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

PHASE I

Application of Plant Extracts and Essential Oils as Natural Preservative and Flavoring in Low-Salt Dried Fish and Fish Jerky



PHASE II

Technology Verification, Pilot Scale Production, and Test Marketing of Low-Salt Dried Fish and All Natural Tuna Jerky

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

PRINCIPAL INVESTIGATOR: Prof. Rose T. Mueda

INDUSTRY PARTNER: Herbanext Laboratories, Inc./Thelmie’s Dried Fish

GRANT PERIOD: September 1, 2015 to November 30, 2017

GRANT AMOUNT: Php 8,770,705.80 (approximately USD185,760)

All-natural preservative for fish products

The preservation of fish using salt, in combination with drying, has been the common practice in most countries. This is to prolong the shelf life of the products or to impart desired flavor. Traditionally, Philippine dried fish products contain high salt, because salt gives the fish storage stability at ambient temperatures. However, consuming the highly salted dried fish regularly has negative health effects. Another issue in dried fish products is the odor during storage and cooking. This odor in dried fish products results in lower acceptability of dried fish products



Prof. Rose Mueda (2nd from left) presents the all-natural tuna jerky

compared to the imported ones in the local market. It also results in rejection of the products at the port of entry in most importing countries. With the Association of Southeast Asian Nations (ASEAN) integration, stiff market competition for dried fish products from other ASEAN countries is expected. The free flow of goods will be expected, and the Philippines seafood market will be flooded. Innovation in dried fish products must be done to sustain and retain the industry.

The processing of fish jerky, on the other hand, requires the use of artificial preservatives in amounts that are not within the allowable limits. Thus, Phase I of the project attempted to apply the use of plant extracts and oils in the formulation and optimization of the products as natural preservative and flavoring.

Milestones

In Phase I, the study resulted in a 40–50% salt reduction to create low-salt dried fish products and all natural tuna jerky with no chemical preservatives like nitrites and sulfites in the product. Plant extracts were used as natural antioxidant, antibacterial, and flavoring, which resulted in a high-quality, safe, and shelf-stable product.

Moving forward

While the project developed highly promising and acceptable low-salt dried fish and tuna jerky products, there is a need to conduct technology verification and to test the protocols at a higher scale of production prior to technology transfer and adoption of the fish drying sector and prospective investors. This is to enable process refinement that suits the commercial scale and makes it more attractive to technology adopters.

Phase II of the project specifically intends to do the following: a) verify the developed technologies in the production of low-salt dried fish and “all natural” tuna jerky (results of Phase I); b) test protocols at higher production level (pilot scale); c) establish marketability of the products; and d) determine feasibility of the processes at pilot scale production (with 50–100 kg raw material input).



Low-salt dried fish and all-natural tuna jerky with ginger and turmeric extracts