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The effect of dietary fatty acid content on rainbow trout fry robustness towards *Flavobacterium psychrophilum*

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Among the most serious rainbow trout (*Oncorhynchus mykiss*) fry diseases in Danish aquaculture is Rainbow Trout Fry Syndrome (RTFS), caused by the bacterium *Flavobacterium psychrophilum*. The robustness of the rainbow trout fry towards *F. psychrophilum* may be related to dietary lipid composition and the content of highly unsaturated omega-3 fatty acids (HUFAs). In the project RobustFish we tested the immune competence of 1g rainbow trout fry towards *F. psychrophilum* by experimental challenges with the bacterium, either intraperitoneal injection (triplicate aquaria with 30 fish per aquarium) or bath infection (duplicate aquaria with 60 fish per aquarium). Additionally, four experimental control aquaria for each challenge method. From first feeding and throughout the experimental period of 34 days for intraperitoneal injection and 55 days for bath infection the fry were fed three isoproteinous and isoenergetic diets specially made for this experiment containing vegetable rapeseed oil as the only lipid and supplemented by different levels of LC HUFAs (0.1, 1.1 or 2.5 % total EPA + DHA (as fed)). The levels of HUFA's were adjusted with Incroomega DHA 500TG (CRODA). One additional diet type was a commercial control from Aller-Aqua (ALLER FUTURA EX). All moribund fish seen during the two challenge experiments were euthanized and the spleen, kidney and brain examined for the presence of *F. psychrophilum*. Depending on diet type cumulated mortality by the end of the experiment ranged from (mean \pm SD) 8 % (\pm 4) to 43 % (\pm 9) in the bath challenge and 70 % (\pm 10) to 98 % (\pm 2) in the intraperitoneal injection challenge. No mortality was observed in the experimental control. A strong correlation was found between final mortality in the bath and intraperitoneal injection challenges for the four types of diet. The effect of HUFAs on the robustness of rainbow trout fry towards *F. psychrophilum* will be discussed.

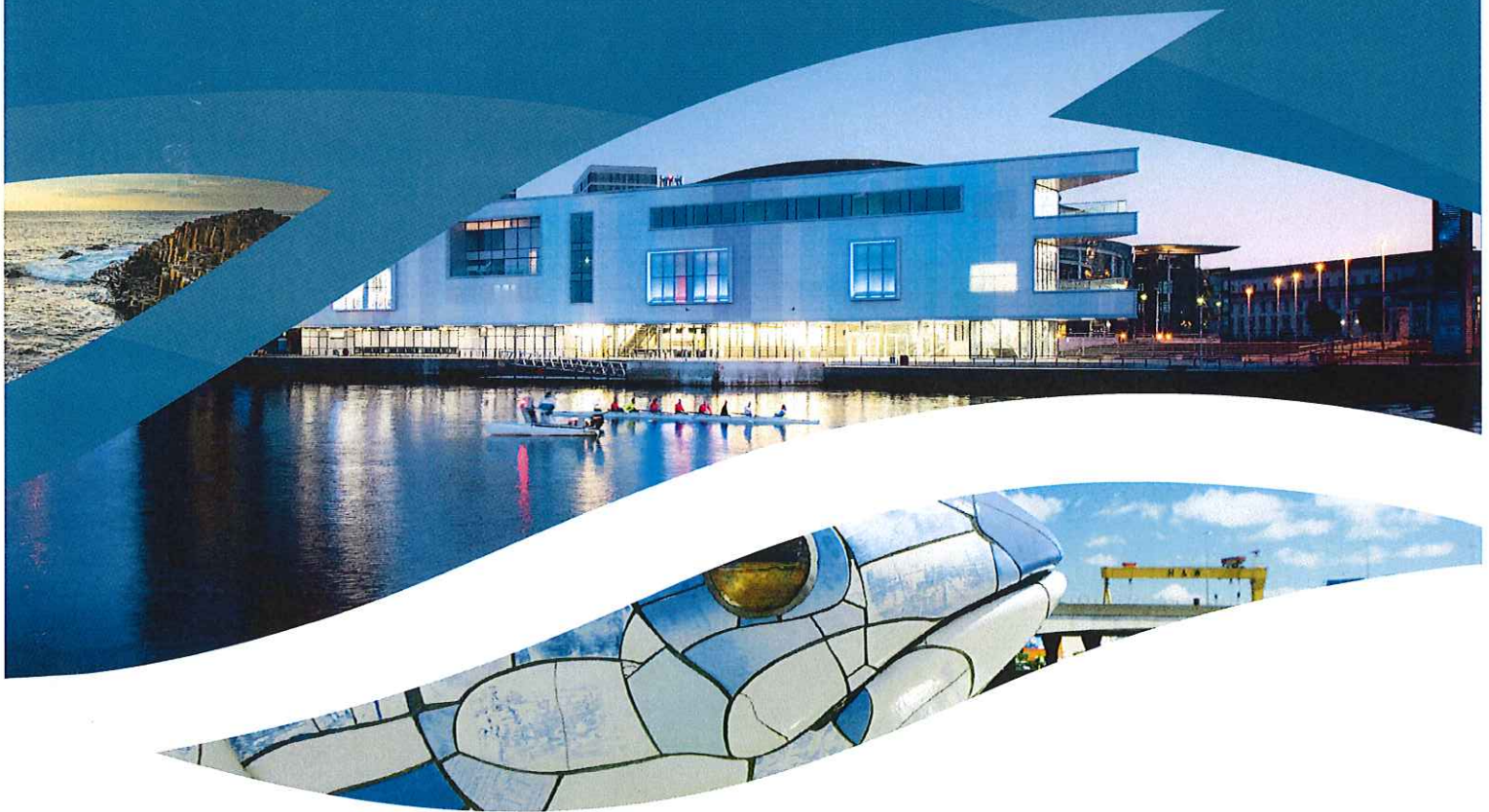
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ABSTRACT INFORMATION