

Extraction and Characterization of Hemicelluloses from a Softwood Acid Sulfite Pulp

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Table S1. Results and yields obtained during hemicelluloses extraction procedure.

| | $m_{\text{initial sulfite pulp}} \text{ (g)}$ | $m_{\text{hemicellulose}} \text{ (g)}$ | Delignification Yields (%) | $m_{\text{initial Hemicellulose loss}} \text{ (g)}$ | $m_{\text{CUnbleached Cellulose}} \text{ (g)}$ | CCE Yields (%) | $m_{\text{hemicelluloses}} \text{ (g)}$ | Hemicelluloses Yields (%) |
|---------|---|--|----------------------------|---|--|----------------|---|---------------------------|
| HC-A | 10.00 | 9.62 | 96.2 | 9.62 | 8.85 | 92.0 | 0.64 | 6.7 |
| HC-B | 10.00 | 8.52 | 85.2 | 8.52 | 7.33 | 86.0 | 0.11 | 1.3 |
| HC-C | 9.87 | 8.69 | 88.0 | 4 | 2.68 | 67.0 | 0.38 | 9.5 |
| HC-D | 19.77 | 18.19 | 92.0 | 18.19 | 16.37 | 90.0 | 0.2 | 1.1 |
| HC-E | 20.00 | 16.02 | 80.1 | 16.02 | 12.50 | 78.0 | 1.32 | 8.2 |
| HC-F | 19.99 | 18.43 | 92.2 | 15.13 | 13.42 | 88.7 | 0.48 | 3.2 |
| HC-RYAM | 196.96 | 141.81 | 72.0 | 135.74 | 102.23 | 51.9 | 7.44 | 5.5 |

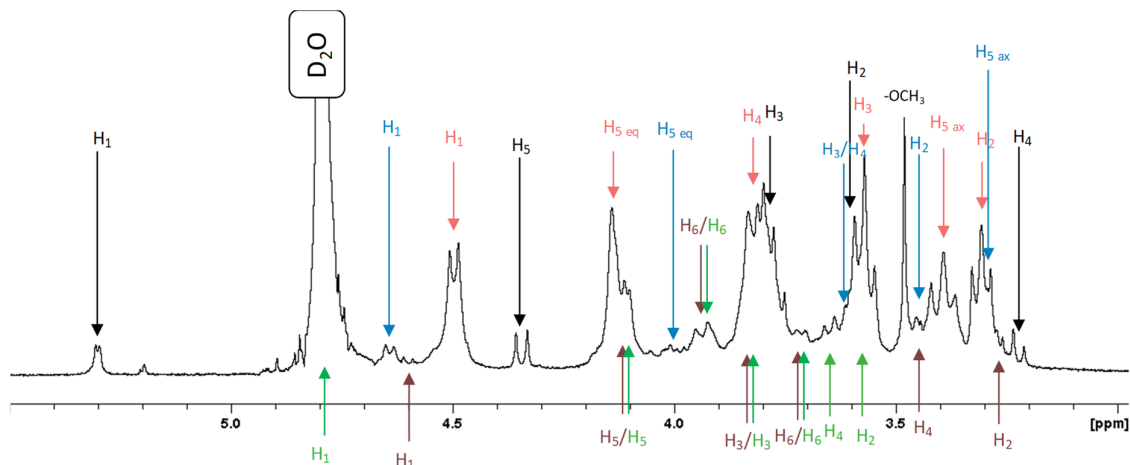


Figure S1. ^1H NMR spectrum of hemicelluloses extracted from the sulphite pulp in D_2O . (glucose units in brown, mannose units in green, non-substituted xylose units in red, glucuronic acid substituted xylose units in blue, glucuronic acid units in black. The number refers to the H-atom.

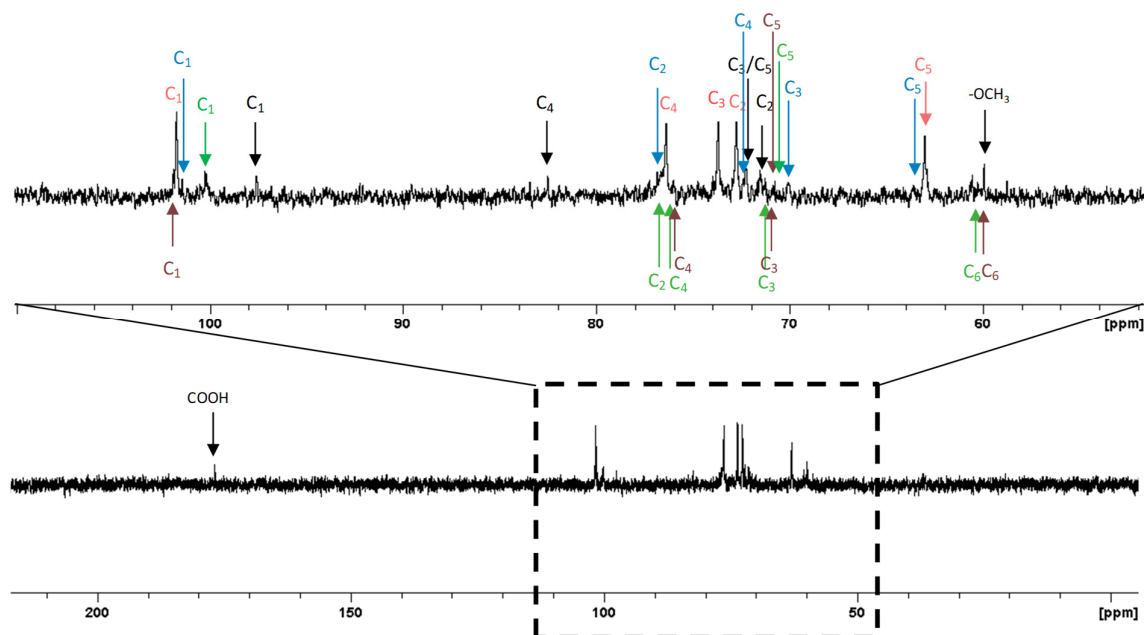


Figure S2. ^{13}C NMR spectrum of hemicelluloses extracted from the sulphite pulp in D_2O . (glucose units in brown, mannose units in green, non-substituted xylose units in red, glucuronic acid substituted xylose units in blue, glucuronic acid units in black. The number refers to the C-atom.

