

ORL-F&HN-08**Fermentation of Plant Feed Ingredients: A Novel Approach for Climate-Resilient and Sustainable Aquaculture**

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The aquaculture sector in Bangladesh has experienced significant growth, making the country a leading producer of fish globally. However, this expansion has led to challenges, particularly regarding the sustainability of feed sources and environmental impacts. The reliance on fish meal from marine sources has strained marine resources and contributed to environmental degradation. Additionally, the production processes of commercial aquafeed contribute to greenhouse gas emissions and water quality degradation. However, its high price and environmental issues have compelled researchers to find a substitute protein source for commercial feed. Plant feed-stuffs (soybean meal, rice bran, maize, etc.) in aquafeed are mainly limited due to their low protein level and anti-nutritional factors.

To address these challenges, there's a growing interest in utilizing fermented plant feedstuffs as an alternative to commercial feed. Research showed that fermentation of soybean, rice bran and maize using indigenous bacterial isolates enhances the nutritional value of plant proteins while mitigating anti-nutritional factors (Table). This fermentation not only improves the proximate composition but also it improves the functional compounds of plant feed-stuffs. Direct use of fermented plant feedstuffs promotes the plankton community's growth in pond water, increasing dissolved oxygen and reducing the water temperature. Therefore, fermented plant feed ingredients might be a revolutionary approach for climate-resilient and sustainable aquaculture.

Table: Effect of fermentation on qualitative traits of Soybean, Rice Bran and Maize

Parameters	Soybean		Rice Bran		Maize	
	Non-Fermented	Fermented	Non-Fermented	Fermented	Non-Fermented	Fermented
Protein (%)	43.93	58.64	11.80	13.67	8.04	10.55
Lipid (%)	4.43	13.46	2.02	2.20	4.27	1.26
Fiber (%)	4.31	13.03	26.24	27.07	5.41	1.28
Phytic Acid (mg/100gm)	230.27	199.05	238.19	175.9	152.86	109.6

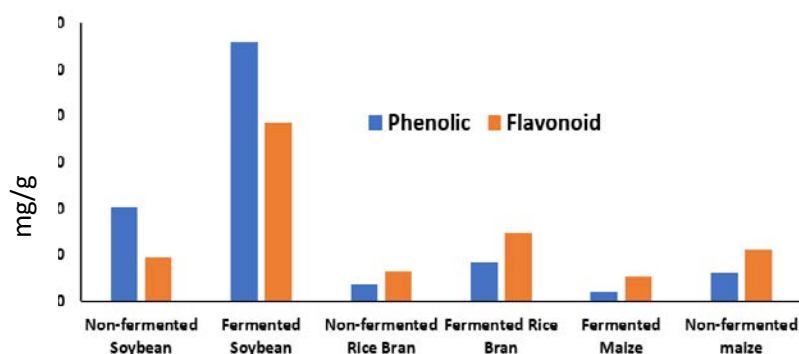


Figure: Effect of fermentation on bio-active compound of Soybean, Rice and Maize (mg/g).