

**NUTRITIONAL VALUE OF FISH SILAGE
WITH *GRACILARIA Sp* AND ABALONE VISCERA
AS POULTRY FEED**

A Thesis

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ABSTRACT

ANDI BESSE PATADJAI. University of the Philippines in the Visayas. November 2004. Nutritional Value of Fish Silage With *Gracilaria sp* and Abalone Viscera as Poultry Feed.

Study on fish silage prepared with *Gracilaria sp.*, with and without abalone viscera was conducted to evaluate the rate of hydrolysis during the ensiling process. The fish-*Gracillaria sp.*-abalone viscera silage was further subjected to nutritional value test as poultry feed.

Three silage were prepared using 5% propionic acid and formic acid (ratio 1:1) to contain: a) 100% fish by catch (Silage F), b) 70% fish by catch and 30% *Gracilaria sp.* (Silage FG) and c) 70% fish by catch, 25% *Gracilaria sp.* and 5% abalone viscera (Silage FGA). These silage were stored for 15 days and stirred daily. Chemical components such as pH, amino nitrogen, polypeptide, and monosaccharide content were determined at regular intervals within the 15-day ensiling period.

Isonitrogenous feeds were then formulated to contain fish-*Gracillaria sp.*-abalone viscera silage Feed (II) and fish silage (Feed III). Nutritional value of these diet (i.e. Feed II and Feed III) were compared with that of commercial feed (Feed I) which was used as the control, based on the growth response of chickens.

Results showed that rate of decrease in pH value was sufficiently rapid to stabilize the three silage. Silage F showed significantly higher pH value throughout the ensiling period, compared with Silage FG and Silage FGA. No significant difference ($P<0.05$) was, however, found between Silage FG and Silage FGA. Results can be attributed to incorporation of *Gracilaria sp.* in silage production, which provided

favorable condition to decrease the pH value. Amino nitrogen content of all silage increased with ensiling time. Silage F exhibited the highest amino nitrogen content during 15 days of ensiling, followed by that of Silage FGA. Although the amino nitrogen content of Silage FGA was higher than that of Silage FG, significant differences ($P<0.05$) were noted only after 12 days of ensiling. Polypeptide content of all silage decreased after 3 days of ensiling. Silage FGA exhibited the highest polypeptide content after 9 days of ensiling. Monosaccharide content of all silage fluctuated during the ensiling period. However, the highest value was noted with Silage FGA, followed by Silage FG on the 3rd day of ensiling. This could be attributed to the highest polysaccharide hydrolysis rate exhibited by Silage FGA throughout the ensiling period.

The best feed conversion ratio (FCR) and protein efficiency ratio (PER) were obtained with chickens given feed containing fish-*Gracilaria sp.*-abalone viscera silage (Feed II) during the 3-week feeding time. Body weights of chickens given Feed II were significantly higher than those given Feed III until the 3rd week of feeding.

Reduction of fish content by as much as 30% and its substitution with 25% of *Gracilaria* and 5% of abalone viscera in silage (Feed II) gave the same effect on growth rate of chickens as that of silage made up of 100% fish (Feed III), and commercial feed (Feed I) without any mineral deficiency symptoms (e.g. slipped tendon or leg weakness and abnormal feather growth). Fish-*Gracilaria sp.*-abalone viscera silage could be used as an ingredient for the production of an acceptable/palatable and nutritious feed for poultry.