Table S2. Total signals assignation of hemicelluloses extracted from the sulfite pulp in D₂O.

| Hemicelluloses | Monosaccharide units | Position | δ ¹ H / ¹³ C (ppm) |
|-----------------------|---|-----------------|--|
| Methylglucuronoxylans | β -Xylose non substituted | 1 | 4.50 / 101.74 (³ J _{H1-H2} = 7.88Hz) |
| | | 2 | 3.30 / 72.77 |
| | | 3 | 3.57 / 73.74 |
| | | 4 | 3.81 / 76.42 |
| | | 5 _{ax} | 3.39 / 63.03 |
| | | 5 _{eq} | 4.14 / 63.03 |
| | β -Xylose substitued | 1 | 4.64 / 101.45 (³ J _{H1-H2} = 7.64Hz) |
| | | 2 | 3.43 / 76.46 |
| | | 3 | 3.62 / 69.28 |
| | | 4 | 3.62 / 72.42 |
| | | 5 _{ax} | 3.30 / 65.12 |
| | | 5 _{eq} | 3.98 / 65.12 |
| | 4- <i>O</i> -Methyl- α -Glucuronic acid | 1 | 5.3 / 97.59 (³ J _{H1-H2} = 3.6 Hz) |
| | | 2 | 3.58 / 71.30 |
| | | 3 | 3.76 / 72.30 |
| | | 4 | 3.23 / 82.55 |
| | | 5 | 4.34 / 72.26 |
| | | -COOH | - / 176.80 |
| | | -OCH3 | 3.48 / 59.98 |
| Glucomannans | β -Mannose | 1 | 4.76 / 100.20 (³ J _{H1-H2} = - Hz) |
| | | 2 | 3.56 / 76.36 |
| | | 3 | 3.78 / 71.57 |
| | | 4 | 3.57 / 74.95 |
| | | 5 | 4.12 / 70.07 |
| | | 6 | 3.72 et 3.94 / 60.58 |
| | β -Glucose | 1 | 4.60 / 101.90 (³ J _{H1-H2} = 8 Hz) |
| | | 2 | 3.26 / 73.54 |
| | | 3 | 3.78 / 71.57 |
| | | 4 | 3.43 / 75.28 |
| | | 5 | 4.12 / 70.07 |
| | | 6 | 3.72 et 3.94 / 60.58 |

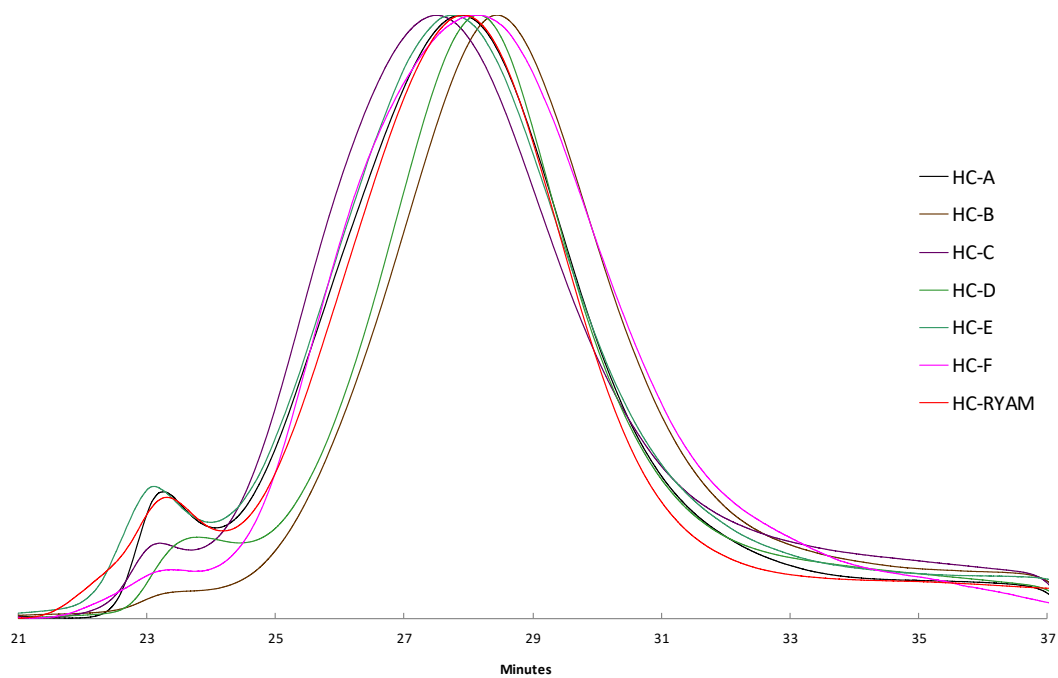


Figure S3. SEC-RI chromatograms of hemicelluloses extracted from the sulfite pulp.