The effects of feeding on the development and growth of pike perch muscle and on proliferation of their progenitor myogenic cells were evaluated. Larvae were fed starting on Day 5 after hatching with Artemia nauplii, two commercial diets (Aglo Norse [AN] and Biokyowa [BK]), and two formulated diets (C [nonhydrolyzed casein] and CH [25% casein hydrolysate]). The survival, body mass, and length of pike perch juveniles fed Artemia nauplii and AN and BK diets were significantly higher compared to the C and CH groups. The highest somatic growth rate was associated with an increased contribution of hyperplasia to white muscle growth. Significantly higher frequency of proliferating cell nuclear antigen- and Ki-67-positive nuclei in the white muscle of fish fed Artemia nauplii and commercial diets compared to those fed C and CH feeds indicates that feeding affected the number of fibers. The pike perch fed the CH diet exhibited significantly lower total cross-section area and average fiber area, additionally to the pathological changes in muscle morphology. The larvae fed natural food and diets promoting a fast growth rate exhibited a higher contribution of hyperplasia to muscle growth, which in turn, promoted an increase in the body size of adult fish.

This abstract is excerpted from the original paper, which was published in Journal of the World Aquaculture Society 39:184-195.