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## Utilization of scallop viscera and squid byproduct hydrolysates as new-class feed ingredients in the diets of California yellowtail *Seriola lalandi*

Jonas Miller, Chong M Lee, Barry Volson, Jack Wilson, Gabriel Betty and David A Bengtson  
University of Rhode Island, USA

California Yellowtail (YT) (*Seriola lalandi*) is a novel marine finfish species with a high market value in the United States that is being cultured commercially using RAS technology on land by Acadia Harvest Inc., Franklin, ME. There is a global trend to improve the utility of Soybean Meal (SBM) in commercial marine fish aquafeeds. In New England, USA, both Squid Processing Byproduct (SPB) and Scallop Viscera (SV) contain high levels of protein and excellent amino acid and fatty acid profiles pointing to the bioconversion of SPB and SV into high value hydrolysates for commercial aquafeed applications. Byproducts were homogenized and subjected to hydrolysis at 55 °C for 1.5 hours followed by pasteurization at 75 °C for 30 min. The resulting hydrolysates were used to make impregnated soybean meal and also drum-dried to produce dry hydrolysate powder. The first study investigated feed attractability and growth stimulant properties of scallop and squid hydrolysates in Fish Meal (FM) replacement diets using SBM in YT. In phase-1, YT fingerlings (5.84±0.27 g) were housed in triplicate (20 fish/75 L tank) and hand fed to apparent satiation for 8 weeks. Experimental diets were formulated; (1) FM control, (2) 50% FM/50% SBM control (24% SBM in the diet), (3) Diet 2 modified with the addition of dry squid hydrolysate, (4) Diet 2 modified with the addition of squid hydrolysate-impregnated SBM, (5) Diet 2 modified with the addition of dry scallop hydrolysate, and (6) Diet 2 modified with the addition of scallop hydrolysate-impregnated SBM. The second feeding trial was conducted using YT (86.79±1.72 g) housed in triplicate (15 fish/250 L tank) to determine whether the addition of squid hydrolysate improves feeding performance of SBM diets (30% FM/70% SBM (33.6% SBM in the diet). Following the 2nd trial, fillets of fish weighing 235 g average were subjected to a sensory analysis. At the end of the rearing trials, biochemical analyses were carried out, growth performance was evaluated and histology was performed to determine the occurrence of gastroenteritis. In the first yellowtail feeding trial, fish grew 8.9-fold on the hydrolysate diets to 52±11.5 g in 8 weeks. The dry and impregnated squid hydrolysate diets outperformed the rest, suggesting squid hydrolysate did improve growth and FCR. The results of our study indicate that SPB and SV hydrolysates have potential as dietary components for fish, especially as SBM is increasingly substituted for FM. In addition, SBM-caused fillet texture softening could be avoided with addition of squid hydrolysate or impregnated SBM.

### Biography

Jonas Miller has completed his BSc in Aquaculture and Fisheries Technology in 2014 from the University of Rhode Island, USA. He has worked at Boston Children's Hospital, USA from 2015-2018 in the zebrafish laboratories and is currently pursuing MSc at Kindai University, Japan.

Jm6254@gmail.com

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