Title : Influence of Diet Formulation on Growth and Survival Rate of Golden Apple Snail, *Pomacea canaliculata* (Lamarck, 1822)

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ABSTRACT

Pomacea canaliculata (Lamarck, 1822) is a freshwater gastropod belonging to the family Ampullariidae. Despite its negative ecological and agricultural impacts, it has recently been reconsidered as a valuable low-cost protein source for human and animal feed. However, there is a lack of optimized, cost-effective diet formulations that support efficient growth under controlled culture systems. This study aimed to evaluate the effects of different diet formulations on the growth performance and survival of *P. canaliculata*, and to determine optimal ingredient proportions using predictive modeling. A total of 180 juveniles (70 days old) were randomly assigned to three dietary treatments for 60 days: (1) a control group (catfish feed mixed with ground eggshells), (2) Formulation 1 (catfish feed mixed with ground eggshells and scalded morning glory), and (3) Formulation 2 (catfish feed mixed with ground eggshells and soybean meal). Growth parameters (shell length and body weight) and survival rates were recorded weekly under controlled water temperature (25–30°C). Survival rates remained high (>90%) across all treatments, indicating good adaptability to formulated diets. Snails fed Formulation 2 exhibited significantly greater shell length and body weight gain ($P < 0.05$) compared to other treatments. Response surface methodology further demonstrated that increasing the proportion of soybean meal as a partial substitute for commercial feed enhanced growth performance while reducing overall feed cost. These findings suggest that soybean meal supplementation is an effective strategy for improving growth efficiency in *P. canaliculata* culture. The integration of statistical optimization models provides a practical framework for cost reduction and sustainable production, contributing to the development of economically viable snail-based culture and feed industries.

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