

Carbonic anhydrase (CA) activity by *Chlorella* sp. in immobilised matrix under carbon dioxide rich cultivation condition

ABSTRACT

The continuous release of global CO₂ and greenhouse gases into the atmosphere is considered one of the major contributors for global warming. Currently, microalgal biosequestration using enzyme carbonic anhydrase (CA) has been reported to be one approach that could be applied to overcome the issue. Eventhough this enzyme has been proven to show its potential to convert atmospheric CO₂ to bicarbonates, there are remaining issues related to its stability and production parameters that need to be addressed. In this study, the activity of CA produced by immobilized microalgae *Chlorella* sp. cultivated in a laboratory environment was investigated. For this study, the influence of cultivation conditions such as pH value ranging from 4.00 to 12.00, light intensity ranging from 330 lux to 1000 lux and CO₂ concentration ranging from 0.04% to 25% on CA activity were investigated. This present study indicates that the highest CA activity of 1.908 U/min was observed for the cultivation was performed using 15% CO₂ with a pH of 8.00 and a light intensity of 550 lux. This suggested that the entrapment of microalgal using a suitable matrix carrier could produce higher CA activity which could be further utilised for extended biomimetic CO₂ capture systems.