Fatty Acids Profile of *Synechocystis* sp. CACIAM05 Biomass for Quality Parameters of Biodiesel

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INTRODUCTION: The primary source of biodiesel obtainment in Brazil is soy. However, there is a great holdback caused by the competition with food industry, which makes the search for alternative pathways to replace fossil fuels needed. **OBJECTIVES:** Investigate and compare the biotechnological potential of strain of the cyanobacterium *Synechocystis* sp. CACIAM05 cultured in two culture media as an alternative for obtaining biodiesel. **MATERIAL AND METHODS:** The strain *Synechocystis* sp. CACIAM 05 was cultured in medias ASM-1 and BG-11. After culture, the lipids in the cell biomass were extracted using the Bligh & Dyer method. The next step was the esterification of these lipids and analysis by gas chromatography to determine the fatty acid composition. The quality parameters of biodiesel were calculated from the fatty acid profile. **RESULTS AND DISCUSSION:** The fatty acids detected in the two culture media were: caproic (6C) with 23.11% (ASM-1) and 78.84% (BG-11), enanthic (7C) with 1.08% (ASM-1) and 5.63% (BG-11), palmitic (16C) with 9.33% (ASM-1) and 7.43% (BG-11), stearic (18C) with 1.65% (ASM-1) and 1.67% (BG-11), oleic (18:1C) with 6.85% (ASM-1) and 4.89% (BG-11) and linoleic (18:2C) with 2.79% (ASM-1) and 1.54% (BG-11). The capric (10C), undecanoic (11C), lauric (12C), myristic (14C), margaric (17C), nonadecanoic (19C), palmitoleic (16:1C) and erucic (22:1) acids only been identified in the media ASM-1. The strain showed the best values of the parameters cetane number, iodine value, saponification value, degree of unsaturation, cold filter plugging point and long-chain saturated factor that give better quality biodiesel was *Synechocystis* sp. CACIAM05 when cultured in BG-11 medium. **CONCLUSIONS:** The profile of fatty acids varies according to the culture medium. In the general framework, the results of this study demonstrated the potential use of lipids of cyanobacterias as a source of biodiesel synthesis.

Keywords: Biodiesel, cyanobacteria, biodiesel quality parameters.
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