

Supplementary Material

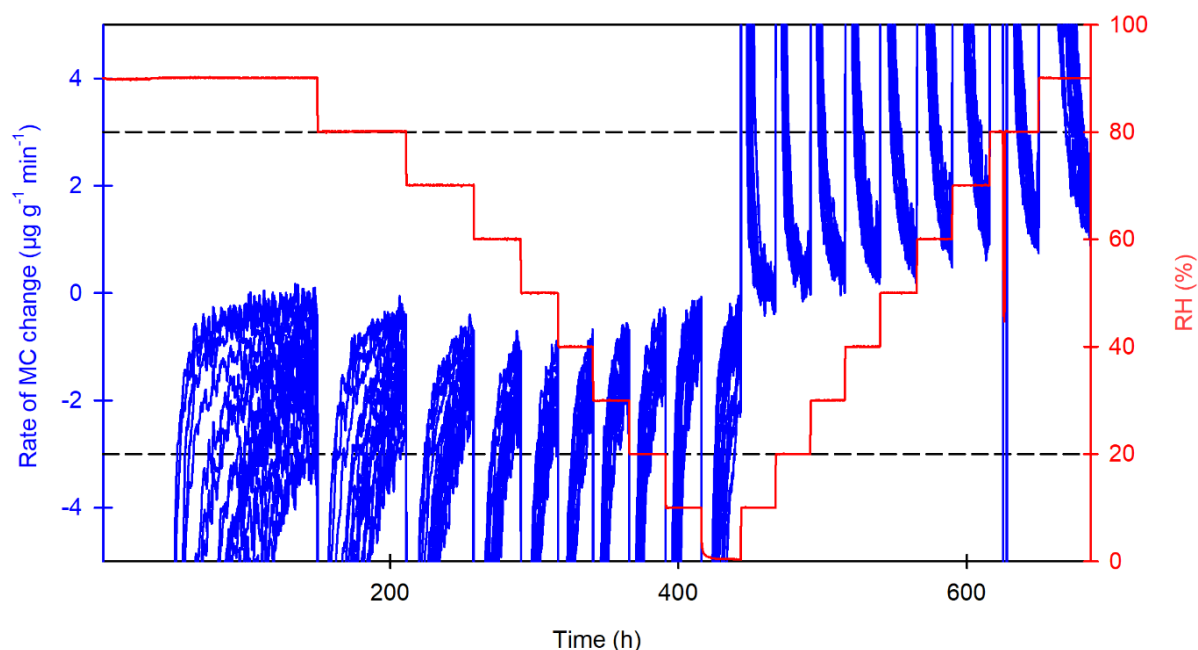
Changes in wood-water relations in acetylated wood over the course of *Rhodonía placenta* brown rot decay

Tiina Belt^{1*}, Michael Altgen²

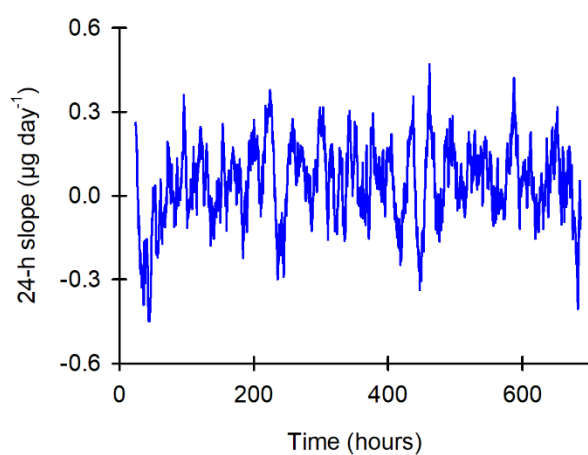
¹ Natural Resources Institute Finland, Production Systems Unit, Viikinkaari 9, 00790 Helsinki, Finland

² Norwegian Institute of Bioeconomy Research, Department of Wood Technology, P.O. Box 115, 1431 Ås, Norway

