

Rungkan Klahan 2009: The Digestive Enzymatic Activity, Apparent Digestibility Coefficients and Effect of Enzyme Supplement on Feed Utilization in Nile Tilapia (*Oreochromis niloticus* L.).

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Activity of protease, amylase and lipase from stomach, upper intestine, lower intestine and liver of 5.7, 35.8 and 92.1 g male Nile tilapia (*Oreochromis niloticus* L.) were determined. *In vitro* protein, starch and lipid digestibility by digestive enzyme from intestine of three sizes of fish and the effect of replacement of fishmeal by soybean meal at 0, 50, 75 and 100 percents supplemented with protease (from *Bacillus* sp.) on *in vivo* digestibility and growth performance were studied. Small and medium fish appeared to have higher activity of protease and lipase than the large one while large fish had higher activity of amylase than the small and medium one. Protein digestibility in 35.8 and 92.1 g tilapia were highest in fish meal and sunflower meal respectively while there were no significant differences of digestibility among protein source in 5.7 g tilapia. Starch digestibility in 35.8 g fish was highest in tapioca flour but not significantly different ($P>0.05$) in 5.7 and 92.1 g fish. Lipid digestibility of the 35.8 and 92.1 g fish were found to be in fish oil but 5.7 g fish was palm oil. The growth rate at the end of the experiment of fish fed with diet replacing fishmeal by soybean meal without 0.02 U protease were lower than the control group, however, fish fed with diet supplemented with 0.02 U protease had the similar growth rate as control group and similar trend was also observed for feed utilization especially for protein utilization. Fish fed with diet replacing fishmeal by soybean meal at 50 and 75 percents supplemented with 0.02 U protease had the highest protein digestibility. All levels of substitution of fishmeal by soybean meal with and without supplemented protease had no effect on survival rate.

The result indicated that the partial replacement of fishmeal by soybean meal at 75 percents supplemented with 0.02 U protease was appropriate for Nile tilapia feed because it yielded good growth rate which was not significantly different from control ($P>0.05$) but with lower feed cost.

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Thesis Advisor's signature

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