



Nutritional Profile of Local and Imported Polychaetes Use in Shrimp Broodstock Feeding in Sri Lanka

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Polychaetes are widely used as live feed in shrimp broodstock because of their rich nutritional composition, particularly proteins, lipids, amino acids, and fatty acids profiles, which support reproductive development. This study focused on comparing the nutritional profile of three polychaete species commonly used in Sri Lankan shrimp hatcheries, including two local species identified in our laboratories as *Marphysa quatrefages* and *Leiochrides* sp., and one imported species, *Nereis virens*. Standard analytical methods were used for proximate composition analysis, while amino acid analysis was carried out using High-Performance Liquid Chromatography (HPLC). Proximate composition values were expressed on a dry weight basis. One-way ANOVA at $p < 0.05$ used for statistical testing. Among the tested species, *N. virens* showed the highest protein (63.41%) content. Local *M. quatrefages* has shown protein at 59.21%, and *Leiochrides* sp. had comparatively lower protein percentage, as 53.52%. Even though there were differences among species, all three had protein levels above the recommended range (45–55%) for shrimp broodstock diets. Fat percentage was not significantly different in *N. virens* (8.30%) and *M. quatrefages* (8.06%), while significantly lower fat content was detected in *Leiochrides* sp. (6.10%). The amino acid profiles showed some clear differences. *M. quatrefages* had higher levels of lysine (35.02%), glycine (18.04%), and tryptophan (6.61%), which are important for shrimp reproduction. In contrast, *Leiochrides* sp. had higher serine (24.93%) and proline (27.31%) contents, while *N. virens* showed slightly higher aspartic acid (6.43%) and asparagine (8.94%) levels. Although the overall composition varied, *M. quatrefages* had a lipid content similar to the imported *N. virens*, while providing adequate protein for shrimp broodstock feeding and higher levels of lysine and tryptophan, suggesting that this local species has good nutritional potential. Based on these findings, locally available polychaetes, especially *M. quatrefages*, could be considered as a suitable and cost-effective alternative to imported species for shrimp broodstock feeding in Sri Lanka particularly if they are produced under aquaculture conditions.

Keywords: Amino acid, Lysine, Polychaetes, Proximate composition, Shrimp broodstock