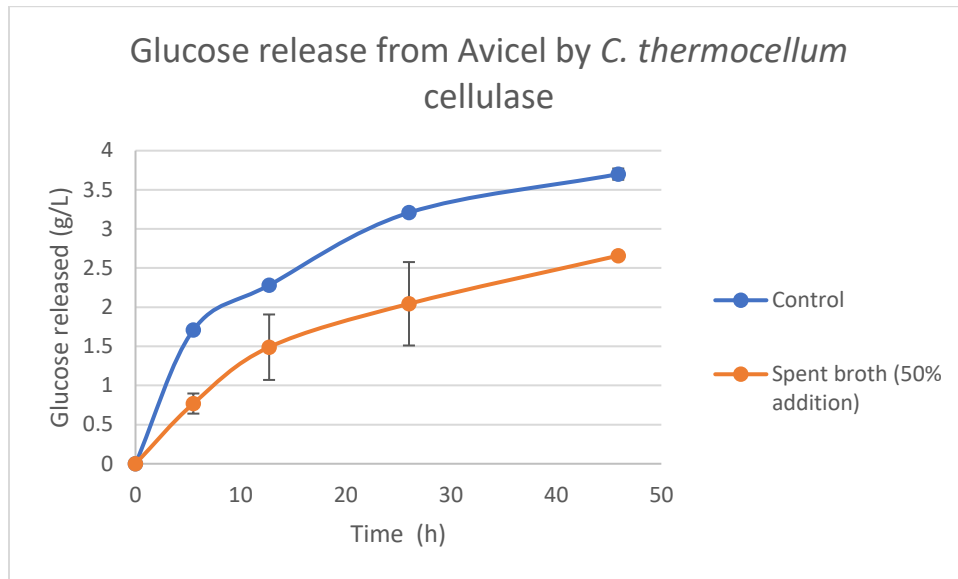
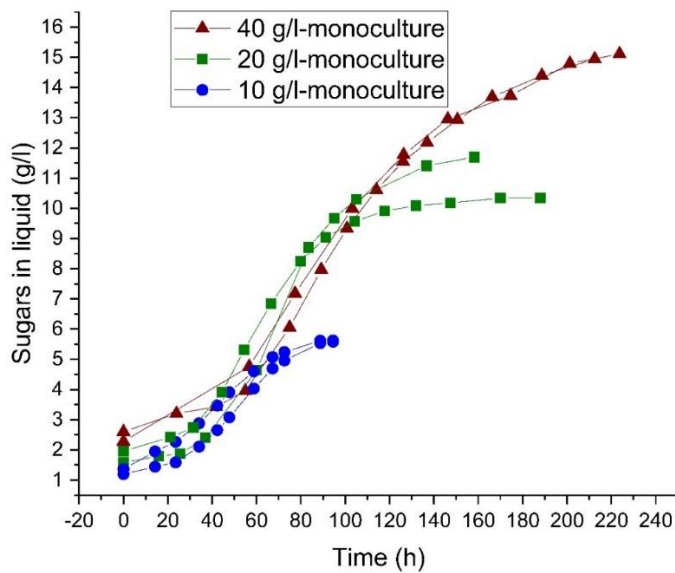


Supplementary Section



Supplementary Figure 1- Timecourse of glucose release from Avicel for cellulase assay with the addition of spent broth- 20 mg (cellulase)/g (Avicel) was incubated with 6 g/L Avicel for 50 h. Regular samples were taken to measure the release of glucose by liquid QS.



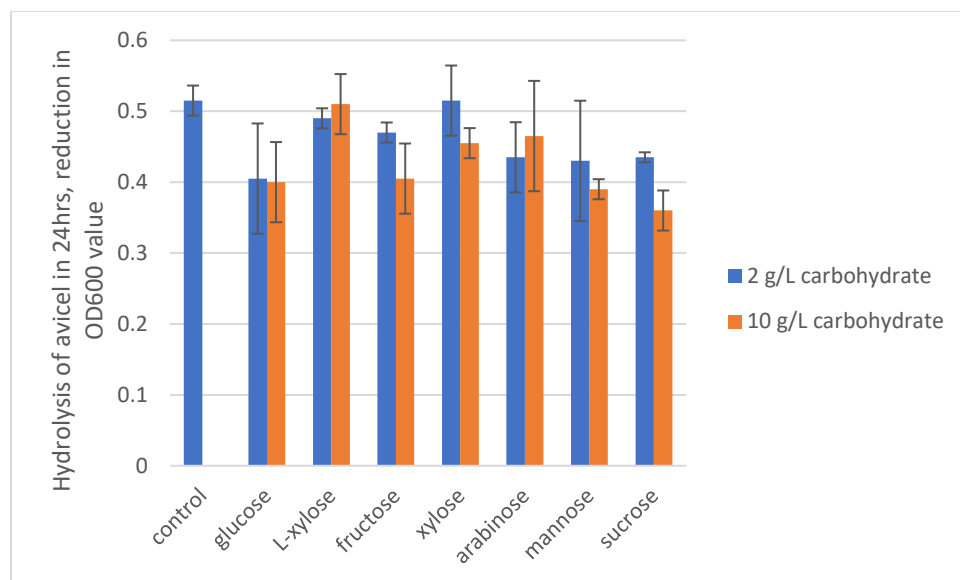
Supplementary Figure 2- Total sugars in fermentation broth from *C. thermocellum* monoculture reactors on corn fiber, measured by liquid QS.

