

APPENDIX B
Pretreatment result

B.1 Acid Pretreatment Result

B.1.1. Sulfuric Acid (H₂SO₄) Pretreatment

1. The result of pretreatment product in liquid phase

Table B.1 The concentration result of monomeric sugar, acetic acid, citric acid, oxalic acid, furfural, HMF and soluble lignin in liquid phase after filtration

Sample Name	Content									
	Xylose	Glucose	Arabinose	Acetic acid	Citric acid	Oxalic acid	Formic acid	HMF	Furfural	Soluble lignin
	g/L	g/L	g/L	g/L	g/L	g/L	g/L	g/L	g/L	g/L
Pretreatment A-1	22.62	1.91	0.95	1.53	0.25	0.42	0.00	0.00	0.16	0.42
Pretreatment A-2	21.85	1.85	0.88	1.34	0.22	0.43	0.00	0.00	0.18	0.43
Washed A-1	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
Washed A-2	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06
Pretreatment B-1	22.62	1.91	0.95	1.53	0.25	0.42	0.00	0.00	0.00	0.42
Pretreatment B-2	21.85	1.85	0.88	1.34	0.22	0.43	0.00	0.00	0.00	0.43
Washed B-1	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
Washed B-2	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06
Pretreatment C-1	17.68	1.24	0.92	1.52	0.12	0.35	0.00	0.00	0.03	0.31
Pretreatment C-2	16.09	1.12	0.82	1.36	0.12	0.32	0.00	0.00	0.04	0.31
Washed C-1	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
Washed C-2	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
Pretreatment D-1	13.54	10.92	0.93	1.93	0.17	0.46	0.83	0.07	2.66	0.45
Pretreatment D-2	14.73	12.19	1.02	2.31	0.20	0.53	0.93	0.08	2.73	0.39
Washed D-1	0.17	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
Washed D-2	0.13	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
Pretreatment E-1	22.51	2.13	1.02	1.62	0.24	0.32	0.00	0.00	0.31	0.40
Pretreatment E-2	16.41	1.54	0.74	1.34	0.19	0.23	0.00	0.00	0.28	0.38
Washed E-1	0.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
Washed E-2	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
Pretreatment F-1	21.56	2.05	1.05	1.55	0.26	0.33	0.00	0.00	0.37	0.35

Table B.1 The concentration result of monomeric sugar, acetic acid, citric acid, oxalic acid, furfural, HMF and soluble lignin in liquid phase after filtration (Cont.)

[illegible]

Table B.2 The concentration result of monomeric sugar, acetic acid, citric acid, oxalic acid, furfural, HMF and soluble lignin in liquid phase after filtration.

Sample Name	Content									
	Xylose	Glucose	Arabinose	Acetic acid	Citric acid	Oxalic acid	Formic acid	HMF	Furfural	Lignin
	(g/g _{biomass})	(g/g _{biomass})	(g/g _{biomass})	(g/g _{biomass})	(g/g _{biomass})	(g/g _{biomass})	(g/g _{biomass})	(g/g _{biomass})	(g/g _{biomass})	(g/g _{biomass})
Pretreatment A-1	0.0564	0.0048	0.0024	0.0038	0.0006	0.0010	0.0000	0.0000	0.1615	0.0011
Pretreatment A-2	0.0515	0.0044	0.0021	0.0032	0.0005	0.0010	0.0000	0.0000	0.1833	0.0010
Pretreatment B-1	0.0339	0.0013	0.0017	0.0032	0.0000	0.0010	0.0000	0.0000	0.0000	0.0008
Pretreatment B-2	0.0256	0.0010	0.0013	0.0024	0.0000	0.0008	0.0000	0.0000	0.0000	0.0008
Pretreatment C-1	0.0583	0.0055	0.0027	0.0042	0.0006	0.0008	0.0000	0.0000	0.0339	0.0010
Pretreatment C-2	0.0412	0.0039	0.0019	0.0034	0.0005	0.0006	0.0000	0.0000	0.0357	0.0010
Pretreatment D-1	0.0533	0.0051	0.0026	0.0038	0.0006	0.0008	0.0000	0.0706	2.6645	0.0009
Pretreatment D-2	0.0546	0.0051	0.0027	0.0041	0.0006	0.0008	0.0000	0.0752	2.7284	0.0009
Pretreatment E-1	0.0422	0.0029	0.0022	0.0036	0.0003	0.0008	0.0000	0.0000	0.3058	0.0007
Pretreatment E-2	0.0385	0.0027	0.0020	0.0032	0.0003	0.0008	0.0000	0.0000	0.2839	0.0007
Pretreatment F-1	0.0327	0.0264	0.0023	0.0047	0.0004	0.0011	0.0020	0.0000	0.3737	0.0011
Pretreatment F-2	0.0360	0.0298	0.0025	0.0056	0.0005	0.0013	0.0023	0.0000	0.3621	0.0010

