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Hydrogen peroxide as pre-treatment stressor in experimental immersion challenge of rainbow trout fry with *Flavobacterium psychrophilum*

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Several models for experimental infection with *Flavobacterium psychrophilum* in rainbow trout (*Oncorhynchus mykiss*) have been carried out with varying success, including challenge through injection, immersion and cohabitation. Intraperitoneal challenge is highly reproducible, while immersion challenge results in low mortality rates unless combined with various forms of stress or scarification. Although reproducibility has generally been an issue regarding immersion challenges, the method is more appropriate for investigations concerning the immune system, since natural transmission is imitated. Non-medical therapeutic substances are routinely used against pathogens in aquacultures, including copper sulphate, chloramine-T, sodium carbonates, sodium chloride, formalin and hydrogen peroxide (H₂O₂). One of the more successful immersion models used formalin as a stressor, but a less harmful substance was desirable, since formalin is to be phased out in Danish farms by 2014 due to health considerations. The aim of this study was to establish a reproducible method for immersion challenge of rainbow trout fry to be used in investigations concerning immune response and vaccine testing. Various concentrations of H₂O₂ were tested before being combined with immersion exposure to the virulent *F. psychrophilum* isolate 950106-1/1, which was used for infections. Pre-treatment with H₂O₂ elevated the cumulative mortality following immersion challenge with *F. psychrophilum*, although variation between replicates was very high.