AIMS Bioengineering, 2(4): 387-403.
DOI: 10.3934/bioeng.2015.4.387
Received date 15 June 2015,
Accepted date 14 October 2015,
Published date 20 October 2015

http://www.aimspress.com/

Research article

A novel approach for harnessing biofilm communities in moving bed biofilm reactors for industrial wastewater treatment

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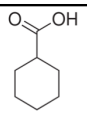
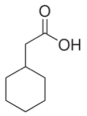
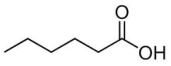
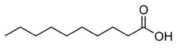
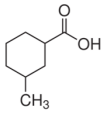
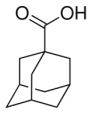
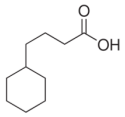
Supplementary Material

Table S1. Naphthenic acids evaluated for degradation by carrier-bound biofilms. Mixture contains equimolar (1.7 mM) concentrations of each component.

Naphthenic Acid	Structure
Cyclohexane carboxylic acid (CHCA)	
Cyclohexane acetic acid (CHAA)	
Hexanoic acid (HA)	
Decanoic acid (DA)	
3-Methyl-1-cyclohexane carboxylic acid (*cis* and *trans*) (mCHCA)	
1-Adamantane carboxylic acid (ACA)	
Cyclohexane butyric acid (CHBA)	
Cyclopentane carboxylic acid (CPCA)	

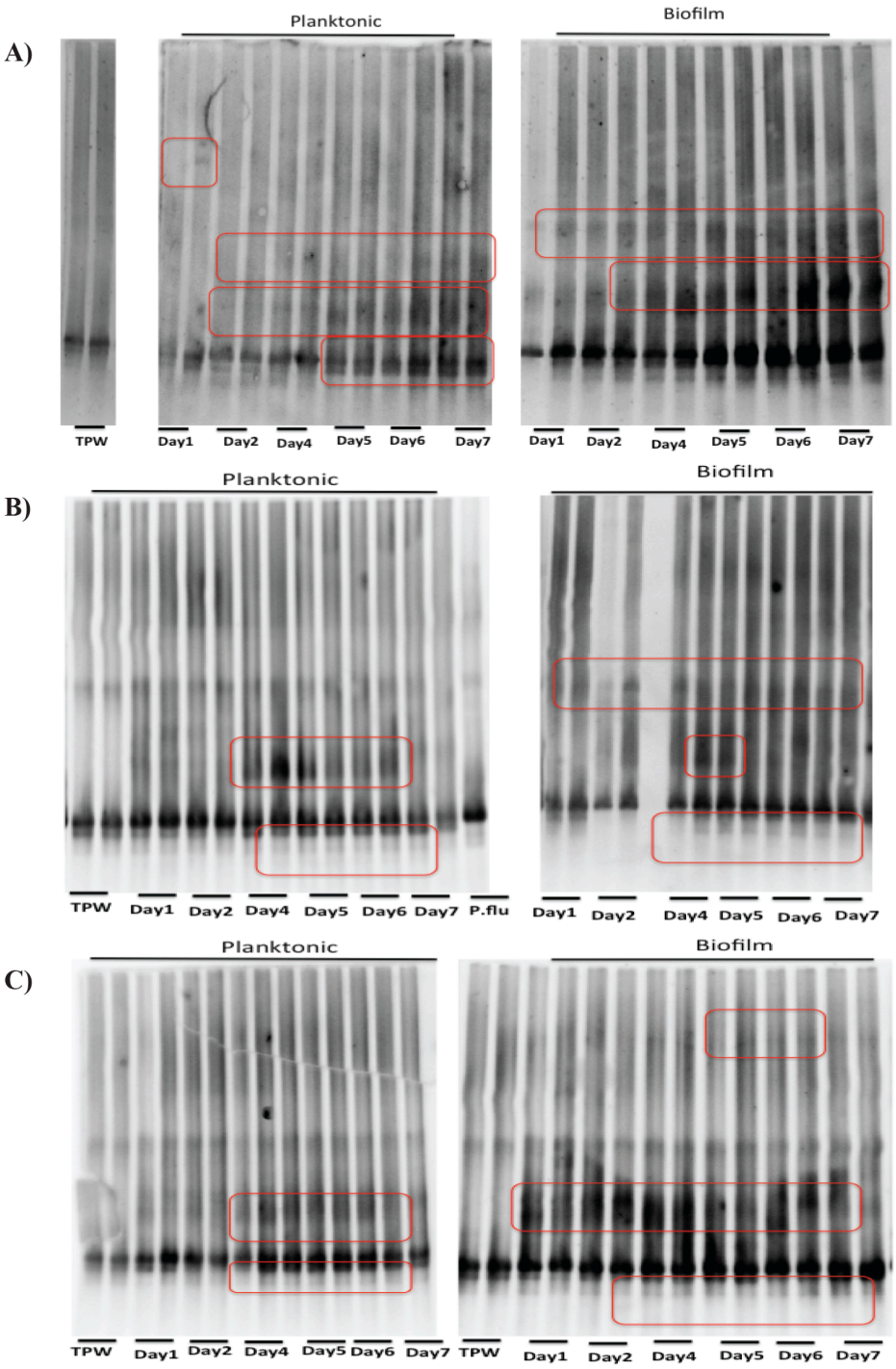
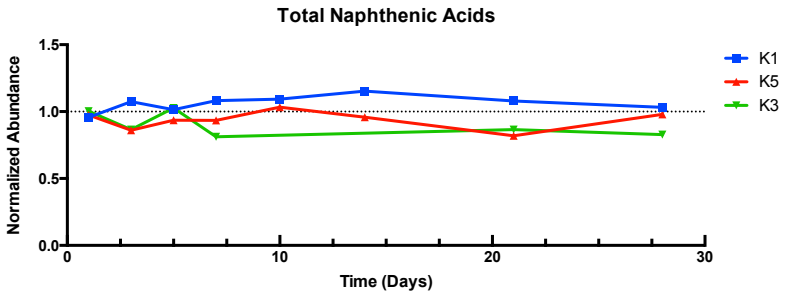
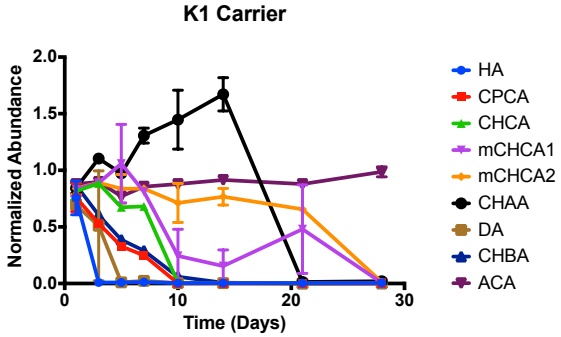