B.1.2. Hydrochloric acid (HCl) Pretreatment

1. The result of pretreatment product in liquid phase

Table B.3 The concentration result of monomeric sugar, acetic acid, citric acid, oxalic acid, furfural, HMF and soluble lignin in liquid phase after filtration (Cont).

Sample Name	Content									
	Xylose	Glucose	Arabinose	Acetic acid	Citric acid	Oxalic acid	Formic acid	HMF	Furfural	Soluble lignin
	g/L	g/L	g/L	g/L	g/L	g/L	g/L	g/L	g/L	g/L
Pretreatment M-1	23.37	2.11	0.78	1.59	0.28	0.20	0.00	0.70	0.03	0.37
Pretreatment M-2	26.26	2.47	1.15	2.21	0.30	0.31	0.00	0.66	0.03	0.34
Washed M-1	0.80	0.06	0.04	0.07	0.01	0.01	0.00	0.00	0.00	0.08
Washed M-2	0.73	0.06	0.03	0.06	0.00	0.01	0.00	0.00	0.00	0.09
Pretreatment N-1	16.38	0.80	0.83	1.64	0.09	0.30	0.00	0.04	0.00	0.45
Pretreatment N-2	17.69	0.87	0.88	1.70	0.09	0.30	0.00	0.06	0.00	0.42
Washed N-1	0.55	0.02	0.03	0.04	0.00	0.02	0.00	0.00	0.00	0.09
Washed N-2	0.51	0.02	0.03	0.05	0.00	0.01	0.00	0.00	0.00	0.08
Pretreatment Q-1	25.80	1.91	1.25	2.40	0.22	0.17	0.00	0.65	0.00	0.25
Pretreatment Q-2	27.16	1.96	1.35	2.64	0.22	0.22	0.00	0.64	0.00	0.23
Washed Q-1	0.69	0.04	0.04	0.07	0.00	0.00	0.00	0.00	0.00	0.04
Washed Q-2	0.74	0.04	0.03	0.07	0.00	0.00	0.00	0.00	0.00	0.04
Pretreatment R-1	1.93	18.90	0.33	2.58	0.13	0.32	0.00	2.51	0.22	0.51
Pretreatment R-2	1.73	16.87	0.31	2.29	0.10	0.29	0.00	2.55	0.23	0.48
Washed R-1	0.05	0.54	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.05
Washed R-2	0.05	0.44	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.04
Pretreatment O-1	21.39	2.51	1.15	2.07	0.30	0.24	0.00	1.35	0.01	0.30
Pretreatment O-2	19.98	2.20	1.00	1.88	0.24	0.19	0.00	1.19	0.04	0.27
Washed O-1	0.63	0.06	0.03	0.05	0.01	0.01	0.00	0.04	0.00	0.04
Washed O-2	0.71	0.08	0.04	0.08	0.01	0.01	0.00	0.00	0.00	0.04
Pretreatment P-1	26.26	2.88	1.33	2.38	0.34	0.25	0.00	1.37	0.00	0.25

Table B.3 The concentration result of monomeric sugar, acetic acid, citric acid, oxalic acid, furfural, HMF and soluble lignin in liquid phase after filtration. (Cont.)

