



Review of USB FFPW PhD thesis

First name(s), surname, titles of the PhD student: Ruoyi Hao, Ph.D.	First name(s), surname, titles of supervisor: Assoc. Prof. Dipl.-Ing. Jan Mráz, Ph.D.
Title of PhD thesis: Freshness and shelf-life of fish products	

REVIEWER:

Surname: Klouček	Institution: ČZU Praha
Name: Pavel	
Titles: doc., Ing., Ph.D.	E-mail: kloucek@af.czu.cz
Please describe your professional relationship to the PhD student:	Please describe your field of expertise:

QUESTIONNAIRE

Originality, scientific importance, perspectives and impacts of results presented in the PhD thesis for basic and/or applied research

Evaluate competitiveness of the PhD thesis in the international context and compare its level with the current state of the art in the field (**extent ¼ – ½ page**):

The major part of the thesis describes important aspects of the processing of the patented farming system of common carp with improved nutritional profile of fatty acids, called omega-3 common carp (OCC). Manipulating the nutritional composition of the carp could have effect on post-mortem changes. Therefore, the research was aimed at testing of broad spectrum of parameters of shelf life, consumer acceptability and preservation methods. The research group of the Ph.D. supervisor is the leader in the OCC research, and the presented thesis originally and systematically extends current knowledge. These are important both scientifically, because it adds new information in the field of fish processing generally, as well as practically, because of useful information for exploitation of the patented OCC technology. All experiments were adequately designed, up-to-date methods were used. It also corresponds with the fact, that the resulting manuscripts were accepted in high quality journals.



Elaboration of the PhD thesis, objectives of the work and deliverables

Evaluate the overall level of elaboration of the PhD thesis (structuring of the main text, comprehensibility, logicity of the chapters and their ordering) and the originality of the selected approaches to solve the objectives; evaluate publications and whether the results described correspond to objectives of the PhD thesis (extent ¼ – ½ page):

The thesis is composed as collection of five already published manuscripts, with general introduction and general discussion and conclusions. Three manuscripts, in which the Ph.D. student is the first author, are aimed at evaluating post-mortem parameters and shelf life of OCC. The other two manuscripts describe different topic, gelling and oxidation properties of the fish muscle protein. The connection of these two parts is by the use of natural compounds (essential oils for OCC and polyphenols in fish gel food) for processing of fish. Even though these two parts are quite distinct, they keep the common idea. In this way, the thesis is structured well, the approaches and methods were appropriately selected, and the results correspond to the objectives.

OVERALL COMMENTARY ON THE PhD THESIS

Please write in the box specific comments concerning the PhD thesis in extent of 1-2 pages:

The first ten pages of general overview (or introduction) is the strongest part of the thesis. It is obvious, that the student has studied the theoretical background of the problem deep and systematically. There are almost no typographical errors, the structure is logical, and the text is concise and comprehensive. The only point that I was missing a bit is mentioning the microbial toxins, that could also play a role in fish food safety.

All of the papers presented here are well written, there are no major comments. I appreciate the statement of the student's share, maybe the activities could be specified. The first and the third papers are experimental, describing post-mortem quality changes and development of essential oil based coatings. The second one is a review about the use of essential oils in chilled fish. One follows the other in logical order. It is nice to see really well written review in the days, when even such type of papers in well reputed journals are so often too scrappy. I won't go into detail evaluating the last two papers, since the Ph.D. student was not the main author, but I have no objections.

The third part – general discussion – summarizes the outcomes of the single papers. Even though this part has also high quality, it is little bit lower than the other parts. It would be useful, if the author writes it more self-explanatory. The style was to try combine the results based on the topic, rather than papers, which is correct. However, it suffers with decreased comprehensibility, because it lacks many supporting information, which are probably obvious for the author, but not always for the reader. For example, brief explanation what is storage modulus (chapter 3.1), Fenton system (5.1), or stating reduction of microbial log CFU/g together with the absolute numbers (chapter 4.2) would help to understand the text more



easily. Moreover, this part is called discussion, but in some chapters, there are quite low number of references discussing the obtained results (no reference in chapters 2.2, 3.1, one ref. in 2.3). There is also higher number of typos than in the previous parts. General problem is correct writing of the names of microbial species. This should be checked throughout the thesis. All minor comments are highlighted directly in the thesis file.

However, these minor errors do not substantially decrease the overall quality of the thesis. I recommend the PhD thesis for defence.

FINAL RECOMMENDATION

- ☒ PhD thesis can be recommended for defence
☐ PhD thesis can be recommended for defence with reservations
☐ PhD thesis cannot be recommended for defence

In Prauge, 29th December

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Date and place

Pavel Klouček

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Name and signature