



Replacement of fishmeal using poultry-based protein sources in feeds for pikeperch (*Sander lucioperca*, Linnaeus, 1758) during grow out phase

Sandra Langi^{1,2} · Edson Panana³ · Ceder Alloo⁴ · Gilbert Van Stappen¹ · Wouter Meeus⁵

Received: 23 January 2022 / Accepted: 24 August 2022
© The Author(s), under exclusive licence to Springer Nature Switzerland AG 2022

Abstract

A 61-day growth experiment was carried out to evaluate the potential of a poultry-based protein (PBP) comprising of feather meal (FeM) and poultry meat and bone meal (PMBM), as a fishmeal (FM) substitute in diets of juvenile pikeperch (*Sander lucioperca*, L.). Pikeperch (initial body weight 113.12 g) were randomly distributed in groups of 250 fish in twelve 1.8 m³ circular recirculating aquaculture system (RAS) tanks, and fed four isonitrogenous (52% crude protein), isolipidic (17% crude lipid), and isocaloric (21.80 KJ/g energy) experimental diets. The feeds contained FM as the primary protein source (PBP0) or PBP replacing 20 (PBP20), 40 (PBP40), or 60% (PBP60) of the FM. Based on appetite and calculated uneaten feed, the feeding rate was initially set at 1.5% and subsequently reduced to 1% of the total tank biomass towards the end of the study. At the end of the experiment, the average feed intake ranged from 1.93 to 2.00 g/fish/day ($p > 0.05$). No adverse effects on growth and feed efficiency were observed in fish fed diets PBP0, PBP20, and PBP40. Particularly, the final body weight (FBW) (248.73, 240.11 g), feed conversion ratio (FCR) (0.86, 0.91), specific growth rate (SGR) (1.29, 1.35%/day), and protein efficiency ratio (PER) (2.20, 2.12) of fish fed PBP20 and PBP40 were not significantly different from the control PBP0 whose values ranged from 248.11 g, 0.89, 1.27%/day, and 2.18, respectively ($p > 0.05$). In all treatments, the condition factor (k) (1.31 to 1.33), hepatosomatic index (HSI) (2.35 to 2.70%), visceral somatic index (VSI) (6.87 to 7.19%), and whole-body composition of crude protein (57.77–58.28%) and crude lipid (23.85–26.85%) were not significantly influenced by the dietary PBP inclusion level ($p > 0.05$). However, whole-body ash content was significantly higher in PBP60 (14.66%) compared to the other treatments (12.57–14.43%) ($p < 0.05$). Based on the results from this study, up to 40% of FM can be replaced by PBP in diets for pikeperch juveniles without compromising growth performance and feed utilization.

Handling Editor: Gavin Burnell

✉ Sandra Langi
sandra.langii@gmail.com

Extended author information available on the last page of the article