Monosaccharides	Disaccharides	Oligosaccharides	Polysaccharides
D-Xylose	Sucrose	XOS	Pullulan
Arabinose	Xylobiose	Xyloglucan	Inulin
Glucose	Mannobiose	Glucomannan	Arabinan
Fructose	Maltose	Galactomannan	Wheat AX
D-Galactose	Melibiose	Stachyose	
L-xylose		A ³ X	
L-Rhamnose		A ² XX	
D-ribose		Xylotriose	
L-sorbose		Xylotetraose	

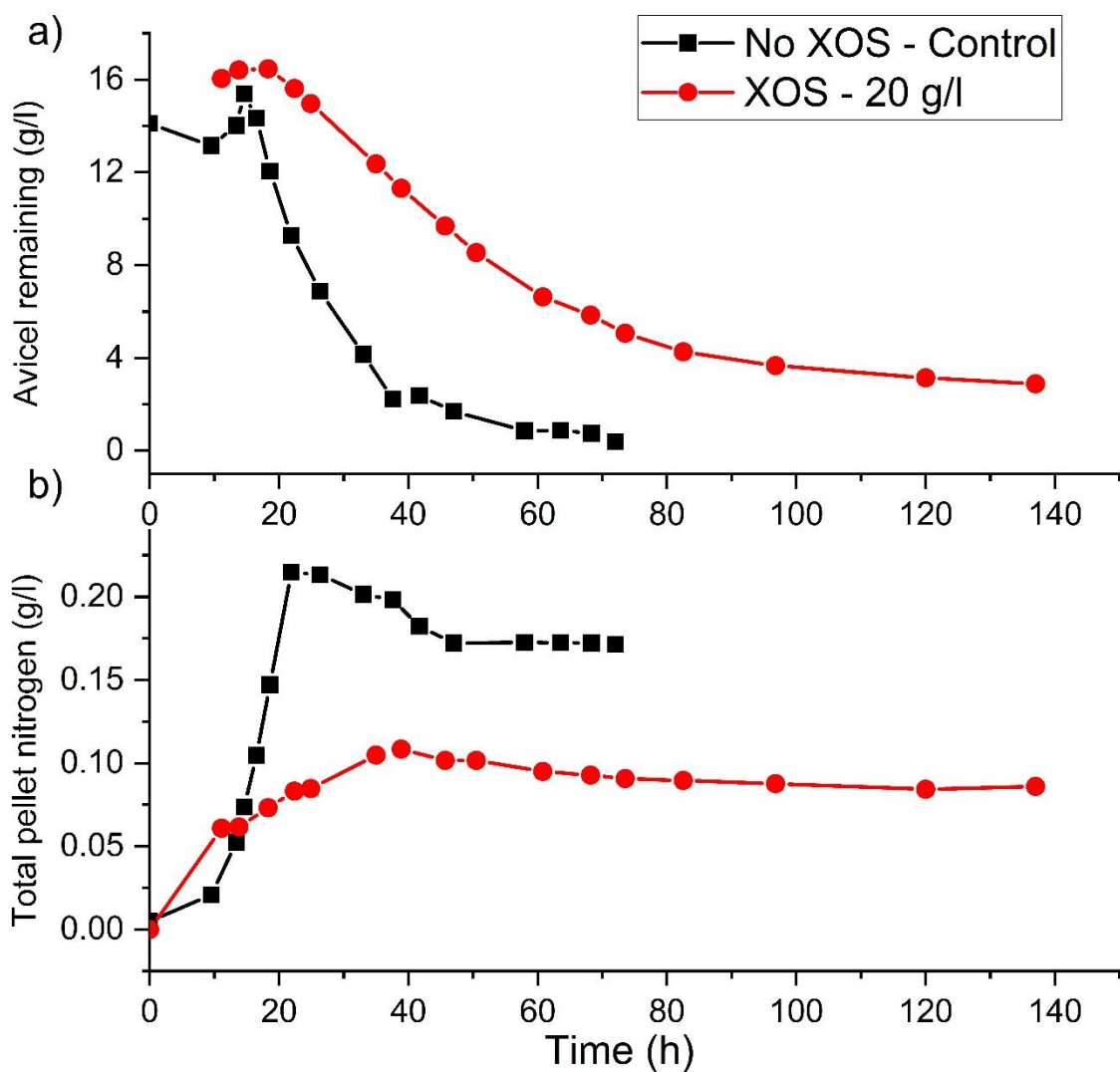
Supplementary Table 1- List of carbohydrates tested for effect on growth rate of *C. thermocellum* on cellobiose. XOS- Xylooligosaccharides, AX- arabinoxylan, A³X- 3²- α -L-Arabinofuranosyl-xylobiose, A²XX- 2³- α -L-Arabinofuranosyl-xylotriose

