



MSc. Defence

Use of butyrate in aquaculture to reduce risk of endotoxemia

Mary Wang

Date: January 6th 2023 at 9:30am

The MSc Defence for Mary Wang has been scheduled for January 6th, 2023 at 9:30am. The defence will be held online via Teams and in 141: https://teams.microsoft.com/l/meetup-join/19%3ameeting_NjFmMDhjNDItNzg3OC00OWZjLThiMGEtZjc2YzYyMDJjYmM0%40thread.v2/0?context=%7b%22Tid%22%3a%22be62a12b-2cad-49a1-a5fa-85f4f3156a7d%22%2c%22Oid%22%3a%22fbd28915-dda5-478f-8ecb-a3682dcf0c3a%22%7d

The exam committee will consist of:

Examining Chair: Dr. Christine Baes

Advisor: Dr. Niel Karrow

Adv. Committee Member: Dr. David Huyben

Additional Graduate Member: Dr. Dan Tulpan

Abstract:

Butyrate is a short-chain fatty acid with considerable benefits to gut health, and in recent years has been commonly used as an alternative to antimicrobials in agricultural animal production. In this thesis, we assessed the protective effects of sodium butyrate (NaB) on larval zebrafish during a lethal *Pseudomonas aeruginosa* polysaccharide (LPS) challenge and elucidated potential protective mechanisms of action. Larval zebrafish were pre-treated with 3 concentrations of NaB for 24 hours at 72 hours post fertilization (hpf), and then immune challenged with 60 µg/mL of LPS at 96 hpf. Our results demonstrate that larval zebrafish exposed to 6000 µM NaB prior to a lethal LPS challenge experienced significantly increased survival, and exposure to 6000 µM NaB significantly down-regulated the pro-inflammatory cytokine tumor necrosis factor α (TNF- α). Findings from this thesis are consistent with the beneficial effects of NaB in other vertebrate species and support potential use of NaB in aquaculture.