



Confidential

Supervisor's Review of USB RIFCH PhD Thesis

Surname of the PhD student: Roy Koushik	Name of supervisor: doc. Jan Mráz, Ph.D.
Title of PhD thesis: Circular and Sustainable Fish Nutrition	

OVERALL COMMENTARY ON THE PhD THESIS

The thesis of Koushik Roy is focused on how fish nutrition can become more sustainable and can contribute to the circularity of our food system. Aquaculture is the fastest-growing sector of animal food production. As aquaculture production grows, environmental concerns related to waste generation and disposal, such as eutrophication of waters and greenhouse gas emissions, are rising. There is an urgent need for aquaculture to become more sustainable and adapt circularity as much as possible. Waste is not a waste but a resource in circularity. Circularity demands a paradigm shift in thinking, changing focus from increasing productivity (presently) to increased resource use efficiency (future), from animal or farm level to the industrial scale (e.g., food system)

Koushik Roy well addressed these issues in his thesis. The quality of wastewater and sludge from 3 different RAS farms was analyzed, and possibilities of their use for aquaponics were assessed in the paper I (published in Journal of Environmental Management; IF 2019 = 5.647; Q1). Digestibility of feeds in common carp and their potential to contribute to eutrophication were assessed in paper II (published in Reviews in Aquaculture; IF 2020 = 10.592; top 1). Possibility to use waste biomass from biofloc system as a novel feed ingredient in the crayfish diet was assessed in the paper III (Scientific Reports; IF 2020 = 4.38; Q1). Nutrient footprint and ecosystem services of carp production in European fishponds in contrast to EU crop and livestock sectors were assessed in paper IV (published in Journal of Cleaner Production; IF 2020 = 9.297; top 10 %). How fish nutrition shapes excretion and eventually eutrophication in shallow lake ecosystems like most European large-sized ponds was assessed in paper V (submitted to Journal of Cleaner Production IF 2020 = 9.297; top 10 %). TILAFed aquaponics database: A stochastic feedstuff inventory tailor-made for Tilapia nutrition and aquaponics mineral manipulation was developed in paper VI (minor revisions in New Biotechnology; IF 2020 = 5.079; Q1). Certified methodology about alternative feed components to replace fishmeal and fish oil in carp feed was prepared.

The thesis is thus composed of 4 published articles in excellent journals, two manuscripts, and one certified methodology. In addition to these included papers, Koushik has published 23 articles in journals with impact factor, and 3 applied outputs. Overall, he has published 27 papers in prestigious scientific journals, out of them 4 in the top 1 journals. In conclusion, I strongly recommend his thesis for defense.



Fakulta rybnářství
a ochrany vod
Faculty of Fisheries
and Protection
of Waters

Jihočeská univerzita
v Českých Budějovicích
University of South Bohemia
in České Budějovice
Czech Republic

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

29th December, České Budějovice
Date and place

MRAZ 
.....
surname and signature