

Response of cylindrospermopsin production to varying light intensities by *cylindrospermopsis* sp. Isolated from tropical waters

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Abstract

The study investigated the effect of various light intensities on the cellular production of total cylindrospermopsin (CYN) (i.e. including its analogs) over the different growth phases by a *Cylindrospermopsis* strain isolated from local water in Singapore. The isolate was incubated under 4 light exposures: L1=86.1, L2=43.1, L3=28.7, L4=18.5 $\mu\text{mol photons m}^{-2}\text{s}^{-1}$. Growth rates were significantly different between light exposures ($p < 0.05$) with the maximum growth rate under the highest light exposure. Total CYN content normalized to biovolume, was the highest during the early exponential growth phase and decreased in the late exponential and stationary phase. During the early exponential growth phase the cultures exhibited a strong linear inverse relationship between light intensity and total CYN content ($p < 0.05$; $R^2 = 0.98$). Under low light intensity, higher CYN production and lower cell yield were observed in this study. Furthermore, the culture exposed under the lowest light intensity reached the stationary phase earlier than the other light conditions. This may suggest that due to the low light condition, the cell's growth may have been inhibited and the cell resources were used to produce CYN.