

Potential of medium chain fatty acids production from municipal solid waste leachate: Effect of age and external electron donors

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Appendix A. Supplementary material

Table A1: Preliminary characterization of the five samples of fresh leachate for choosing the adequate sample for chain elongation (sample number 2 was chosen for chain elongation process).

Fresh leachate sample	pH	Electrical conductivity (ms/cm)	Redox (mV)	COD (mgO ₂ /L)	FFA (mmol/L)
1	4.48	11.45	-39.1	77,550	36.53
2	4.57	16.84	-40.5	78,180	37.95
3	4.07	13.08	-51.8	76,348	35.98
4	4.87	13.58	-47.8	77,307	37.61
5	4.54	10.58	-31.5	75,258	35.35

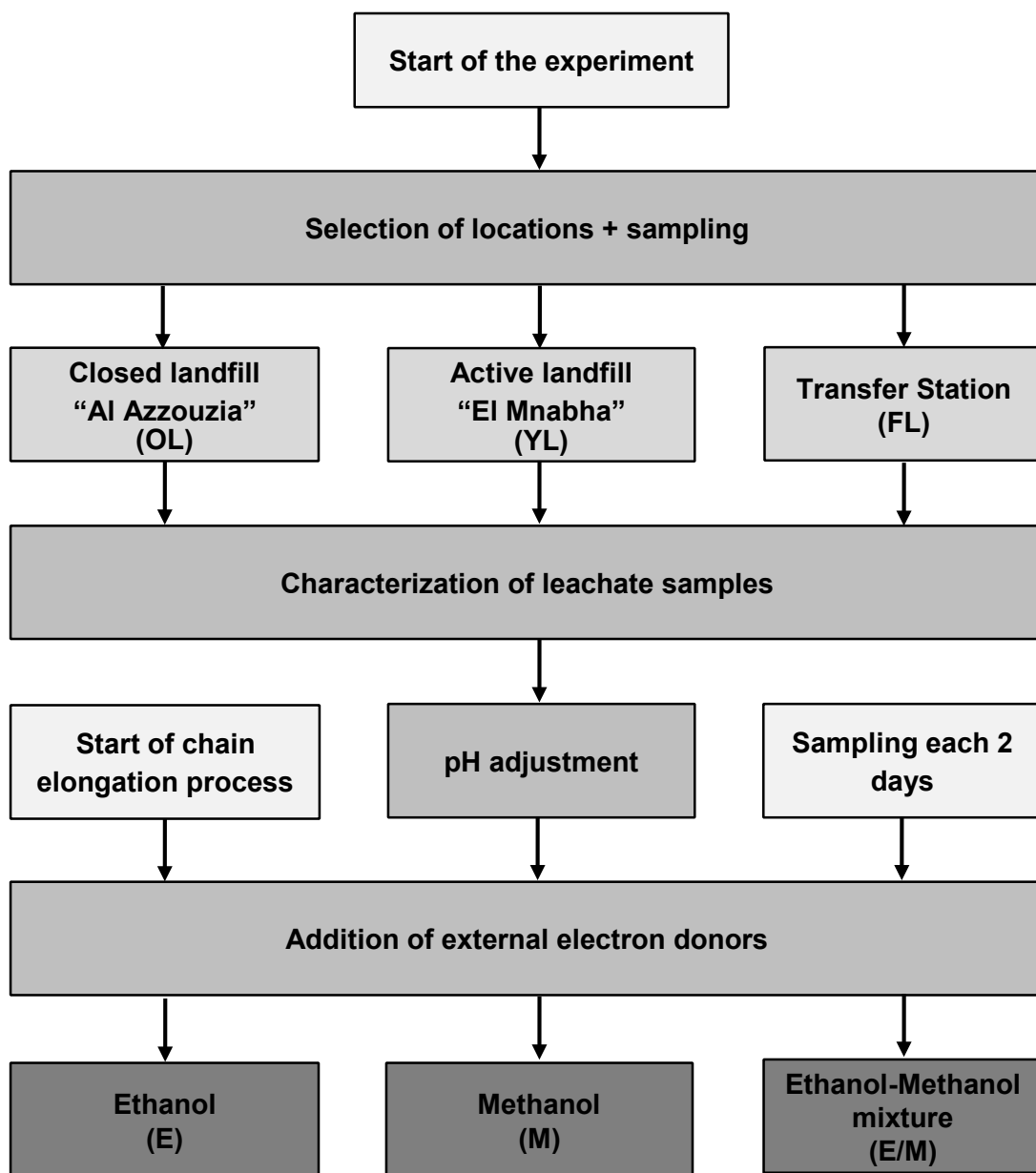


Figure A2: Chain elongation process, recapitulation schema

Table A3: Preliminary characterization of leachate samples

Parameter	Old leachate (OL)	Young leachate (YL)	Fresh leachate (FL)
pH	9.23 ± 0.52	8.23 ± 0.24	4.57 ± 0.45
Electrical conductivity [mS/cm]	177.51 ± 4.47	21.53 ± 3.25	13.08 ± 2.25
Redox potential [mV]	-398.81 ± 14.56	-254.35 ± 24.36	-40.34 ± 13.65
Chemical oxygen demand (COD) [mg O ₂ /L]	16,504.67 ± 1,504.57	125,956.67 ± 3,980.73	78,180.00 ± 2,606.00
