



“Gheorghe Asachi” Technical University of Iasi, Romania



STUDY OF DIFFERENT LIQUID MEDIA INFLUENCE ON *Arthrospira platensis* MICROALGAE CULTIVATION FOR ENVIRONMENTAL APPLICATIONS

Mariana Diaconu, Irina Volf, Igor Crețescu, Gabriela Șoreanu*

“Gheorghe Asachi” Technical University of Iasi, “Cristofor Simionescu” Faculty of Chemical Engineering and Environmental Protection, Department of Environmental Engineering and Management, 73 D. Mangeron Blvd., Iasi 700050, Romania

Abstract

Growth rate and biomass yield in the case of *Arthrospira platensis* depend on nutrient availability, temperature and light, which can determine changes in the metabolism and therefore in the biomass composition. The aim of this study is to evaluate the behavior of *A. platensis* during the growing time in several liquid culture media and their influence on the yield of biomass production. The following culture media have been investigated in this sense: ARS, Zarrouk (Z), modified Zarrouk (MZ), economic (EM) and UTEX media. Experiments have been carried out by using Erlenmeyer flasks containing 100 mL medium inoculated with 5% cellular suspension of *A. platensis*. Monitoring of microalgae development has been performed for 30 days at room temperature, 12/12 light/dark alternation regime and daily intermittent shaking. Optical density (OD) has been measured every three days. Dry substance, protein and antioxidant enzymes (catalase and dehydrogenase) were determined at the end of the cultivation period. Results of OD monitoring relieved a very fast acclimatization and exponential growth of *A. platensis* on UTEX, ARS and Zarrouk media, while a higher lag period and a slower growth have been observed on MZ and EM. The algal dry weight (DW) was greatly enhanced on UTEX, ARS and Z media, where the highest amounts of protein were recorded. The lack of carbon source in EM and MZ media has increased the activity of antioxidant enzymes, which suggests that these conditions could be considered in further investigations related to the antioxidants harvesting from *A. platensis*. Overall, economic media in the microalgae-based systems used in environmental applications can sustain biomass development and the increase of the enzymatic activity, at a reasonable yield and lower costs.

Key words: *Arthrospira platensis*, catalase, culture media, dehydrogenase, dry mass, protein

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* Author to whom all correspondence should be addressed: e-mail: gsor@tuiasi.ro