

## **Effects of inoculum size of *afifella marina* in the bioprocessing of *sargassum* spp. meal**

### **ABSTRACT**

Brown seaweed, *Sargassum* spp. is also used as an alternative feed ingredient for aquaculture in the form of seaweed meal. Nutritional values seaweed meal with bioprocess technology using microbes such as *Lactobacillus*, *Bacillus* or *Streptococcus*, are improved with different inoculum sizes. Purple non-sulphur bacterium, *Afifella marina* could be one of the alternative and potential candidates. This study aims to determine the optimum inoculum level and period for the improvement of nutritional values in *Sargassum polycystum* meal. *Sargassum polycystum* was collected from the Sepanggar Bay. Dried seaweed was grinded into fine particles ( $<400\ \mu\text{m}$ ). Inoculum sizes of 10% (v/v), 20% (v/v) and 30% (v/v) of *A. marina* were used with 20 g *Sargassum polycystum* powder in one liter bottle with autoclaved 112 synthetic media. Bottles were incubated at 2500 lux light intensity at  $30^{\circ}\text{C} \pm 1^{\circ}\text{C}$  for 8 days. Every two days destructive samples were taken for the determination of nutritional values of bioprocessed seaweed meal. The measured analytical parameters were crude protein (%), crude ash (%), crude fiber (%) and crude lipids (%). Nutritional value of processed seaweed meal powder with *A. marina* has improved with the increase of inoculum size. The crude protein percentage of  $14.70\% + 0.40\%$  was significantly high ( $p < 0.05$ ) with 30% (v/v) inoculum size and obtained on the 8th of bioprocessing product. Consistent decrease in crude fiber values was observed with increase of inoculum sizes, as 19.34% of crude fiber decrement was determined with 30% (v/v) inoculum level on 6th day. The performance of crude lipids was observed insignificant in all inoculum levels. No significant differences ( $p > 0.05$ ) were observed among the values of crude protein, ash, lipids and fiber within 6th and 8th day. *A. mariana* with 30% (v/v) inoculum sizes on 6th of day has capability in improving the nutritional values of *Sargassum polycystum* seaweed meal during bioprocessing.