

Abstract

Surfactin is obtained through biocatalysis by microorganisms. In our biorefinery concept, it is purified on activated carbon (AC) during downstream processing. Besides cyclic surfactin, it is possible to obtain linear surfactin analogues, when AC with specific properties is used. In the present article, the hydrolysis of various cyclic surfactin analogues mediated by activated carbon is described. Hydrolysis products were identified using HPLC/UV/MS and (Q-TOF)MS/MS. Hydrolytic activity of six commercial and three modified activated carbons was evaluated. The porous texture of ACs was determined by sorption measurements and elemental composition of ACs surface – by SEM-EDS analysis. Their pH_{PZC} value and moisture, ash, and volatile matter content using proximate analysis were also determined. Properties of ACs were correlated with their hydrolytic activity, and the crucial role of alkaline pH_{PZC} was found. The beneficial effect of alkaline pH_{PZC} was further confirmed by acid modification of AC that had previously shown hydrolytic activity and lost this ability after the pH_{PZC} decrease.