

## **Abstract**

The relative significance of the exponential and linear growth phases during light-limited batch cultivation of *Chlorella pyrenoidosa* C-212 and *Spirulina platensis* M-135 cells was investigated. The relationships among the specific growth rates, the linear growth rates and the final cell concentrations during algal cultivation in various types and sizes of photobioreactors were studied. There was neither good correlation between the specific growth rates and the linear growth rates nor between the specific growth rates and the final cell concentrations. On the other hand, regardless of the type and size of the photobioreactor, good correlations between the linear growth rates and the final cell concentrations were found for both *Chlorella* and *Spirulina* cells. The existence of the various growth phases during light-limited batch cultivation of photosynthetic cells could be predicted by a simple mathematical model. The model predicts that the linear growth phase is relatively longer than the exponential growth phase. During light-limited batch cultivation of photosynthetic cells, the linear growth rate is thus a better growth index than the specific growth rate.

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