Figure S1. Denaturing gradient gel electrophoresis (DGGE) was used as a means to examine the biofilm and planktonic population diversity of OSPW-derived cultures grown on A) K5, B) K3, and C) Peenox carrier modified CBD systems over a 7 d period at 25 °C and 125 rpm using Bushnell-Haas minimal media amended with yeast extract (1 g/L). DGGE was also performed on the original OSPW inoculum (labelled TPW) in order to fingerprint the original community for comparative purposes. Note the red boxes, which highlight changes in the population over time.

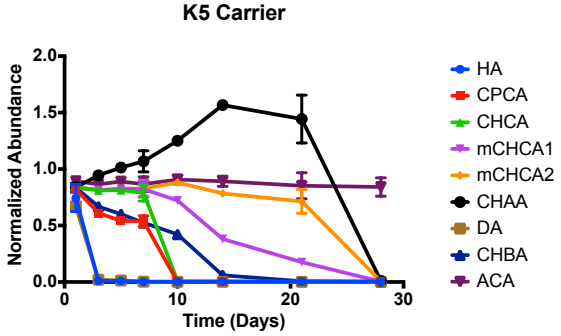
A)



B)



C)



D)

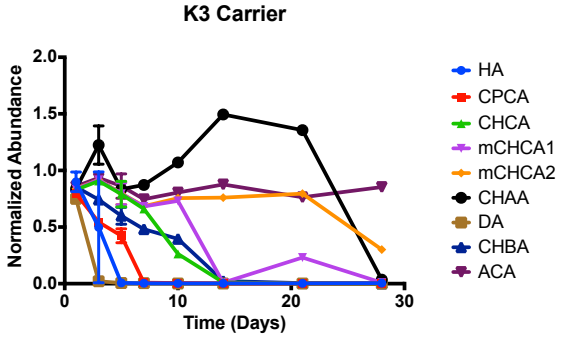


Figure S2. Naphthenic acid (NA) degradation profiles of A) sterile controls demonstrates that abiotic loss of NAs was negligible. Parts B), C) and D, display degradation profiles for all 8 individual NAs tested within the synthetic mixture for K1, K5 and K3 biofilm carriers respectively. Note how adamantane carboxylic acid (ACA) was the only NA that resisted degradation within these MBBR systems.