Utilization of Broiler Slaughterhouse Wastewater Sludge to Formulate Low-Cost Ornamental Fish Feed

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Ornamental fish industry is an emerging sector in Sri Lanka which generates substantial export revenue. With the shortage of animal feed ingredients and the consequent surge in formulated fish feed prices, Sri Lankan ornamental fish farmers face a significant challenge in maximizing their profit. Repurposing broiler slaughterhouse waste as an animal feed ingredient offers an eco-friendly strategy to address this feed ingredient scarcity. Therefore, this study aimed to formulate a cost-effective ornamental fish feed utilizing dried broiler wastewater sludge as a feed ingredient. Three experimental feeds incorporating different levels of sludge (10%, 15%, and 20%) by substituting fishmeal were formulated, with a commercial fish feed as the control. Proximate composition, floatability, stability, and the presence of *Eschertia coli* and *Salmonella* sp. were analyzed. Crude protein (CP) values in all the experimental feeds were significantly higher ($p<0.05$) than the control (29.43%) while the highest CP value showed by 10% sludge inclusion feed (37.21%). As the presence of sludge inclusion rose, there was a significant reduction in the crude protein content, ($p<0.05$). Nevertheless, all the tested diets successfully met the ornamental fish's CP requirement within the range of 35-45%. Pellet stability displayed no significant differences among the experimental feeds ($p>0.05$), but the floatability of the commercial feed has surpassed significantly (100%) that of the experimental feeds ($p<0.05$). Importantly, all feed samples tested negative for the presence of *E. coli* and *Salmonella* sp. The results of cost analysis revealed that feed costs can be effectively decreased by incorporating broiler slaughterhouse waste as a partial substitute for fish meals. Therefore, the broiler wastewater sludge can be effectively utilized as a fish feed ingredient and this research highlights the potential of utilizing broiler wastewater sludge as a valuable resource in the realm of feed production, offering both economic and nutritional benefits.

Keywords: Broiler**,** Ornamental fish**,** Wastewater sludge, Pellet stability, Pellet floatability

Acknowledgement: This study was financially supported by the Aquinas College of Higher Studies, Colombo 08, Sri Lanka.