Evolution process of humins derived from cellulose by approach of humins extraction

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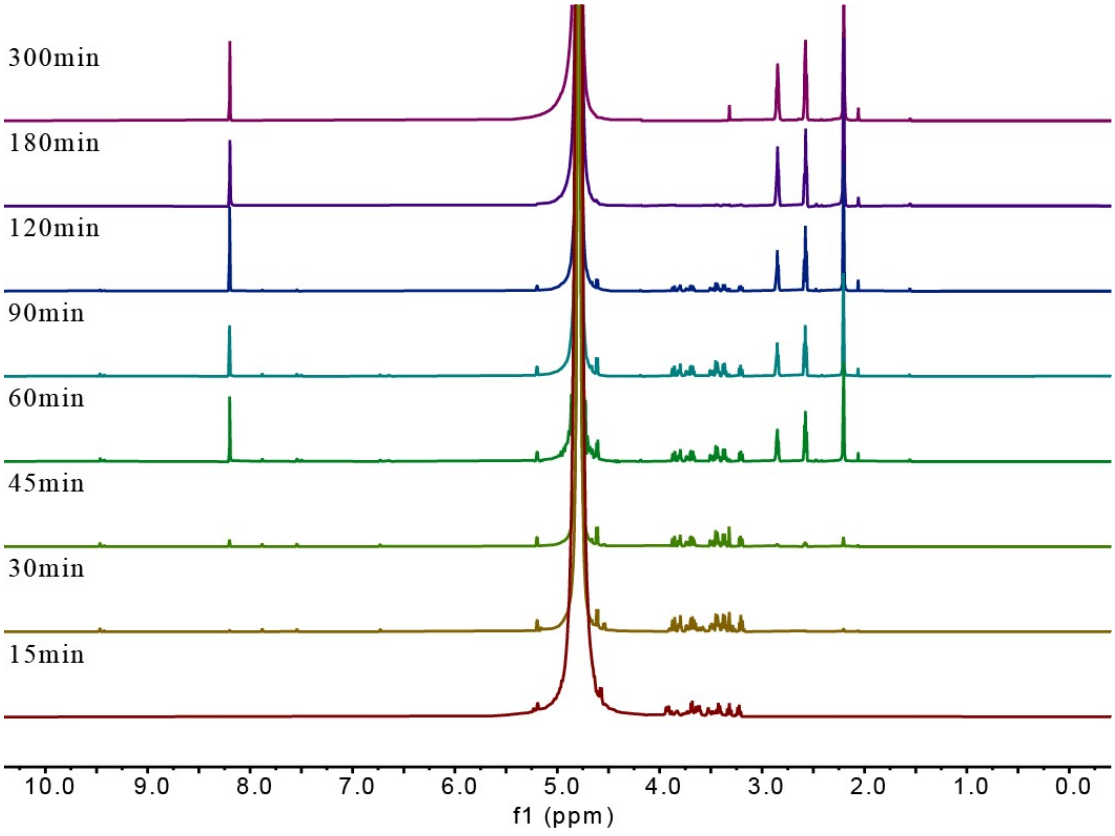

Figure S1. ^{1}H NMR spectra of the reaction mixture of cellulose at 170 ℃.

