

Analysis and evaluation of fish silage and rice bran mix as a potential feed ingredient

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Abstract

Fish by-products from the Sri Lankan fisheries is approximately 10,000 metric tons, there is a potential for value addition. One of the alternatives to utilize fish by products is fish silage. Rice bran is the most suitable under utilized locally available filler material to use for co- drying of fish silage.

The objective of this research was to study the feasibility of using rice bran as a drying aid for fish silage.

Five mixtures of silage / rice bran (1:2, 1:1, 2:1, 3:1 and 4:1) were produced by drying in a mechanical dryer at 50 °C for 12 hours. Proximate composition, Total Volatile Nitrogen (TVN), Water Soluble Protein (WSP), Amino acid composition, Digestibility trial with Mink, Biogenic amine content of silage, rice bran and silage / rice bran mixture were analyzed. pH, degree of hydrolysis and peptide distribution of fish silage were determined.

Results reveal higher protein (35.72%) content can be achieved by increasing inclusion levels of fish silage. Dry matter content (24.4%) and crude protein (16%) level of fish silage is similar to lean fish materials. More than 95% of the protein present in silage was water-soluble. Low value of TVN and biogenic amines indicate the freshness of the silage and silage rice bran mixture and pH of 3.51 indicates the storage stability of silage. Silage contains lower tryptophan and higher lysine. Therefore makes a nutritionally balanced feed ingredient when mixed with rice bran rich in methionine, cysteine and tryptophan. The protein digestibility of rice bran is improved to (70.1 ± 2.0) when mixed with silage.

Therefore fish silage / rice bran dry mixture is a good feed ingredient. The mixture is a dry powder and can be easily mixed with other feed ingredient to develop aquatic and animal feed.

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