



Science, Technology, Research and Innovation for Development (STRIDE)



Production and Evaluation of High-Protein Fermented Sweet Potato (ProENK) as Feed Ingredient for Economically Important Aquatic Organisms

GRANTEE: University of the Philippines Visayas Foundation, Inc. (UPVFI)

PRINCIPAL INVESTIGATOR: Dr. Rex Ferdinand Traifalgar

INDUSTRY PARTNER: Plentex Philippines, Inc.

COLLABORATING PARTNER: Tarlac Agricultural University

GRANT PERIOD: September 1, 2016 to August 31, 2017

GRANT AMOUNT: Php 3,923,882 (approximately USD83,500)

Sweet potato as fish meal

Aquaculture of shrimp and finfishes in the Philippines is currently expanding in response to both increasing demand and declining wild fish stocks. However, expansion, profitability, and sustainability of aquaculture is dependent on the supply of feed materials, which accounts for



Production of experimental fish diets of protein enhanced sweet potato (ProENK)

about 60–80% of the total operation cost. Cultured fish require a high-protein diet to attain maximum growth, and at present, the industry is heavily reliant on fish meal as a major component of fish feed. Fish meal usage in aquaculture is considered a global concern, condemned by most scientists as inefficient resource utilization. Fish

should be used to feed humans, not other fish or animals, but the shortage of feed protein for aquaculture is a serious issue faced by the Philippine aquaculture industry, due to limited land area for farming and production of high-protein legumes.

UPVFI, with support from USAID STRIDE, embarked on a one-year study on the fermentation of sweet potato to be used as alternative ingredient to lower the cost of imported fish meal. The project will provide a solution to the growing demand for feed materials to fuel growth of the fish and shellfish aquaculture industry in the Philippines.

Milestones

UPVFI, in collaboration with Plentex Philippines, has started developing an integrated agricultural/aquaculture feed mill plant in Tacloban, Leyte. With the ongoing research, it was discovered that plasma pro-enkephalin (ProENK) can be used to supplement or replace other imported protein sources such as soybean and fish meal. Leveraging the ProENK technology with the abundant local supply of sweet potato and cassava can lead to the production of a cost-effective protein for animal and aqua feeds. Major components of the project are the following:

- Commercialization of the technology and its integration into the UPVFI and Protemax Pty Ltd.'s systems; and
- Licensing of the technology to Plentex Philippines Inc. for commercialization and mass production with future royalty benefits (to be discussed among the members of the research group).

Formulations have been tested to reduce fish meal inclusion by adding fermented sweet potato to about 50% of the diet. This eventually results in an increase in the income of sweet potato growers, as their surplus in harvest will be utilized completely as a ProENK ingredient.



A research team member feeds the experimental fish with the formulated diets containing fermented sweet potato