



Confidential

Supervisor's Review of USB RIFCH PhD Thesis

Surname of the PhD student: Tran Quang Hung	Name of supervisor: Vlastimil Stejskal, Ph.D.
Title of PhD thesis: Insect meal as feed source in nutrition of percids, Eurasian perch (<i>Perca fluviatilis</i>) and pikeperch (<i>Sander lucioperca</i>)	

OVERALL COMMENTARY ON THE PhD THESIS

Presented Ph.D. thesis is composed of 7 papers in journals with IF ranging from 2.323 to 10.592. He is the first author on six articles and co-author on one. Six papers were published in Q1 journals in total. Two papers were published in the top one journal in the Fisheries field (Reviews in Aquaculture), where Hung served as the first author. Those accomplishments are incredible, and they are well deserved, in my opinion. The Ph.D. candidate clearly demonstrated that he is fully oriented in aspects of fish nutrition and physiology. In detail, the results of Hung's thesis show that the inclusion of insect meal in complete feed mixtures and as the main source of protein is real, organic, and can have a positive effect on the intestinal microbiome. Due to the still sophisticated technologies of insect meal production, there is a high presumption of reducing the costs of their production and thus the real possibility of a significant increase in production capacity. It is obvious that the usage of insect meal is species-specific, both in terms of farmed fish and the insect species utilized. It is apparent that Hung's Ph.D. thesis is a consistent and excellent piece of work with direct, practical application in percid aquaculture. The thesis, in my opinion, has both scientific and practical sound, and that is why it has a high perspective of being implemented in commercial production, having a direct potential impact on the development of the aquaculture sector. In conclusion, the thesis is an original scientific contribution that should be advanced to a Ph.D. in aquaculture-related disciplines.

Tran Quang Hung, a Ph.D. candidate, is a very active, hardworking, and enthusiastic person who brings a lot of new ideas to the lab. He was quite engaged in cooperation with other faculty members and international partners in addition to his major research topic. These activities are documented by seven co-authored papers (since 2020), which are not in direct link with his Ph.D. topic. He collaborated closely with the Laboratory of Molecular, Cellular and Quantitative Genetics (sturgeon swimming experiments), Institute of Hydrobiology CAS (Swimming physiology and respirometry of asp, Crucian carp, and Gibel carp), Bern University of Applied Science (Insect meal and alternative feed sources in percids nutrition), University of Jyväskylä (stable isotope technique), University of Torino (Novel ingredients in aquafeeds), Chiang Mai University (Immunology in fish). Moreover, he also establishes collaboration with partner from the commercial sector (Protix - Insect meal in fish nutrition). In addition, he was heavily involved in various industry-related activities such as rainbow trout and African catfish nutrition (Naturealleve Sarl), as well as novel feed ingredients (RethinkResource GmbH). I'd like to call attention to his ability and willingness to learn new techniques (stable isotope analysis, microbiome analysis, various lab techniques, swimming performance, intermittent respirometry), high level of independence as well as ability to solve very practical problems in experimental recirculating systems or analysis related to fish physiology and nutrition. All of the aforementioned characteristics make Hung a unique student with high expectations for his



future research career and an important person in our lab's future development.

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

27.4.2022

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Date and place

Stejskal

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surname and signature