

**Project Title: Environmental and cost-effective natural product for enhancing growth of beneficial microalgae in aquaculture systems**

Name of Project Leader : **MOHD ROZHAN BIN ZAKARIA**  
Name of Project Members : **PROF. DR. FATIMAH MD YUSOFF**  
**PROF. DR. SUHAILA MOHAMED**  
**ASSOC. PROF. DR. FAUZIAH OTHMAN**

Department/ Laboratory of : Aquaculture  
Faculty/ Institute of : Faculty of Agriculture  
Universiti Putra Malaysia, 43400 UPM,  
Serdang, Selangor, Malaysia

Tel : 03- 8946 4162  
E-mail : m\_rozhan@putra.upm.edu.my  
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**Abstract**

Diatoms are considered beneficial microalgae as they are widely used as live feed for fish and shrimp larvae in aquaculture. Nonetheless, certain harmful microalgae such as cyanobacteria and dinoflagellates are undesirable in aquaculture systems as they can cause water quality problems and decrease production. Thus, it is important to search for the key-control factors of the microalgal growth which is mainly the essential nutrient concentrations; so that their production and productive impacts can be enhanced and harmful impacts can be minimized. Silica is one of the most important nutrients enhancing the diatom growth in the aquatic environment. In our laboratory studies on indigenous microalgae behavior in mixed cultures, we have illustrated that diatoms can compete well over noxious cyanobacteria using appropriate amount of silica concentrations with the addition of sufficient macronutrients and trace metals. However, using industrial chemical as the source of silica supply is not practical as it is expensive. Therefore, a cheap source of silica and other important nutrients which is always available is crucial. In our laboratory, we have shown that the innovative natural product is an alternative, which is suitable for the growth of diatoms, environment-friendly, cheap and available in nature. The product originated from paddy field and earthen aquaculture pond wastes. This product can be applied in many types of aquaculture systems, either in small or large scale aquaculture operation. By using this product, aquaculturist will be able to produce beneficial microalgae especially diatom as the source of live feed for fish and shrimp larvae in the shortest time. In addition they are also able to maintain a constant growth of diatoms in earthen ponds and eliminate the existing nuisance microalgae in order to provide good water quality and high aquaculture production.