Sample Name	Content									
	Xylose	Glucose	Arabinose	Acetic acid	Citric acid	Oxalic acid	Formic acid	HMF	Furfural	Soluble lignin
	g/L	g/L	g/L	g/L	g/L	g/L	g/L	g/L	g/L	g/L
Pretreatment P-2	20.78	2.23	1.06	1.88	0.24	0.19	0.00	1.18	0.00	0.29
Washed P-1	0.79	0.07	0.04	0.03	0.01	0.01	0.00	0.01	0.00	0.05
Washed P-2	0.57	0.05	0.04	0.05	0.00	0.01	0.00	0.00	0.00	0.05

Table B.4 The concentration result of monomeric sugar, acetic acid, formic acid, citric acid, oxalic acid, furfural, HMF and soluble lignin in liquid phase after filtration

Sample Name	Content									
	Xylose	Glucose	Arabinose	Acetic acid	Citric acid	Oxalic acid	Formic acid	Furfural	HMF	Lignin
	(g/g _{biomass})	(g/g _{biomass})	(g/g _{biomass})	(g/g _{biomass})	(g/g _{biomass})	(g/g _{biomass})	(g/g _{biomass})	(g/g _{biomass})	(g/g _{biomass})	(g/g _{biomass})
Pretreatment M-1	0.0530	0.0048	0.0018	0.0036	0.0006	0.0004	0.0000	0.0016	0.0001	0.0008
Pretreatment M-2	0.0602	0.0057	0.0026	0.0051	0.0007	0.0007	0.0000	0.0015	0.0001	0.0008
Pretreatment N-1	0.0418	0.0021	0.0021	0.0042	0.0002	0.0008	0.0000	0.0001	0.0000	0.0011
Pretreatment N-2	0.0532	0.0026	0.0026	0.0051	0.0003	0.0009	0.0000	0.0002	0.0000	0.0013
Pretreatment O-1	0.0694	0.0052	0.0031	0.0065	0.0008	0.0007	0.0000	0.0018	0.0000	0.0007
Pretreatment O-2	0.0690	0.0050	0.0025	0.0067	0.0006	0.0005	0.0000	0.0016	0.0000	0.0006
Pretreatment P-1	0.0048	0.0472	0.0033	0.0064	0.0009	0.0006	0.0000	0.0063	0.0006	0.0013
Pretreatment P-2	0.0044	0.0427	0.0027	0.0058	0.0006	0.0005	0.0000	0.0065	0.0006	0.0012
Pretreatment Q-1	0.0569	0.0067	0.0033	0.0055	0.0006	0.0005	0.0000	0.0036	0.0000	0.0008
Pretreatment Q-2	0.0480	0.0053	0.0032	0.0045	0.0005	0.0005	0.0000	0.0029	0.0001	0.0007
Pretreatment R-1	0.0770	0.0084	0.0010	0.0070	0.0004	0.0009	0.0000	0.0040	0.0000	0.0007
Pretreatment R-2	0.0597	0.0064	0.0009	0.0054	0.0003	0.0008	0.0000	0.0034	0.0000	0.0008

B.2 Alkaline Pretreatment Result

B.2.1. Sodium hydroxide (NaOH) Pretreatment

1. The result of pretreatment product in liquid phase

Table B.5 The concentration result of monomeric sugar, acetic acid, formic acid citric acid, oxalic acid, furfural, HMF and soluble lignin in liquid phase after filtration.

