Effective harvesting of the microalgae Chlorella protothecoides via bioflocculation with cationic starch.

In the present work, the flocculation efficiency of cationic starch (Greenfloc 120) was tested on the fresh water microalga Chlorella protothecoides under different conditions (pH and flocculant concentrations). Different concentrations of Greenfloc 120 (0, 2.5, 5, 10, 20, 40mgL\(^{-1}\)) were screened against different algal densities (0.44, 0.56 and 0.77gL\(^{-1}\)). Once the optimal flocculation concentration had been established (40mgL\(^{-1}\)) for all different biomasses densities) a more detailed analysis was performed in order to investigate if different pH (4.0, 7.7, and 10.0) could increase the flocculation efficiency of cationic starch. Highest flocculation efficiency without addition of Greenfloc 120 was obtained at pH 10, while in the presence of flocculant, the efficiency increased for all the tested pH values, with a maximum of 98% for pH 7.7 and 10. Cationic starch confirmed to be as an easy to use, efficient and cost-effective flocculant for harvesting of microalgae.
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