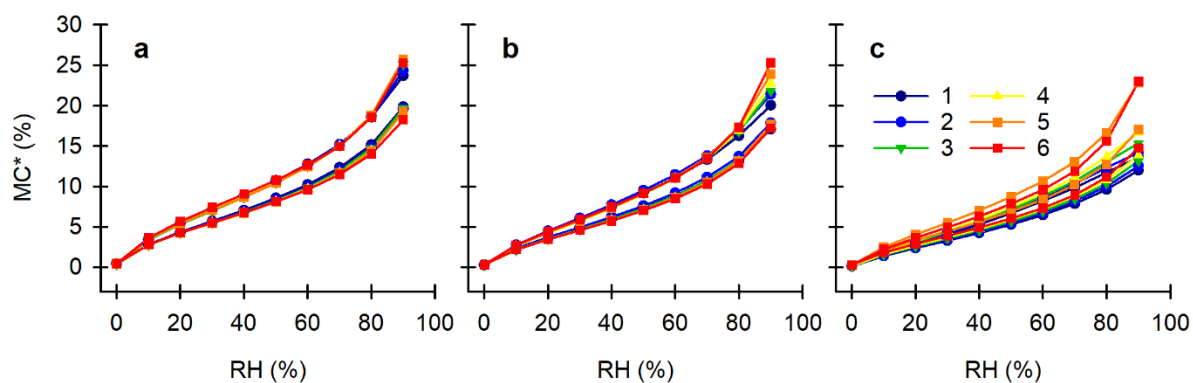
*corresponding author, tiina.belt@luke.fi



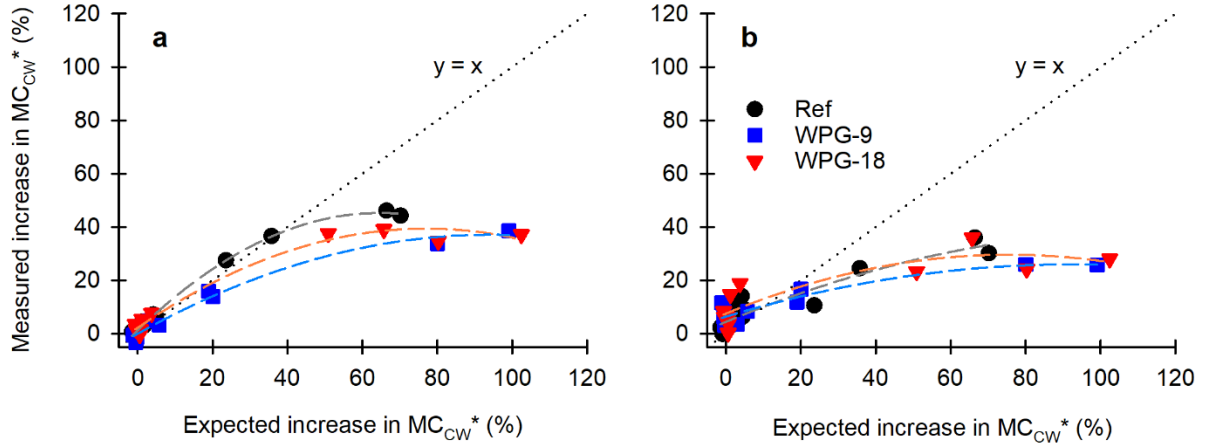
Supplementary Figure S1 Rate of MC change for all samples during the sorption measurement sequence, showing that all samples were close to reaching a rate of $<|3| \mu\text{g g}^{-1} \text{min}^{-1}$ at the end of each RH step



Supplementary Figure S2 Mass change per day (24-h slope) of an inert sample measured alongside the wood samples during the sorption measurement sequence, showing the mass stability of the instrument



Supplementary Figure S3 Sorption isotherms of all reference (a), WPG-9 (b) and WPG-18 samples plotted using acetyl-corrected moisture content (MC*) at different sample positions in the decay test. Position 1 is at the top of the test tube and has the lowest mass loss, while position 6 is at the bottom and has the highest mass loss



Supplementary Figure S4 Expected vs. measured increase in acetyl-corrected maximum cell wall moisture content (MC_{CW}^*) before (a) and after (b) drying for the reference and acetylated (WPG-9 and WPG-18) samples

The **expected increase in MC_{CW}^*** was obtained by calculating the theoretical volume of cell wall substance removed by decay and using that volume to calculate the theoretical increase in MC_{CW}^* . Thus, the expected increase in MC_{CW}^* (ΔMC_{CW}^*) was calculated according to equation 9,

$$\Delta MC_{CW}^* (\%) = \frac{\Delta m / \rho_{wood}}{100 - \Delta m} \times \rho_{water} \times (1 + a) \times 100\% \quad (9)$$

where Δm is the mass loss (%) of each sample estimated according to equation 5, ρ_{wood} is the average density of the wood cell walls (1.45 g/cm^3), ρ_{water} is the density of water (1 g/cm^3), and a is the acetyl content (g/g) of each acetylated sample determined by saponification.

The **measured increase in MC_{CW}^*** was obtained by taking the measured MC_{CW}^* of each sample before or after drying and subtracting the average MC_{CW}^* of the position 1 samples of that sample type before or after drying (42.4%, 39.0%, and 24.5% for the reference, WPG-9, and WPG-18 samples measured before drying, respectively, and 43.5%, 42.9%, and 26.5% for the reference, WPG-9, and WPG-18 samples measured after drying, respectively).