Sample Name	Content									
	Xylose	Glucose	Arabinose	Acetic acid	Citric acid	Oxalic acid	Formic acid	HMF	Furfural	Soluble lignin
	g/L	g/L	g/L	g/L	g/L	g/L	g/L	g/L	g/L	g/L
Pretreatment G-1	0.00	0.00	0.00	3.62	0.07	0.08	1.13	0.00	0.00	22.42
Pretreatment G-2	0.00	0.00	0.00	3.96	0.09	0.09	1.20	0.00	0.00	22.91
Washed G-1	0.00	0.00	0.00	0.51	0.00	0.02	0.15	0.00	0.00	2.81
Washed G-2	0.00	0.00	0.00	0.41	0.00	0.03	0.11	0.00	0.00	2.25
Pretreatment H-1	0.00	0.00	0.00	3.69	0.06	0.09	0.89	0.00	0.00	23.00
Pretreatment H-2	0.00	0.00	0.00	2.60	0.05	0.08	0.68	0.00	0.00	15.39
Washed H-1	0.00	0.00	0.00	0.42	0.00	0.03	0.11	0.00	0.00	2.81
Washed H-2	0.00	0.00	0.00	0.66	0.00	0.03	0.16	0.00	0.00	3.96
Pretreatment I-1	0.05	0.00	0.00	3.14	0.14	0.41	2.90	0.00	0.00	38.75
Pretreatment I-2	0.07	0.00	0.00	3.18	0.15	0.42	2.87	0.00	0.00	47.17
Washed I-1	0.00	0.00	0.00	0.16	0.00	0.02	0.05	0.00	0.00	2.32
Washed I-2	0.00	0.00	0.00	0.17	0.00	0.02	0.05	0.00	0.00	2.25
Pretreatment J-1	0.08	0.00	0.00	2.68	0.13	0.40	3.43	0.00	0.00	50.46
Pretreatment J-2	0.06	0.00	0.00	2.73	0.13	0.40	3.43	0.00	0.00	71.19
Washed J-1	0.00	0.00	0.00	0.06	0.00	0.00	0.02	0.00	0.00	1.26
Washed J-2	0.00	0.00	0.00	0.07	0.00	0.00	0.02	0.00	0.00	1.57
Pretreatment K-1	0.00	0.00	0.00	3.74	0.11	0.45	2.41	0.00	0.00	63.72
Pretreatment K-2	0.00	0.00	0.00	3.63	0.11	0.42	2.56	0.00	0.00	57.95
Washed K-1	0.00	0.00	0.00	0.18	0.00	0.02	0.09	0.00	0.00	2.38
Washed K-2	0.00	0.00	0.00	0.17	0.00	0.02	0.11	0.00	0.00	2.71
Pretreatment L-1	0.08	0.00	0.00	3.67	0.10	0.44	4.47	0.00	0.00	63.62

Table B.5 The concentration result of monomeric sugar, acetic acid, citric acid, oxalic acid, furfural, HMF and soluble lignin in liquid phase after filtration (Cont.)

Sample Name	Content									
	Xylose	Glucose	Arabinose	Acetic acid	Citric acid	Oxalic acid	Formic acid	HMF	Furfural	Soluble lignin
	g/L	g/L	g/L	g/L	g/L	g/L	g/L	g/L	g/L	g/L
Pretreatment L-2	0.06	0.00	0.00	3.63	0.12	0.43	4.50	0.00	0.00	66.11
Washed L-1	0.00	0.00	0.00	0.18	0.00	0.02	0.13	0.00	0.00	2.85
Washed L-2	0.00	0.00	0.00	0.19	0.00	0.02	0.12	0.00	0.00	2.72

Table B.6 The concentration result of monomeric sugar, acetic acid, formic acid, citric acid, oxalic acid, furfural, HMF and soluble lignin in liquid phase after filtration

Sample Name	Content									
	Xylose	Glucose	Arabinose	Acetic acid	Citric acid	Oxalic acid	Formic acid	Furfural	HMF	Lignin
	(g/g _{biomass})	(g/g _{biomass})	(g/g _{biomass})	(g/g _{biomass})	(g/g _{biomass})	(g/g _{biomass})	(g/g _{biomass})	(g/g _{biomass})	(g/g _{biomass})	(g/g _{biomass})
Pretreatment G-1	0.0000	0.0000	0.0000	0.0045	0.0001	0.0001	0.0014	0.0000	0.0000	0.0282
Pretreatment G-2	0.0000	0.0000	0.0000	0.0045	0.0001	0.0001	0.0014	0.0000	0.0000	0.0259
Pretreatment H-1	0.0000	0.0000	0.0000	0.0046	0.0001	0.0001	0.0011	0.0000	0.0000	0.0285
Pretreatment H-2	0.0000	0.0000	0.0000	0.0024	0.0000	0.0001	0.0006	0.0000	0.0000	0.0145
Pretreatment I-1	0.0001	0.0000	0.0000	0.0071	0.0003	0.0009	0.0066	0.0000	0.0000	0.0880
Pretreatment I-2	0.0001	0.0000	0.0000	0.0065	0.0003	0.0009	0.0059	0.0000	0.0000	0.0963
Pretreatment J-1	0.0002	0.0000	0.0000	0.0059	0.0003	0.0009	0.0076	0.0000	0.0000	0.1113
Pretreatment J-2	0.0001	0.0000	0.0000	0.0054	0.0003	0.0008	0.0068	0.0000	0.0000	0.1416
Pretreatment K-1	0.0000	0.0000	0.0000	0.0073	0.0002	0.0009	0.0047	0.0000	0.0000	0.1235
Pretreatment K-2	0.0000	0.0000	0.0000	0.0069	0.0002	0.0008	0.0048	0.0000	0.0000	0.1096
Pretreatment L-1	0.0002	0.0000	0.0000	0.0086	0.0002	0.0010	0.0104	0.0000	0.0000	0.1487
Pretreatment L-2	0.0001	0.0000	0.0000	0.0081	0.0003	0.0010	0.0101	0.0000	0.0000	0.1479

