

UTILIZATION OF BROILER SLAUGHTERHOUSE WASTEWATER SLUDGE TO FORMULATE LOW-COST POST- LARVAL SHRIMP FEED FOR *PENAEUS MONODON*

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Abstract: The shrimp industry in Sri Lanka is a vital contributor to export earnings, but faces challenges due to the rising cost of shrimp feed ingredients. A sustainable solution is being explored, which involves repurposing waste from broiler slaughterhouses to create cost-effective shrimp post larval (PL) feed. This research focused on developing such a feed using dried broiler wastewater sludge as a key ingredient. Three experimental feeds were formulated, each incorporating varying levels of sludge (10%, 15%, and 20%) by replacing fishmeal, with a commercial PL feed used as the control with four replicates for each. The study analyzed the nutritional composition, stability, and presence of *Escherichia coli* and *Salmonella* bacteria. Crude protein (CP) content in all experimental feeds was significantly higher ($P < 0.05$) than in the control feed (47.2%) and there was no significant difference in CP values in sludge included feeds ($P > 0.05$). Nevertheless, all the formulated feed met the CP requirements for post-larvae of *Peneaus monodon* within the range of 45-55%. Crude fat content of the tested feeds was significantly affected ($P < 0.05$) with the sludge inclusion where the highest fat content was observed in the 20% sludge inclusion (11.05%). The stability of the pellets and the effect of the aeration were significantly affected ($P < 0.05$) with the sludge inclusion while the highest stability (6.53%) and the lowest effect of aeration (7.59%) were observed in the 15% sludge included feed. All feed samples tested negative for the presence of *E. coli* and *Salmonella* bacteria. The cost analysis revealed that incorporating broiler wastewater sludge as a partial substitute for fishmeal could effectively reduce feed cost. Therefore, broiler wastewater sludge can be a valuable and sustainable ingredient in shrimp PL feed production and 15% sludge inclusion results best nutrition and physical attributes offering economic benefits.

Keywords: Broiler; Pellet stability; Shrimp; Wastewater sludge