Abstract

Microalgae is important in many biotechnological exploitations in producing valuable products, services and processes. The technology of cryopreservation is useful in the long-term storage of many microalgal strains able to survive post cryopreservation. In this study, Chlorella vulgaris was conducted to determine the effects of different concentrations of cryoprotectant to preserve the fresh water microalgal strain employing three types of protocol. Dimethyl sulfoxide (DMSO) with different concentrations of 0%, 10%, 20% and 30% were added to the microalgal suspension in three types of protocol. Protocol 1 involves direct plunging into liquid nitrogen, Protocol 2 is slow cooling to -80 °C and Protocol 3 is slow cooling to -20 °C. The absorbance value at 540nm was used as a measurement to determine the growth post cryopreservation. The absorbance value with 30% DMSO in Protocol 2 showed the highest at 0.387 + 0.015 and was significant at p<0.05 compared to Protocol 1 and 3. The best protocol for the cryopreservation of Chlorella vulgaris was Protocol 2 using slow cooling to -80 °C treated with 30% DMSO as the cryoprotective agent.