B.2.2. Potassium Hydroxide (KOH) Pretreatment

1. The result of pretreatment product in liquid phase

Table B.7 The concentration result of monomeric sugar, acetic acid, formic acid citric acid, oxalic acid, furfural, HMF and soluble lignin in liquid phase after filtration.

Sample Name	Content									
	Xylose	Glucose	Arabinose	Acetic acid	Citric acid	Oxalic acid	Formic acid	HMF	Furfural	Soluble lignin
	g/L	g/L	g/L	g/L	g/L	g/L	g/L	g/L	g/L	g/L
Pretreatment S-1	0.00	0.00	0.00	1.51	0.03	0.03	0.51	10.83	0.00	0.00
Pretreatment S-2	0.00	0.00	0.00	1.34	0.04	0.02	0.49	15.00	0.00	0.00
Washed S-1	0.00	0.00	0.00	0.12	0.00	0.02	0.05	1.17	0.00	0.00
Washed S-2	0.00	0.00	0.00	0.12	0.00	0.03	0.08	1.28	0.00	0.00
Pretreatment T-1	0.00	0.00	0.00	2.95	0.11	0.41	2.59	16.49	0.00	0.00
Pretreatment T-2	0.00	0.00	0.00	2.30	0.06	0.05	0.44	17.69	0.00	0.00
Washed T-1	0.00	0.00	0.00	0.15	0.00	0.03	0.15	2.64	0.00	0.00
Washed T-2	0.00	0.00	0.00	0.16	0.00	0.02	0.12	2.33	0.00	0.00
Pretreatment U-1	0.00	0.00	0.00	2.83	0.09	0.49	1.83	53.60	0.00	0.00
Pretreatment U-2	0.00	0.00	0.00	2.74	0.13	0.53	1.93	56.63	0.00	0.00
Washed U-1	0.00	0.00	0.00	0.12	0.00	0.00	0.07	2.11	0.00	0.00
Washed U-2	0.00	0.00	0.00	0.07	0.00	0.00	0.06	1.90	0.00	0.00
Pretreatment V-1	0.00	0.00	0.00	2.51	0.11	0.56	3.70	81.06	0.00	0.00
Pretreatment V-2	0.00	0.00	0.00	2.50	0.11	0.55	3.67	84.69	0.00	0.00
Washed V-1	0.00	0.00	0.00	0.08	0.00	0.00	0.12	2.37	0.00	0.00
Washed V-2	0.00	0.00	0.00	0.08	0.00	0.00	0.09	2.22	0.00	0.00
Pretreatment W-1	0.00	0.00	0.00	2.08	0.05	0.08	0.42	72.21	0.00	0.00
Pretreatment W-2	0.00	0.00	0.00	2.95	0.10	0.33	2.52	58.06	0.00	0.00
Washed W-1	0.00	0.00	0.00	0.27	0.00	0.00	0.00	2.60	0.00	0.00
Washed W-2	0.00	0.00	0.00	0.29	0.00	0.00	0.00	2.42	0.00	0.00
Pretreatment X-1	0.00	0.00	0.00	2.62	0.12	0.27	2.14	50.79	0.00	0.00

Table B.7 The concentration result of monomeric sugar, acetic acid, citric acid, oxalic acid, furfural, HMF and soluble lignin in liquid phase after filtration (Cont.)

