Jutamas Sunthornchot 2010: Development of Suitable Feed for Commercial Production of Nile Tilapia, *Oreochromis niloticus*. Master of Science (Biochemistry), Major Field: Biochemistry, Department of Biochemistry. Thesis Advisor: Assistant Professor Kiattawee Choowongkomon, Ph.D. 118 pages.

Nile tilapia is a famous consumed fish in Thailand. Until now, there is no specific commercial fish feed for Nile tilapia and these may affect maturation, rate of survival, and rate of growth. The objectives of this study is to develop of appropriated raw materials for making suitable feed formula to increase quality of cultivated fish by using *in vitro* digestibility method and characterize trypsin isoforms by polyacrylamide gel electrophoresis (SDS-PAGE) and Substrate-SDS-PAGE. Crude intestine enzymes were assayed for digestion ability of raw materials comparing between food with and without irradiation by *in vitro* digestibility. It was found that raw-materials with radiation and without radiation were similar, digestion of carbohydrate and protein of radiated-raw materials. The results showed that radiated-raw materials to better improve digestive ability than without radiation. The data also indicated that fish meal, soybean and all radiation carbohydrate source raw materials form plants become suitable raw materials for develop food formula for adult Nile tilapia. Zymogram analysis of trypsin activity on SDS-PAGE was also used to examine the expression of trypsin isozymes (indicated for growth of fish). The studied was compared the patterns of trypsin isozyme between fish feed formula which obtain protein source originate from animal and plant materials. The discrepancies of trypsin isozymes were detected in fish cultivated in food formula which obtain protein source originate from animal and plant materials.

In vitro digestibility is a preliminary analysis for select appropriated raw materials of fish feed. The efficiency of trypsin and amylase were improved in radiated raw materials. Moreover, the trypsin protease patterns seem to be difference in fish cultured with protein from plant source and animal source.

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