended for defence of PhD Thesis
 can be recommended with reservations for defence of PhD Thesis
 can not be recommended for defence of PhD Thesis

J.P.W. 31.5.2011
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Date and place

BLAHA
[Signature]
.....
Surname and signature



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Review of USB FFW PhD Thesis

Surname of the PhD student: Mgr. Petra Beránková		Name of supervisor: Prof. MVDr. Zdeňka Svobodová, Dr.Sc.	
Title of PhD thesis: Genotoxic potential of foreign substances in ecosystems of surface waters			
REVIEWER:			
Surname: Misik		Institution: Institute of Cancer Research Borschkegasse 8a A-1090 Vienna Austria	
Name: Miroslav		Phone: ++43-1-4277-65143	
Titles: Ph.D.		E-mail: Miroslav.misik@meduniwien.ac.at	
Please describe your professional relationship to the PhD student: There is no relationship		Please describe your field of expertise: Environmental toxicology	

QUESTIONNAIRE

Originality, scientific importance, prospects of the PhD thesis and benefits for basic or applied research

Evaluate its competitiveness in the international context and compare its level with the current state of the art in the field:

The work of Mgr. Petra Beránková describes results of genotoxicity test of river sediments. The thesis brings new important information about present status pollution together with different methodological way how to detect potential environmental threats.

Preparation of the PhD thesis, targets of the work and deliverables

Evaluate the overall level of preparation of the PhD thesis and the originality of the selected approaches; evaluate publications and whether the targets set in the PhD thesis correspond with the declared purpose of the thesis:

The thesis contains 6 chapters and 2 annexes. At least 3 articles which are here presented were published in journals with IF. The only problem is that there is not indicated participation of each author. However, in my opinion, author fulfilled target of work and presented results in sufficient amount.

As referee I am a little bit disappointed with introduction part. The author does not use newer sources of literature as it sometimes looks like that Mutat Res. 2004, 567 was the main source of information.

Author not indicate (p. 12, first paragraph) any reference concerning phase I, phase II enzymes presence and metabolic activation of PAH in fish.

In the text it is several times mentioned priority pollutants list of EPA (e.g. p. 14, third paragraph), however any information concerning present status of EU legislation (priority substances list?) or Czech Republic absent. I would also appreciate information from Germany, Austria, Slovakia or overall EU concerning present status of sediments contamination.

As the author is one of coauthors of article which deals with plant genotoxicity bioassays I will expect that in introduction part (p. 15, fifth paragraph) will be provided more information concerning these type of tests.



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In general discussion p. 67 author state that „ All published studies with PAH concentration and genotoxicity data from 4 or more sites were scrutinized in an attempt to identify empirical relationship between sediment genotoxicity and PAH contamination (Chen and White, 2004).“ and what kind of results they obtained?

Concerning lead effect in sediments of Klenice (p. 27) I disagree with author's statement that with organic extract (DCM) is possible to detect genotoxic influence of Pb in SOS chromotest (please look also on Mutat Res. 1987; 189(3): 263-9). I suppose that observed genotoxic effect is due to organic pollutants. In this case opinion of the candidate on this issue should be discussed during the defence.

I also expected somehow short chapter about advantages and disadvantages of each extraction method and recommendation when each kind of extraction should be used.

Please write comments:

Submitted work demonstrate good expertise and research potential of Mgr. Petra Beránková, I recommended the thesis for the defence at the Examination Committee of the University of South Bohemia. After successful defence, candidate can be awarded with „PhD“ degree according to Czech legislation.

OVERALL COMMENTARY ON THE PhD THESIS

FINAL RECOMMENDATION

- can be recommended for defence of PhD Thesis
- can be recommended with reservations for defence of PhD Thesis
- can not be recommended for defence of PhD Thesis

15/6/2014 WIEN

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Date and place

Miroslav MHL

.....
Surname and signature