Sample Name	Content									
	Xylose	Glucose	Arabinose	Acetic acid	Citric acid	Oxalic acid	Formic acid	HMF	Furfural	Soluble lignin
	g/L	g/L	g/L	g/L	g/L	g/L	g/L	g/L	g/L	g/L
Pretreatment X-2	0.00	0.00	0.00	2.76	0.11	0.28	2.13	53.16	0.00	0.00
Washed X-1	0.00	0.00	0.00	0.11	0.00	0.00	0.09	1.94	0.00	0.00
Washed X-2	0.00	0.00	0.00	0.11	0.00	0.00	0.07	1.89	0.00	0.00

Table B.8 The concentration result of monomeric sugar, acetic acid, formic acid, citric acid, oxalic acid, furfural, HMF and soluble lignin in liquid phase after filtration.

Sample Name	Content									
	Xylose	Glucose	Arabinose	Acetic acid	Citric acid	Oxalic acid	Formic acid	Lignin	HMF	Furfural
	(g/g _{biomass})	(g/g _{biomass})	(g/g _{biomass})	(g/g _{biomass})	(g/g _{biomass})	(g/g _{biomass})	(g/g _{biomass})	(g/g _{biomass})	(g/g _{biomass})	(g/g _{biomass})
Pretreatment S-1	0.0000	0.0000	0.0000	1.5077	0.0321	0.0293	0.5142	10.8281	0.0000	0.0000
Pretreatment S-2	0.0000	0.0000	0.0000	1.3445	0.0390	0.0220	0.4855	15.0011	0.0000	0.0000
Pretreatment T-1	0.0000	0.0000	0.0000	2.9534	0.1072	0.4064	2.5863	16.4872	0.0000	0.0000
Pretreatment T-2	0.0000	0.0000	0.0000	2.2988	0.0569	0.0502	0.4438	17.6879	0.0000	0.0000
Pretreatment U-1	0.0000	0.0000	0.0000	2.8275	0.0910	0.4923	1.8332	53.6022	0.0000	0.0000
Pretreatment U-2	0.0000	0.0000	0.0000	2.7392	0.1337	0.5312	1.9294	56.6336	0.0000	0.0000
Pretreatment V-1	0.0000	0.0000	0.0000	2.5087	0.1147	0.5637	3.7020	81.0629	0.0000	0.0000
Pretreatment V-2	0.0000	0.0000	0.0000	2.5041	0.1126	0.5471	3.6650	84.6920	0.0000	0.0000
Pretreatment W-1	0.0000	0.0000	0.0000	2.0830	0.0485	0.0767	0.4214	72.2109	0.0000	0.0000
Pretreatment W-2	0.0000	0.0000	0.0000	2.9458	0.1018	0.3320	2.5222	58.0605	0.0000	0.0000
Pretreatment X-1	0.0000	0.0000	0.0000	2.6151	0.1153	0.2713	2.1412	50.7861	0.0000	0.0000
Pretreatment X-2	0.0000	0.0000	0.0000	2.7575	0.1136	0.2846	2.1326	53.1553	0.0000	0.0000

B.3 Distillate water pretreatment (Blank)

B.3.1 The result of pretreatment product in liquid phase

Table B.9 The concentration result of monomeric sugar, acetic acid, formic acid citric acid, oxalic acid, furfural, HMF and soluble lignin in liquid phase after filtration.

Sample Name	Content								
	Xylose	Glucose	Arabinose	Acetic acid	Citric acid	Oxalic acid	Furfural	HMF	Lignin
	g/L	g/L	g/L	g/L	g/L	g/L	g/L	g/L	g/L
Blank- 1	1.28	0.12	0.49	0.03	0.05	0.00	0.00	0.00	2.71
Washed blank -1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.29
Blank - 2	1.08	0.10	0.39	0.00	0.00	0.00	0.00	0.00	1.86
Washed blank -2	0.19	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.46
Blank - 3	0.58	0.05	0.22	0.00	0.04	0.02	0.00	0.00	3.34
Washed blank - 3	0.14	0.01	0.07	0.00	0.00	0.00	0.00	0.00	0.78
Blank – 4	0.45	0.00	0.19	0.00	0.00	0.00	0.00	0.00	1.44
Washed blank - 4	0.13	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.34
Blank - 5	0.92	0.08	0.30	0.00	0.00	0.05	0.00	0.00	2.81
Washed blank - 5	0.22	0.00	0.09	0.00	0.00	0.01	0.00	0.00	0.50
Blank – 6	1.31	0.22	0.47	0.00	0.00	0.00	0.00	0.00	1.83
Washed blank - 6	0.31	0.02	0.10	0.00	0.03	0.00	0.00	0.00	0.57

Table B.10 The concentration result of monomeric sugar, acetic acid, formic acid, citric acid, oxalic acid, furfural, HMF and soluble lignin in liquid phase after filtration.