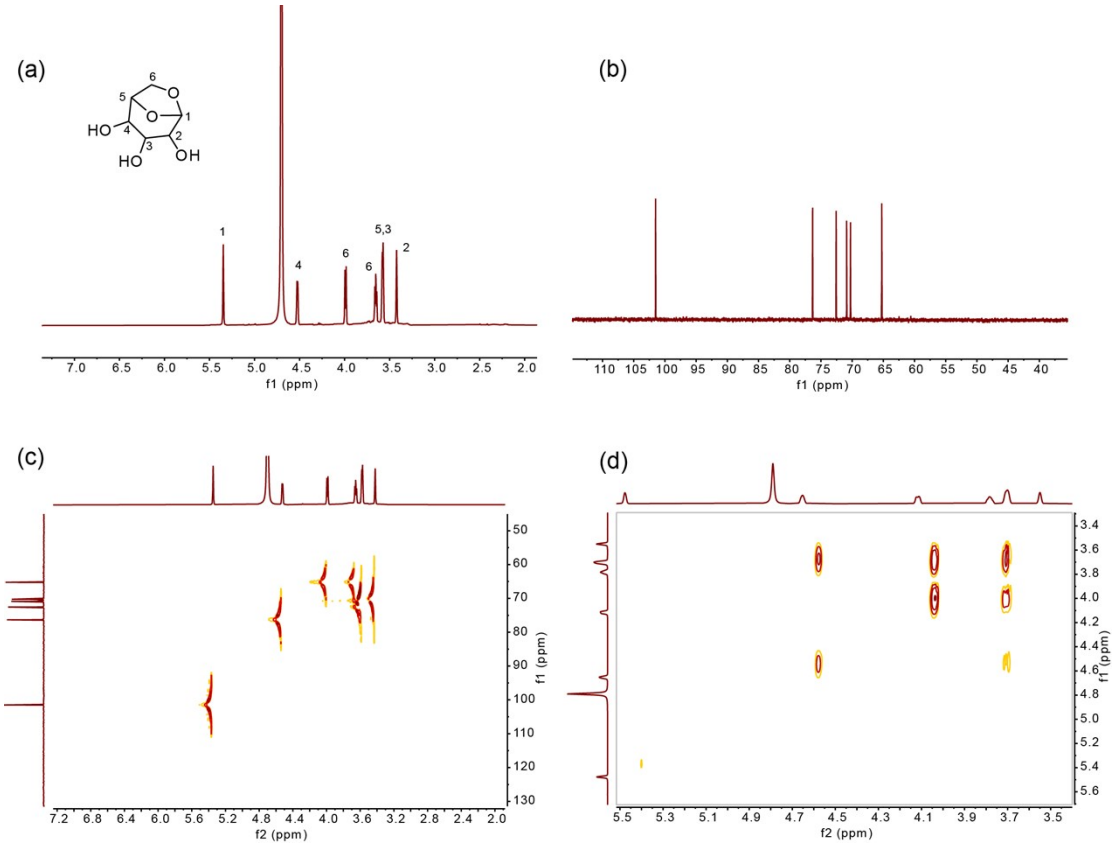

Figure S2. (a) ^{1}H NMR, (b) ^{13}C NMR, (c) ^{1}H-^{13}C HSQC, and (d) ^{1}H-^{1}H COSY spectra of levoglucosan.

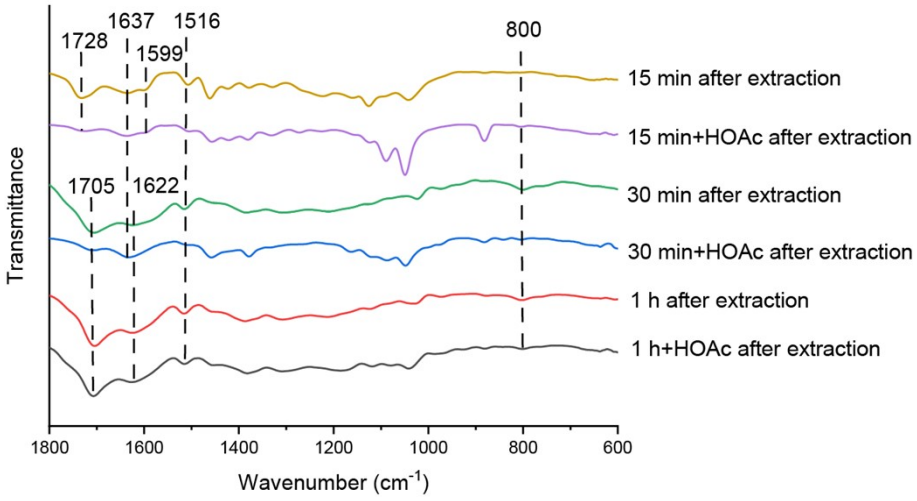

Figure S3. FT-IR spectra of residual solid of cellulose conversion after extraction by THF/PE, with addition of HOAc.

