

The effect of surface properties on the formation of *Scenedesmus rubescens* biofilm

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Abstract

Microalgae are known for their ability to purify wastewater and at the same time to be able to produce biofuels. The development of microalgal biofilms has received attention in recent years, as the growth of microalgae on a substrate facilitates their separation from water. In the present study, we compared 6 different materials (cork, sponge towel, denim, plexiglass, stainless steel and silicone rubber) as substratum to examine their capability on the attachment of algae. Biomass attachment on the various materials was monitored for 16 days of cultivation. Different physico-chemical surface properties such as contact angle, surface energy, point of zero charge (pzc) were examined in order to elucidate materials properties role on algal attachment. Plexiglass succeeded the greatest increase in biomass (up to 35 g/m²), while stainless steel and sponge towel came in the second place both with 21 g/m². Based on the results, the contact angle and pzc alone, are not sufficient for explaining the selectivity of algal cells to get attached on a surface.

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