Sample Name	Content							
	Xylose	Glucose	Acetic acid	Citric acid	Oxalic acid	Furfural	HMF	Lignin
	(g/g _{biomass})	(g/g _{biomass})	(g/g _{biomass})	(g/g _{biomass})	(g/g _{biomass})	(g/g _{biomass})	(g/g _{biomass})	(g/g _{biomass})
Blank - 1	0.0020	0.0002	0.0000	0.0001	0.0000	0.0000	0.0000	0.0043
Blank - 2	0.0013	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0023
Blank - 3	0.0010	0.0001	0.0000	0.0001	0.0000	0.0000	0.0000	0.0055
Blank - 4	0.0008	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0025
Blank - 5	0.0015	0.0001	0.0000	0.0000	0.0001	0.0000	0.0000	0.0046
Blank - 6	0.0023	0.0004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0032

B.4 Enzymatic Hydrolysis

Table B.11 The concentration result of monomeric sugars, acetic acid, citric acid, oxalic acid, furfural and HMF after hydrolysis at the reaction time of 48 hours.

Sample name	Content							
	Xylose	Glucose	Acetic acid	Citric acid	Oxalic acid	Lactic acid	Furfural	HMF
	g/l	g/l	g/l	g/l	g/l	g/l	g/l	g/l
Hydrolysis A-2	0.71	2.74	0.00	6.94	0.00	0.00	0.00	0.00
Hydrolysis B-2	0.45	4.25	0.00	7.58	0.00	0.00	0.00	0.00
Hydrolysis C-2	0.36	3.32	0.00	7.66	0.00	0.00	0.00	0.00
Hydrolysis D-2	0.44	4.55	0.00	7.93	0.00	0.00	0.00	0.00
Hydrolysis E-2	0.74	3.46	0.00	7.29	0.00	0.00	0.00	0.00
Hydrolysis F-2	0.04	3.51	0.00	7.13	0.00	0.00	0.00	0.00
Hydrolysis G-2	1.98	4.84	0.00	6.81	0.00	0.00	0.00	0.00
Hydrolysis H-2	1.75	4.39	0.00	6.90	0.00	0.00	0.00	0.00
Hydrolysis I-2	6.25	17.33	0.00	6.77	0.31	0.00	0.00	0.00
Hydrolysis J-2	6.59	19.14	0.00	7.34	0.31	0.00	0.00	0.00
Hydrolysis K-2	3.83	14.28	0.00	5.53	0.18	0.00	0.00	0.00
Hydrolysis L-2	5.84	19.31	0.00	6.55	0.25	0.00	0.00	0.00
Hydrolysis M-2	0.25	3.71	0.00	6.61	0.00	0.00	0.00	0.00
Hydrolysis N-2	0.62	2.80	0.00	5.75	0.00	0.00	0.00	0.00
Hydrolysis O-2	0.17	3.94	0.00	6.73	0.00	0.00	0.00	0.00
Hydrolysis P-2	0.19	3.55	0.00	6.78	0.00	0.00	0.00	0.00
Hydrolysis Q-2	0.39	2.55	0.00	6.35	0.00	0.00	0.00	0.00
Hydrolysis R-2	0.00	2.10	0.00	5.96	0.00	0.00	0.00	0.00
Hydrolysis S-2	1.22	4.30	0.00	6.90	0.00	0.00	0.00	0.00
Hydrolysis T-2	1.20	3.90	0.00	7.15	0.12	0.00	0.00	0.00
Hydrolysis U-2	3.47	12.48	0.00	6.95	0.17	0.00	0.00	0.00
Hydrolysis V-2	4.58	15.34	0.00	7.85	0.23	0.00	0.00	0.00
Hydrolysis W-2	4.60	15.32	0.00	6.84	0.18	0.00	0.00	0.00
Hydrolysis X-2	5.02	17.97	0.00	7.11	0.25	0.00	0.00	0.00
H-Blank-1-2	0.52	1.32	0.00	6.13	0.04	0.09	0.00	0.00
H-Blank-2-2	0.50	1.01	0.00	5.01	0.05	0.00	0.00	0.00
H-Blank-3-2	0.63	1.61	0.00	6.24	0.06	0.00	0.00	0.00
H-Blank-4-2	0.61	1.68	0.00	6.34	0.07	0.00	0.00	0.00
H-Blank-5-2	0.77	1.79	0.00	7.28	0.07	0.00	0.00	0.00
H-Blank-6-2	0.93	2.03	0.07	7.06	0.08	0.00	0.00	0.00

