



December 5, 2022

Singapore university creates blend of probiotics and nutrients to keep juvenile Asian seabass from infection



Scientists from Singapore's Nanyang Technological University (NTU) have, in the past year, concocted a novel blend of probiotics and nutrients, and mixed them in fish feed to protect juvenile Asian seabass from infection, [The Straits Times reported](#).

The supplements are covered with an edible coating that protects the probiotics from acid in the fish gut that can destroy them fast. Inside a 2mm-wide food pellet, the capsule of probiotics and nutrient is between one and 10 microns in size.

For the fish to gain immunity against the pathogen, the medicinal probiotics and nutrients must travel farther down its

gastrointestinal tract unscathed to be successfully utilised. At the destination, enzymes will break down the fish feed and coating to release the probiotics and nutrients where they are most effective.

"Our hypothesis is that if we feed this feed to fingerlings (young fish), their survivability will improve, and because they are much more disease-resistant, they grow faster as well," said Professor Joachim Loo from NTU's School of Materials Science and Engineering, who led the team of five in the project. His hunch proved to be correct when he tested the feed at a local farm between August and September.

Some fish in the farm were afflicted with a mild infection. A few days after the seabass were fed the special grub, most of them were cleared of the infection.

Juvenile seabass that were given the yellow pellets also grew larger than those on a normal diet, said Prof Loo. But this finding will need further validation, he added.

Rearing meaty, healthy and disease-resistant fish in a cost-efficient manner is a key aim of aquaculture players here, as food security rests on their shoulders. Prof Loo does his part by creating value-added fish feed. Food for fish accounts for between 50% and 70% of a farm's production cost.

The project was funded in 2021 by the Singapore Food Story R&D Programme under the Singapore Food Agency.

The nutrient used in the feed comes from a traditional ingredient of some cuisines in Singapore that has anti-inflammatory and anti-infective properties.

The team hunted for the most suitable probiotic by screening 22 different strains from yogurt, fermented food and drinks, and other sources.

Together, the ideal probiotic and nutrient mix, at specific concentrations, was more effective in vanquishing *S. iniae*, said Prof Loo.

Prof Loo now wants to examine whether mature seabass can return to a normal diet once they have become immune to *S. iniae* thanks to the special feed. This will also reduce cost for farmers, as there would be no need to keep using the special feed – which is expected to be pricier than normal feed – for the seabass' whole lifespan.

To test this theory, the NTU team will conduct trials at urban farm and nursery Opal Resources in 2023.

- The Straits Times