Creation of innovative food production technologies in response to environmental changes in the future

Development of resources-recycling aquaculture feeds inspired from features of the ecosystem

Project Leader : Jun OGAWA
Professor, Div. Appl. Life Sci., Grad. Sch. Agric., Kyoto Univ.

R&D Team : Nippon Suisan Kaisha, Ltd.

Purposes :

Switch the current aquaculture system with high environmental load to a sustainable system. Drive the food chain from recyclable plant resources to fishes by utilizing functions of fermentation microorganisms and intestinal bacteria, and accomplish natural circulation for future fish cultivation.

Current problems :

- Supplying essential nutrients for fishes by fishes themselves.
- Functional metabolites derived from essential nutrients of fish have not been identified.
- The digestive tract research of fishes is extremely few and the investigation and utilization of intestinal bacterial function is not achieved.

Solution :

- Identify metabolites derived from essential nutrients and verify their physiological functions.
- Isolate intestinal bacteria that produce and convert essential nutrients, and verify its probiotic function.
- Produce fermented products containing a sufficient amount of essential nutrients (fatty acids · amino acids) from plant materials.
- Utilize markers found from omics analysis of aquaculture fish to construct an efficient feed quality evaluation system.

Goal :

Establish aquaculture food chain from plankton, small fish, to large fish, by using fermented feeds containing essential nutrients and by applying symbiotic microorganism function.