Improving the value of sericulture waste using silkworm pupae as a partial replacement of protein source in *Carassius auratus gibelio*

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Abstract: *Carassius auratus gibelio* is an important economic freshwater fish which requires high protein content in feed, resulting in high breeding cost. It greatly limits the scale of largemouth bass breeding. Silkworm pupae protein is a good substitute for fish meal. This experiment evaluated the effects of fish meal (FM) replacement by fermented silkworm pupa meal (FSPM) on the growth performance, feed intake and body composition of *Carassius auratus gibelio* and to test the potential of fermented silkworm pupa meal (FSPM) as an optimistic protein source for *Carassius auratus gibelio* diets. Six isonitrogenous and isoenergic diets were formulated by the replacement of 0 (D0), 20% (D1), 40% (D2), 60% (D3), 80% (D4), and 100% (D5) fish meal (FM) with fermented silkworm pupa meal (FSPM). The results showed that, after fermentation treatment, the odor of silkworm pupa powder was improved. SDS-PAGE analysis showed that the protein components of the FSPM appeared to have relatively small molecular sizes compared with the unfermented silkworm pupae meal. The protein solubility of FSPM was 6.01 times of that unfermented. The comprehensive nutritional value of FSPM was markedly improved.

Keywords: *Carassius auratus gibelio*; Fish meal; Silkworm pupae; Protein source; Growth