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

**PHASE I**

**Bioactive Hyaluronic Acid from Heads of Silver-Banded Whiting for Nutraceutical Use**



**PHASE II**

**Bioactive Hyaluronic Acid from Heads of Silver-Banded Whiting for Nutraceutical Use: Characterization and Biocompatibility Assessment of the Extracted Hyaluronic Acid**

**GRANTEE:** Iloilo Science and Technology University (ISATU)

**PRINCIPAL INVESTIGATOR:** Dr. Bernadeth F. Ticar

**INDUSTRY PARTNER:** Unifish, Inc.

**GRANT PERIOD:** June 1, 2015 to November 30, 2017

**GRANT AMOUNT:** Php 10,990,078 (approximately USD233,832)

**High-value marine product from fish**

Aquaculture and fishery industries in the Philippines contribute the largest part of the country's economy, since the Philippines is very rich in marine resources. Commonly, fish processing industries are situated near the coastline areas, and the by-products of the processing, including fish parts (skeletons, heads, and viscera), are being discarded in different bodies of water. This is considered inefficient residue management.

To increase the profitability of seafood operations and to satisfy environmental regulations, low-cost and environmentally friendly technologies are being developed to recover biologically and commercially important materials. One important high-value added material is hyaluronic acid (HA), which research suggests is biologically active. HA has antioxidant, anti-inflammatory, anti-aging, and whitening properties and is highly marketable and in-demand among drug and cosmetics companies around the world, since it promotes good health and well-being in general.



*The fish heads used to be waste products before the USAID project. With the project in its second phase, the fish heads are becoming increasingly more valuable than the body.*

## Milestones

Phase I of the project aimed to address both economic and environmental issues of fishery industries. The project intends to address the pressing problem of ensuring efficient fish-processing-residue management and prevention of water contamination, which would avoid fish kill. The waste of fish processing plants can be transformed into something useful, valuable, and of importance in the increased growth of the Philippine economy, and that of other countries as well.

In the Phase I of the project, it was confirmed that HA extracts contain bioactive compounds with high antioxidant, anti-inflammatory and moisturizing properties beneficial for cell regeneration. The success of the project resulted in continuing assistance from STRIDE.

In the second phase, the HA extract will be subjected to further biocompatibility assessment and characterization. Once results of the tests are obtained, innovation workshops with pharmaceutical and cosmetics companies will be conducted to introduce HA with the complete required chemical analysis.

## Moving forward

Once the technology finds its niche in the market, advance commercialization of HA will be in the works with collaborations among fish processing industries or companies willing to engage in the HA business. Thus, the technology is expected to greatly benefit small-scale fishing, fish brokers, and fishing industries. With more revenue, there will be more job opportunities and livelihood activities.



*Dr. Ticar and her research assistant demonstrate extraction of HA in the lab provided by USAID to the university through the STRIDE grant*