

## PSP-06

### ProviSphere: Integrating Fish Protein Isolate and Indigenous Ingredients for Resilient Nutrition

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Food insecurity and malnutrition remain pressing global challenges, particularly in regions vulnerable to climate change, disasters, and resource limitations. Innovative nutrition solutions are urgently needed to provide concentrated, stable, and accessible sources of dietary protein and essential nutrients. This study presents the development of ProviSphere, a novel food concept that delivers a high-protein, shelf-stable product in a compact and portable form. Anchovy-derived fish protein isolate, combined with functional plant-based ingredients such as mushroom and indigenous grains, forms the foundation of this product, creating a synergistic nutritional profile that provides high-quality protein, dietary fiber, and bioactive compounds. The approach emphasizes three central principles: enhancing nutrient availability, ensuring long-term stability without synthetic preservatives, and integrating environmentally responsible packaging to reduce ecological burden. ProviSphere is designed to serve diverse populations including disaster-affected communities, military personnel, rural populations, and health-conscious consumers in urban markets. Beyond addressing immediate nutritional requirements, the innovation highlights how traditional food resources can be reimaged using modern food biotechnology to create scalable, sustainable, and culturally adaptable solutions. The overall significance of this work lies in demonstrating that the integration of responsible sourcing, nutritional science, and eco-conscious design can produce resilient food systems that meet both human health and environmental goals.

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