

Effect of Pretreatment on Hydraulic Performance of the Integrated Membrane Process for Concentrating Nutrient in Biogas Digestate from Swine Manure

Yuanhang Zhan ^{1,2}, Fubin Yin ¹, Caide Yue ¹, Jun Zhu ², Zhiping Zhu ¹, Mengyuan Zou ¹, Hongmin Dong ^{1, *}

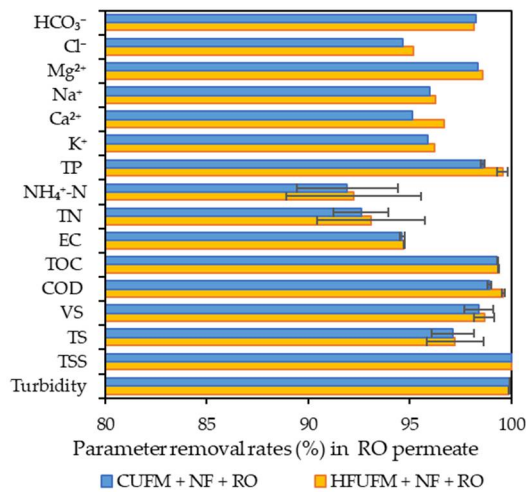
¹ Institute of Environment and Sustainable Development in Agriculture, Chinese Academy of Agricultural Sciences, Beijing 100081, China; zzyh727@126.com (Y.Z.); carft_257@163.com (F.Y.); ycdhope@163.com (C.Y.); zhuzhiping@caas.cn (Z. Z.); condor1228@sina.cn (M.Z.)

² Department of Biological and Agricultural Engineering, University of Arkansas, Fayetteville, AR 72701, USA; junzhu@uark.edu (J. Z.).

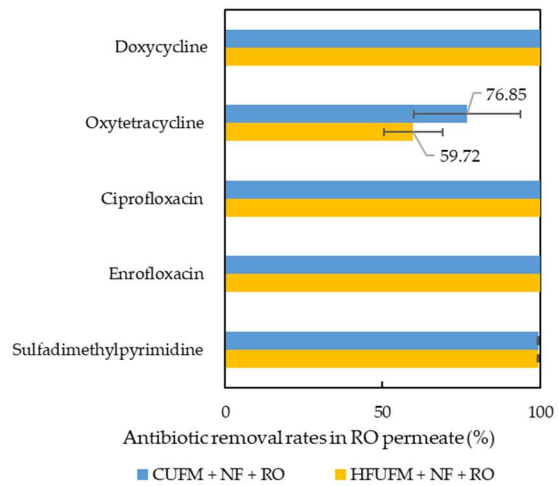
* Correspondence: donghongmin@caas.cn; Tel.: +86-108-210-9979

Table S1. The different batches of the biogas digestate from swine manure.

Experiment batch	Sampling batch	Sampling time	Temperature (°C)
1	1	2017/12/5	12
2			
3			
4	2	2017/12/8	10.5
5			
6	3	2017/12/12	9
7			
8	4	2017/12/16	8



(a)



(b)

Figure S1. The Rrs (%) of (a) physical and chemical parameters and (b) antibiotics content in RO permeates with HFUFM and CUFM pretreatment method.

