IMPROVEMENT OF CYANOBACTERIA BIOMASS FOR BIODIESEL PRODUCTION *VIA* MOLECULAR GENETIC TOOLS

By

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ABSTRACT

Spirulina is a prokaryotic algae and one of the most economically important microalgae, especially to produce biodiesel contained polyunsaturated fatty acids with carbon chain length and degree of unsaturation greater than those found in plants and tallow biodiesel, which can be converted into biofuel content. After collecting samples from three different places, we studied the effect of different concentrations for some nutrition elements (nitrogen and carbon) on the productivity of dry biomass and lipids content of *Spirulina*. Nine mutants were obtained using the mutagen EMS and the results showed a compromise between the nine mutants for the dry weight of the output of the biomass and lipids content. The concentration of EMS 0.1% / 30 min was given the highest contents in biomass weight of 0.6003 g, 0.5512 g before and after extraction, respectively, and by a wide margin in lipid content (8%). Biochemical and molecular genetics methods showed an ability to distinguish between the nine mutants and it showed important use in the genetic improvement of microalgae for the possibility obtained on a strain or a genetic combination distinct higher productivity biomass and lipids content, and that will help speed up the use of microalgae in biodiesel production.

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