

## SUMMARY

*Porphyridium cruentum* is a type of microalgae from the Rhodophyceae group which can meet the needs of natural feed and other needs such as biofuel production, cosmetics, pharmaceuticals, and food additives. *Porphyridium cruentum* is known for its relatively high protein content, ranging from 34-56% of its dry weight, so it can be used as feed. Microalgae can be cultivated in certain environmental conditions to grow optimally, one of which is the level of salinity. The results of literatures study show that *Porphyridium cruentum* is able to tolerate a wide range of salinity and can grow at a salinity of 0 ppt but the optimal salinity is still unknown. For this reason, further research is needed to determine the optimum salinity for growth, biomass and protein content of *Porphyridium cruentum*. The purposes of this research are to study the growth of *Porphyridium cruentum* cultured on media with various concentrations of salinity, to determine the production of biomass of *Porphyridium cruentum* cultured in the media with various concentration of salinity, and the last purposes is to determine the protein content of *Porphyridium cruentum* cultured on media with various concentrations of salinity.

The research applied an experimental method with Completely Randomized Design (CRD). *Porphyridium cruentum* was cultured at 6 different concentrations of salinity namely 0, 5, 10, 15, 20, and 25 ppt. The treatment was repeated 3 times so that there were a total of 18 bottles. The independent variable is the level of salinity of the culture medium, while the dependent variable is the growth and protein content of *Porphyridium cruentum* microalgae. The main parameters include cell density, biomass, and protein content of *Porphyridium cruentum*. While the supporting parameters are temperature, pH, and light intensity.

Cell density data was analyzed quantitatively using Analysis of Variance (ANOVA) with a confidence level of 95% and 99% using SPSS. The results showed a very significant effect of various salinities on culture media on cell density each day, so further test was done. Further tests were carried out using the LSD test, and the results show the salinity with the highest cell density is 25 ppt with average of 91,154 cells/mL, while the lowest cell density is 0 ppt with average of 14,854 cells/mL. Data of biomass and protein content were converted into histograms and analyzed descriptively to interpret salinity that was able to produce the highest biomass and protein content. Based on histograms, both biomass and protein content increase effectively at salinity 25 ppt.

**Keywords:** Biomass, Growth, Protein, *Porphyridium cruentum*, Salinity