

6th Global Summit on

AQUACULTURE AND FISHERIES 2017

May 25-26, 2017 Osaka, Japan

Possibility of marine eukaryote, thraustochytrids as novel probiotic candidates in aquaculture

Yousuke Taoka

University of Miyazaki, Japan

World aquaculture production has continued to increase. Fishmeal is used as protein sources for aqua-feeds. However, the price is drastically increased to around 170,000/ ton in 2013 during recent 10 years because of the decrease of fish resources, anchovy. This is serious problem for sustainable aquaculture. Therefore replacement of fishmeal to another resource is urgently needed. Several researchers reported the replacement of protein sources from fishmeal to plants. However, the complete replacement by plant proteins is not established yet because plant sources contained some components that negatively affect the growth of the cultured fish due to the low digestibility. We focused on the “thraustochytrids” as probiotics to enhance the digestibility of plant sources. Thraustochytrids are widely distributed in marine environment and have unique characteristics that accumulate large amount of lipids in cell bodies. Additionally, it is known that thraustochytrids produce various extracellular enzymes including refractory components such as cellulose. In this study, we researched the profile of extracellular enzymes from thraustochytrids and the tolerant ability in the gastrointestinal juices *in vitro* and *in vivo* to evaluate the potency as probiotics. Production of various extracellular enzymes, protease, amylase, lipase (tween 80 hydrolytic enzyme), cellulase and tannase were detected depending on the genus or species of thraustochytrids. The tolerance to artificial gastric juices was high in genus *Aurantiochytrium* and *Ulkenia*, and low in genus *Oblongichytrium*. In the case of *in vivo* test, *Aurantiochytrium* was recovered from the intestine of Japanese short-necked clam, *Ruditapes philippinarum* (“Asari” in Japanese). Additionally, we have isolated more than one hundred thraustochytrids from marine environment and are screening probiotic abilities to select adequate strain now. As next step, we are planning the rearing trial with aquaculture-major fish species and supply live thrautochytrids by oral administration.

Biography

Yousuke Taoka has completed his PhD from the United Graduate School of Agricultural Sciences, Kagoshima University and Post-doctoral studies from University of Miyazaki. He worked in a commercial fisheries company, Nippon Suisan Kaisha, Ltd. as a Researcher and joined University of Miyazaki in 2011. Recently, he has focused on the production of functional substances from marine microbes and the utilization in the field of aquaculture.

yousuketao@cc.miyazaki-u.ac.jp

Notes: