NANYANG TECHNOLOGICAL UNIVERSITY SINGAPORE
School of Materials Science and Engineering
College of Engineering

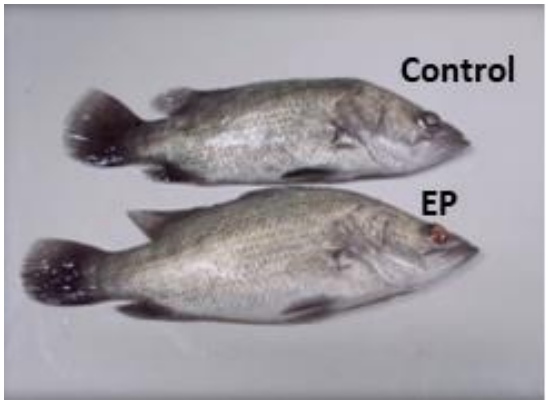
Combinatorial Functional Fish Feeds for Enhanced Growth Rates in Aquaculture

TECHNOLOGY OVERVIEW

This technology focuses on the development of functional fish feeds for enhanced fish growth and disease resistance. The hybrid system consisting of formulated combinatorial supplement in a protective matrix is intended for targeted delivery and health enhancement.

The unique combination of probiotics and immunomodulatory nutraceuticals has been designed for resistance against pathogenic bacteria. Probiotics from various sources, including but not limited to yogurt, fermented food, and drinks, were screened against the fish pathogen – *Streptococcus iniae.*

Combinatorial supplementation of fish feeds designed for targeted delivery in the gastro-intestinal tract (GIT) of the fish promoted growth rates of fingerlings and extends these desirable traits (i.e. growth rate and immunity) even through the grow-out phase.



Asian seabass fingerling's growth performance over 8 weeks (top)

FEATURES & SPECIFICATIONS

- Patented spray-drying production process for supplement encapsulation.
- High nutrients bioavailability in highly acidic environment
- Enhanced growth rate and health in fishes
- Improved growth rates of fingerlings and accelerated pathway into grow-out ponds

MARKET TRENDS & OPPORTUNITIES

- The fish feed market had a global valuation of US$112 billion in 2022 and is projected to be US$164 billion by 2033, at a CAGR of 3.5%. The global probiotics in the animal feed market was valued at US$4.2 billion in 2020 and is projected to grow at a CAGR of 8.2% through 2027.
- Combinatorial functional fish feeds which enhances immunity and promotes growth offers potential productivity improvement and economic benefits to fish farmers while contributing to food security and supporting sustainable aquaculture practices.

POTENTIAL APPLICATIONS

- Aquaculture
- Animal Feed
- Industrial Products