Total nitrogen [mg N/L]	2,130.12 ± 17.23	6,223.74 ± 22.36	1,026.68 ± 65.24
Ammonium nitrogen [mg N/L]	690.58 ± 8.28	1,812.82 ± 10.63	343.81 ± 3.04
Nitrite [mg N/L]	12.14 ± 0.58	20.04 ± 1.64	38.21 ± 1.47
Total phosphorous [mg P/L]	0.92 ± 0.13	5.54 ± 0.35	9.81 ± 0.53
Orthophosphate [mg P/L]	1.11 ± 0.20	2.27 ± 0.34	1.98 ± 0.26
Sulfate [mg/L]	98.81 ± 9.01	889.20 ± 31.20	5,194.80 ± 56.25
Chloride [mg/L]	0.22 ± 0.04	1.41 ± 0.12	1.21 ± 0.08
Calcium [mg/L]	252 ± 7.32	264 ± 6.31	178 ± 5.36
Potassium [mg/L]	2387 ± 42.36	1365 ± 31.64	852 ± 21.57
Sodium [mg/L]	4756 ± 52.61	2381 ± 40.02	1056 ± 23.44
Free fatty acids (FFA) titration [mmol/L]	8.51 ± 0.58	62.95 ± 1.48	37.95 ± 0.61

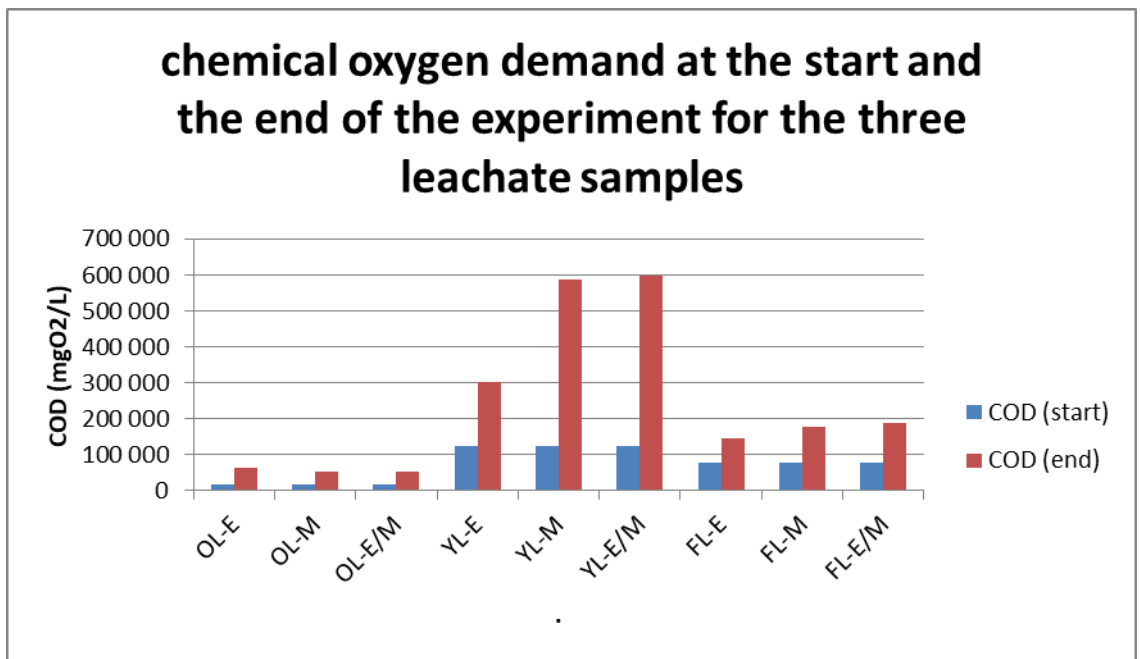


Figure A4: variation of COD at the start and the end of the chain elongation process of the three samples experiments.

Table A5: One-way ANOVA signification of age and alcohol effect on MCFA production

	Df	Sum square	Mean square	F value	Pr> (F)	Sig
Age	3	$4.289 \cdot 10^9$	$1.430 \cdot 10^9$	78.15	$> 2 \cdot 10^{-16}$	***
Residuals	44	$8.048 \cdot 10^8$	$1.829 \cdot 10^7$			
Electron donors	4	$4.30 \cdot 10^7$	$2.150 \cdot 10^7$	0.192	0.862	
Residuals	45	$5.05 \cdot 10^9$	$1.122 \cdot 10^8$			