

The 4th *Nothobranchius* Symposium

3-4 June 2021, ONLINE

***Mycobacterium* infection and *N. furzeri* survival**

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We aimed to study significance of egg sterilization in *Mycobacterium* transmission and fish propagation under *Mycobacterium* infection

Methodology

- GRZ *N. furzeri* strain
- Egg sterilization (peracetic acid)
- Incubation (unsterilized peat, sterilized peat, Petri dish)
- Over 1000 fish, 34 tanks (40-60 liters)
- Fish fed with brine shrimp nauplii, frozen bloodworms

Overall fish survival

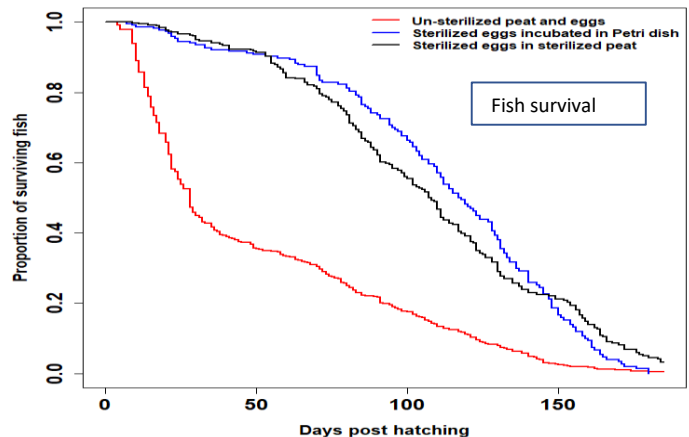
- Across all the treatment combinations, egg sterilization had the biggest effect on early fish survival
- No difference between incubation treatments in sterilized eggs
- Fish from unsterilized eggs 50% survival 5 weeks, 10% survival 18 weeks
- Fish from sterilized eggs 50% survival 16 weeks, 10% survival 23 weeks

Juvenile mortality (0-7 weeks)

- Unsterilized eggs, 365 out of 576 fish died – 63% (91% belly sliders, remaining found dead or missing)
- Fish from sterilized eggs, 49 fish out of 606 fish died – 8% (63% belly sliders, remaining found dead or missing)
- First belly sliders at 9 DPH (in other studies also at day 8 but never earlier) – fish previously normally swimming

External symptoms in adult fish (7-26 weeks)

- Most fish found moribund (do not feed, are less active, often lose coloration and subsequently die within a few days)
- Exophthalmos, uncoordinated spinning, extremely swollen belly, lesions in the mouth and body surface, belly sliding, physical injuries



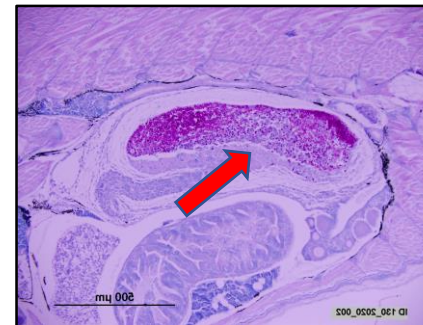
Results of dissections of symptomatic fish

- Commonly swollen liver, spleen and kidney often with lesions
- Sometimes granulomatous lesions on gonads and intestine, limpid exudate in body cavity

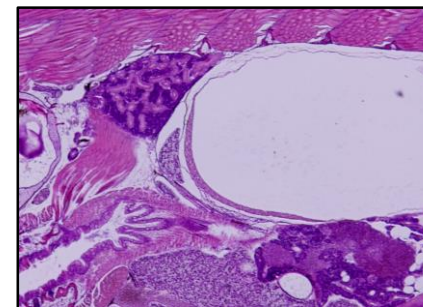
Summary

- Importance of eggs sterilization confirmed
- Mycobacteriosis manifested as belly sliding in juveniles, systemic infection in adults (*Dyková et al. 2021b*)
- Mycobacteriosis often visually undetectable until final stage of the disease in adult fish
- Mycobacterium-infected fish is a source of infection to other tankmates as mycobacteria accumulate in excretory system of cranial part of the kidney (*Dyková et al. 2021a*)

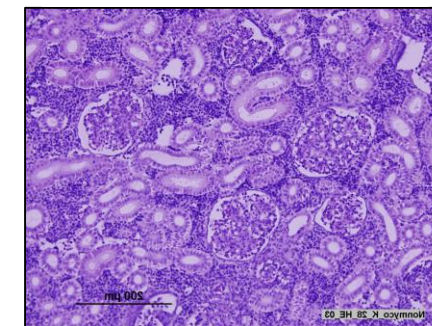
Swim bladder filled with material containing mycobacteria, cell debris, young monocytic cells and phagocytosing macrophages



Swim bladder of healthy fish



Healthy tissue of cranial part of kidney



Cranial kidney tissue with mycobacteria concentrated in excretory system (Ziel-Niesen)