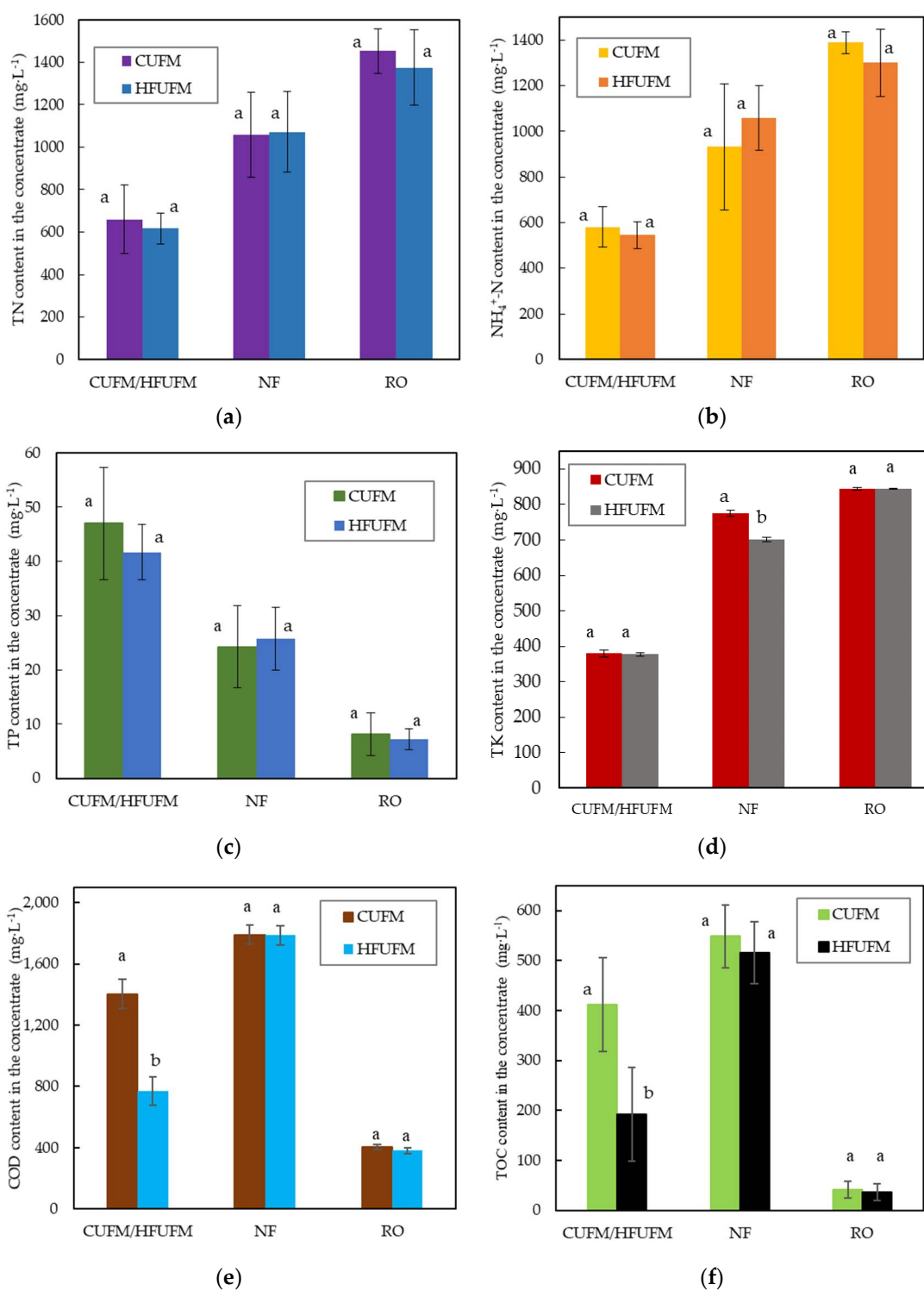


Figure S2. The content of (a) TN, (b) NH₄⁺-N, (c) TP, (d) TK, (e) COD, (f) TOC in the concentrates of the integrated process with HFUFM and CUFM pretreatments.

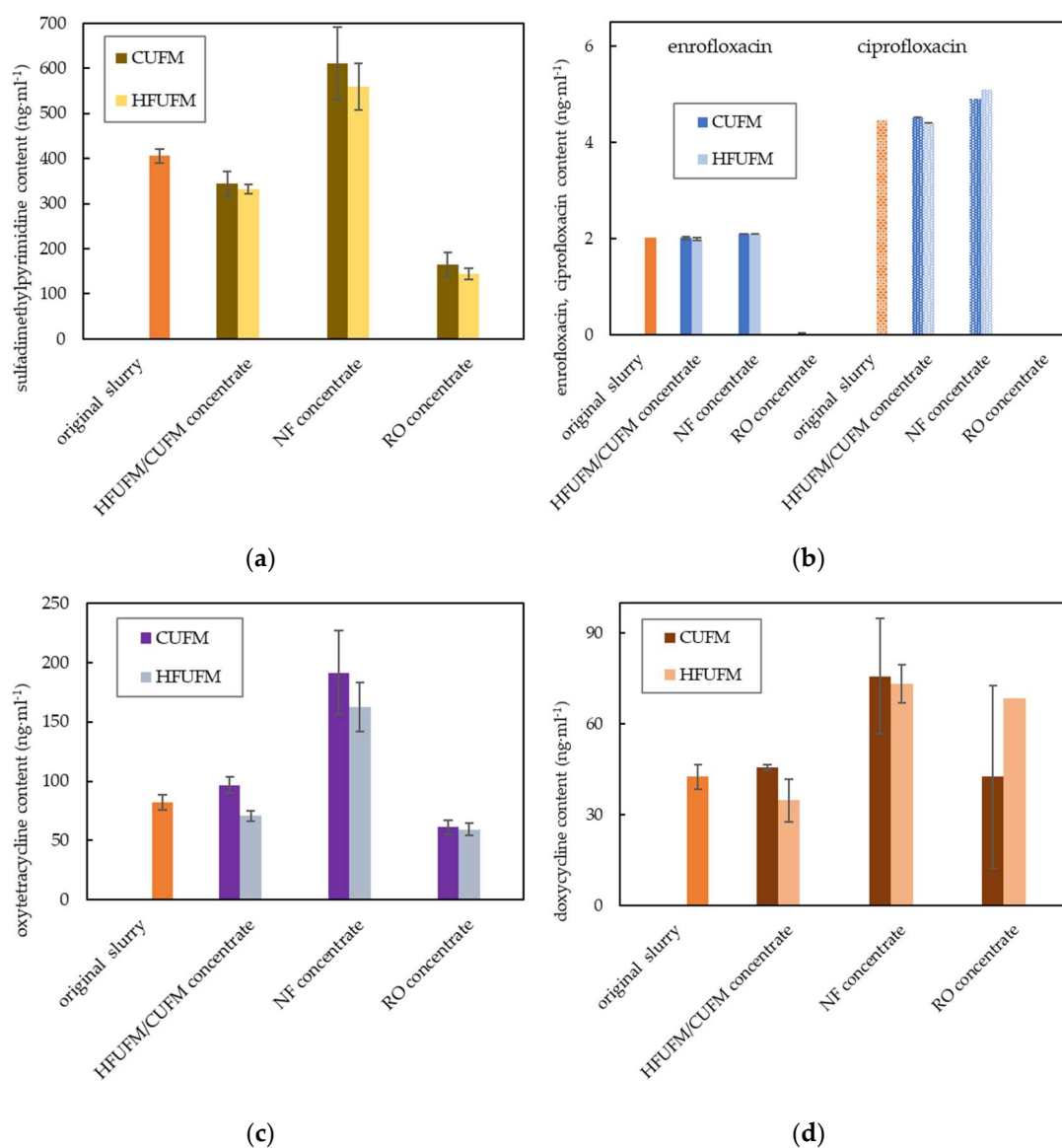


Figure S3. The content of (a) sulfadimethylpyrimidine, (b) enrofloxacin and ciprofloxacin, (c) oxytetracycline, (d) doxycycline in the concentrates of the integrated process with HFUFM and CUFM pretreatment.