Poster

Maximization of cyanobacterial growth and cyanotoxin productivity

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Abstract

Cyanobacteria group comprises more than 2000 species of prokaryotic organisms and they are commonly named "blue-green algae", in spite of being nowadays classified as Gram-negative bacteria. The worldwide occurrence of hepatotoxic cyanobacterium *Microcystis aeruginosa* and the accumulation of its toxin microcystin, the most widespread cyanotoxin, have been responsible for several human deaths and various animal intoxication incidents. In recognition to its toxicity, the World Health Organization (WHO) and several national governments established guidelines and recommendation values for this toxin in water, which gave rise to an increasing demand for microcystin's analytical standards. These standards might be used either as laboratory standards in human and environmental risk assessment or as tools for molecular and cell biology studies. However, their availability is still limited due to constrains found in production and purification processes, which inflate the final price to values as high as 28000€/mg. Thus, the optimization of cyanobacterial cultivation and toxin purification techniques is needed to decrease production cost of such high added-value product. Since the variation of cyanobacterial blooms toxicity is influenced by environmental factors, the aim of this project is to i) evaluate the effect of environmental factors on *Microcystis aeruginosa* LEGE 91094 growth and microcystin-LR accumulation; ii) develop cultivation strategies to optimize cyanobacteria growth and maximize toxin productivity; iii) optimize downstream processing steps in order to obtain high yields of cyanotoxin.