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Biochar as solid carrier for supporting algal biofilm

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Biomass collection and processing are important steps in the implementation of an integrated algal system that allows downstream processing for the production of biofuels and other valuable bioproducts. In attached systems, the algal biomass is directly inoculated onto solid carriers and biofilm is formed by providing the required nutrients. Biofilm is a complex community of microorganisms including microalgae, bacteria, and protozoa, which are adhered to a submerged surface. Until today, various types of substrates have been studied such as stainless steel, polymeric materials (plexiglass, PVC), natural polymers (cotton, cork), lignocellulosic materials (pine sawdust, rice husk). The above materials have different textures, roughness and surface properties. In this study, biochar produced from olive kernels by pyrolysis at 400°C was tested as solid support for *Chlorococcum sp.* cultures. The substrate used was BG-11 enriched with 1/3 nitrates. After 15 days of cultivation, the biomass attached on biochar was determined, while pH, cell concentration, total suspended solids, chl-a, anions, total proteins and carbohydrates were measured in the liquid. The presence of biochar enhanced algal growth and the biomass attached in biochar was about 3 times higher compared to the biomass grown in the control unit (without biochar carriers). The preliminary findings of this work show that biochar is capable to attract algal cells and to promote algal growth.