

UNIVERSITI TEKNOLOGI MARA

**THE EFFECTIVENESS OF *Moringa
oleifera* SEEDS POWDER AND
EFFECTIVE MICROORGANISM IN
AQUACULTURE WASTEWATER
TREATMENT**

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ABSTRACT

Aquaculture wastewater are highly affected from waste disposal either by the aquatic life or human activities. These issues lead to contamination in the aquaculture wastewater if it is reuse. There are various methods for treating aquaculture wastewater either by using chemicals or natural ways. Therefore, the main purpose of this study is to determine the effectiveness of *Moringa oleifera* seeds powder and Effective Microorganism in treating the aquaculture wastewater. Different dosages of *Moringa oleifera* seeds powder (MO), Effective Microorganism (EM) and combination of *Moringa oleifera* seeds powder and Effective Microorganism (MOEM) were applied in the treatment process. Three type of dosages divided into three groups; Treatment 1 (0.05 g MO, 0.05 mL EM and 0.05 MOEM), Treatment 2 (0.10 g MO, 0.10 mL EM and 0.10 MOEM) and Treatment 3 (0.50 g MO, 0.50 mL EM and 0.50 MOEM) and one act as a Control experiment. The *Moringa oleifera* wings and coats were removed first to obtain the seeds and were dried at 103°C for 24 hours. The Effective Microorganism obtained commercially and were used directly in the treatment without fermentation process. The aquaculture wastewater was obtained from the pond situated in Kedah. The treatment were performed in within 12 hours and observation were made after 24 hours. The physicochemical parameters (pH, temperature, dissolved oxygen, salinity, total suspended solids (TSS), total dissolved solids (TDS), nitrite-nitrogen, ammoniacal-nitrogen, and dissolved reactive phosphorus) were analyzed in this study. From the observation, the potential of *Moringa oleifera* seeds as an alternative biosorbents were identified to eliminate the TSS, TDS and nutrients (nitrite, ammonia and phosphate). The lowest dosage of MO (0.05 g), EM (0.05 mL) and MOEM (0.05 gmL) showed better in reducing nitrite and ammonia. Among all of the treatments, the application of *Moringa oleifera* seeds powder only showed the best results. This study will make a new finding for the treatment in aquaculture wastewater in a natural way.

Keywords: *Moringa oleifera*, Effective Microorganism, aquaculture, wastewater.