Table B.12 The concentration result of monomeric sugars, acetic acid, citric acid, oxalic acid, furfural and HMF after hydrolysis at the reaction time of 0 hours.

Sample name	Content							
	Xylose	Glucose	Acetic acid	Citric acid	Oxalic acid	Lactic acid	Furfural	HMF
	g/l	g/l	g/l	g/l	g/l	g/l	g/l	g/l
Hydrolysis A-0	0.00	0.00	0.00	8.35	0.00	0.00	0.00	0.00
Hydrolysis B-0	0.00	0.00	0.00	8.40	0.00	0.00	0.00	0.00
Hydrolysis C-0	0.00	0.00	0.00	8.24	0.00	0.00	0.00	0.00
Hydrolysis D-0	0.00	0.00	0.00	8.48	0.00	0.00	0.00	0.00
Hydrolysis E-0	0.00	0.00	0.00	8.40	0.00	0.00	0.00	0.00
Hydrolysis F-0	0.00	0.00	0.00	8.52	0.00	0.00	0.00	0.00
Hydrolysis G-0	0.19	0.22	0.00	8.20	0.00	0.00	0.00	0.00
Hydrolysis H-0	0.27	0.32	0.00	8.67	0.00	0.00	0.00	0.00
Hydrolysis I-0	0.18	0.23	0.00	8.47	0.00	0.00	0.00	0.00
Hydrolysis J-0	0.13	0.15	0.00	8.40	0.00	0.00	0.00	0.00
Hydrolysis K-0	0.15	0.21	0.00	8.44	0.00	0.00	0.00	0.00
Hydrolysis L-0	0.18	0.21	0.00	8.28	0.00	0.00	0.00	0.00
Hydrolysis M-0	0.03	0.04	0.00	8.63	0.00	0.00	0.00	0.00
Hydrolysis N-0	0.05	0.03	0.00	8.65	0.00	0.00	0.00	0.00
Hydrolysis O-0	0.04	0.04	0.00	8.56	0.00	0.00	0.00	0.00
Hydrolysis P-0	0.02	0.03	0.00	8.60	0.00	0.00	0.00	0.00
Hydrolysis Q-0	0.04	0.04	0.00	8.61	0.00	0.00	0.00	0.00
Hydrolysis R-0	0.03	0.12	0.00	8.62	0.00	0.00	0.00	0.00
Hydrolysis S-0	0.17	0.19	0.00	8.67	0.00	0.00	0.00	0.00
Hydrolysis T-0	0.14	0.16	0.00	8.50	0.00	0.00	0.00	0.00
Hydrolysis U-0	0.20	0.21	0.00	8.47	0.00	0.00	0.00	0.00
Hydrolysis V-0	0.12	0.17	0.00	8.48	0.00	0.00	0.00	0.00
Hydrolysis W-0	0.12	0.18	0.00	8.35	0.00	0.00	0.00	0.00
Hydrolysis X-0	0.13	0.16	0.00	7.84	0.00	0.00	0.00	0.00
H-Blank-1-0	0.14	0.13	0.00	8.50	0.00	0.00	0.00	0.00
H-Blank-2-0	0.18	0.15	0.00	8.53	0.00	0.00	0.00	0.00
H-Blank-3-0	0.25	0.17	0.00	8.43	0.00	0.00	0.00	0.00
H-Blank-4-0	0.25	0.21	0.00	8.51	0.00	0.00	0.00	0.00
H-Blank-5-0	0.25	0.16	0.00	8.43	0.00	0.00	0.00	0.00
H-Blank-6-0	0.28	0.20	0.00	8.63	0.00	0.00	0.00	0.00