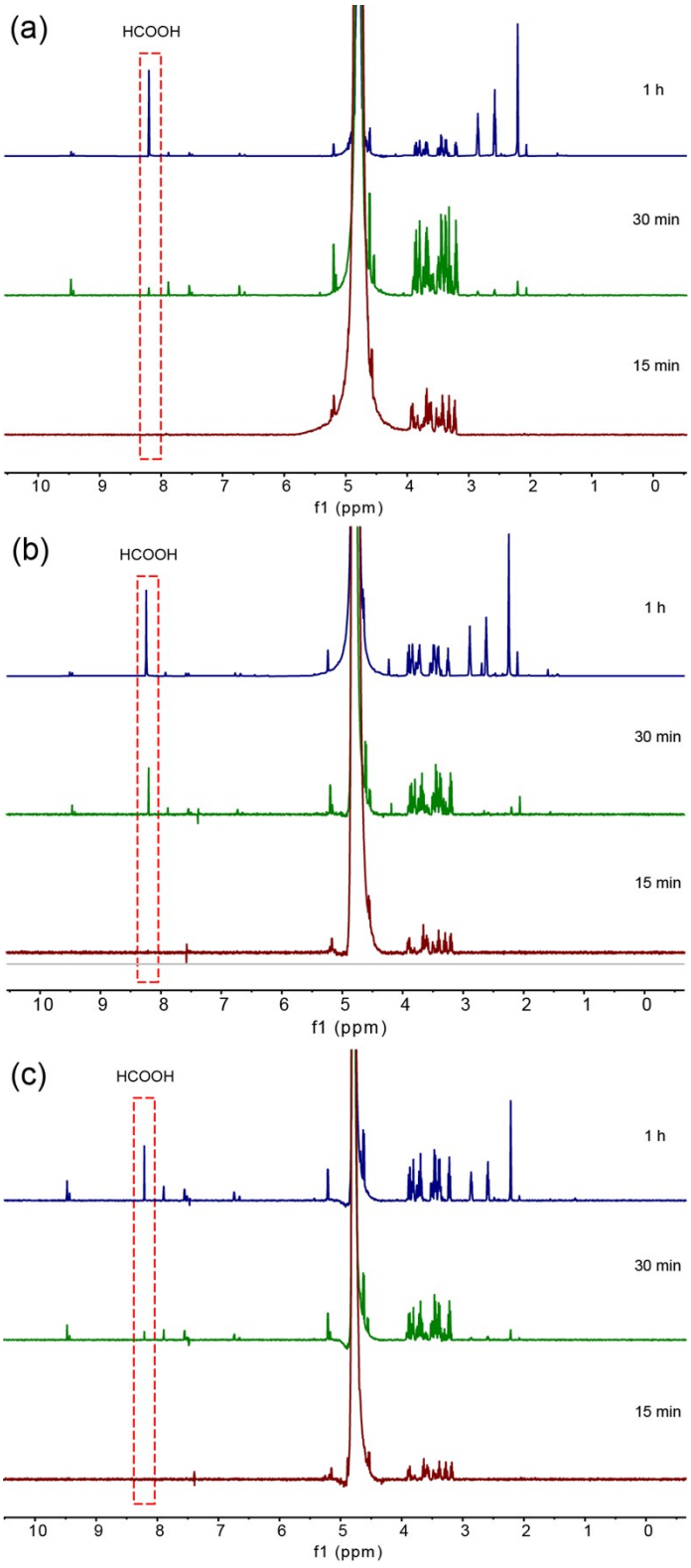

Figure S4. ^{1}H NMR spectra of the reaction mixture of cellulose at 170 ℃ (a) blank control, (b) in the presence of O_2 and (c) in the presence of N_2.