

A Comparative Study of Tilapia Feeding Efficacy: *Schizophyllum commune* VS. *Rhizopus* sp. Treated Rice Bran Feed

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Structured Abstract

Background: This study aims to address the high cost of aquaculture feed in Malaysia by exploring the use of rice bran (RB), a byproduct of rice milling, as an alternative feed ingredient. It compares the effectiveness of two fungal strains, *Schizophyllum commune* and *Rhizopus* sp., in enhancing the nutritional value of RB through solid state fermentation (SSF). The goal is to assess the potential of fungal-treated RB as a sustainable and economical substitute for traditional aquaculture feed.

Methods: The study's methodology involved rice bran (RB) and treating it with two fungal strains, *S. commune* and *Rhizopus* sp., to enhance its nutritional value through solid-state fermentation (SSF). The fermented RB was then analyzed for moisture, ash, protein, lipid, and fiber content. This fermented RB was made into pellets, which were fed to tilapia fingerlings in a recirculating aquaculture system (RAS) to evaluate the growth and health performance of the fish. Statistical analysis was performed to interpret the results.

Results: The study found that fermenting rice bran (RB) with *Rhizopus* sp. significantly enhanced its nutritional value by increasing protein and beneficial lipids while reducing fiber content. Proximate analysis showed higher moisture and protein levels in fermented RB pellets compared to non-fermented ones. However, feeding these pellets to tilapia did not significantly improve their growth or health, likely due to non-homogeneous fish culture. Despite this, the potential for using fungal-treated RB as a sustainable and economical feed alternative in aquaculture remains promising.

Conclusion: In conclusion, this study shows that rice bran (RB) can be a cost-effective and sustainable feed for aquaculture. Fermentation with *S. commune* and *Rhizopus* sp. improved RB's nutrition, though it didn't significantly boost tilapia growth due to uneven culture conditions. Despite this, fungal-treated RB remains a promising alternative to conventional feed, reducing the need for imports and supporting sustainable aquaculture practices.

Keywords: Rice Bran, *Schizophyllum commune*, *Rhizopus* sp., tilapia, solid-state fermentation (SSF)

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