Sigma-Aldrich	D-Xylose, L-Xylose, Glucose, Fructose, D-galactose, Sucrose, Xylan from Birchwood
Megazyme	Mannobiose, Glucomannan (Konjac;Low Vis), A ³ X- 3 ² - α -L-Arabinofuranosyl-xylobiose, A ² XX- 2 ³ - α -L-Arabinofuranosyl-xylotriose, Wheat Arabinoxylan (Wheat Flour; Insoluble), Xylotriose, Xylotetraose, Arabinan (Sugar Beet), Xylan from Beechwood
Carbosynth	L-Rhamnose monohydrate, L-Sorbose, Xylobiose, D-Maltose monohydrate, D-Melibiose monohydrate, Inulin, Xyloglucan, Pullulan, D-Galacto-D-mannan- from carob, Stachyose hydrate
TCI America	Xylan from corn core

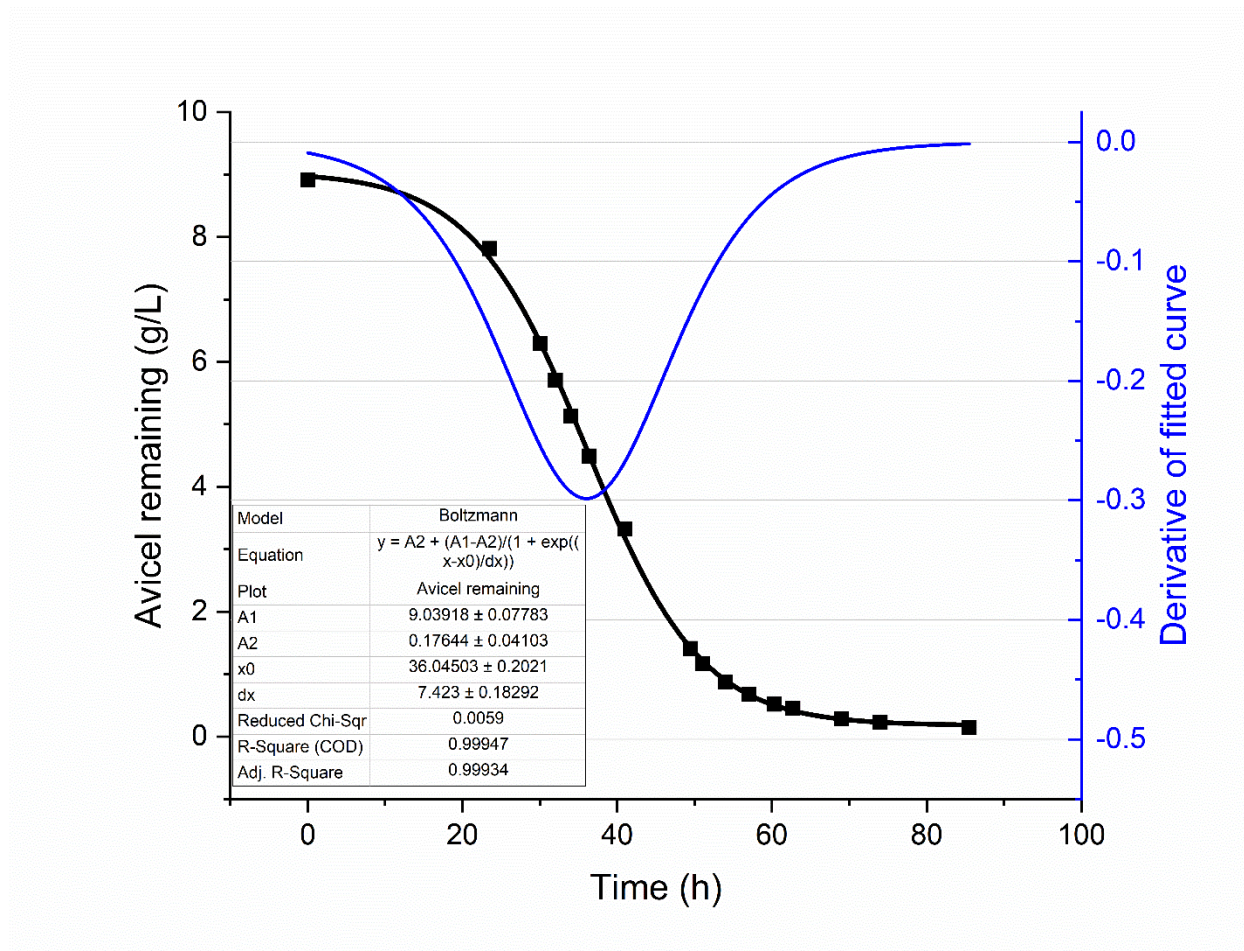
Supplementary Table 2- Sources of carbohydrates used in the study



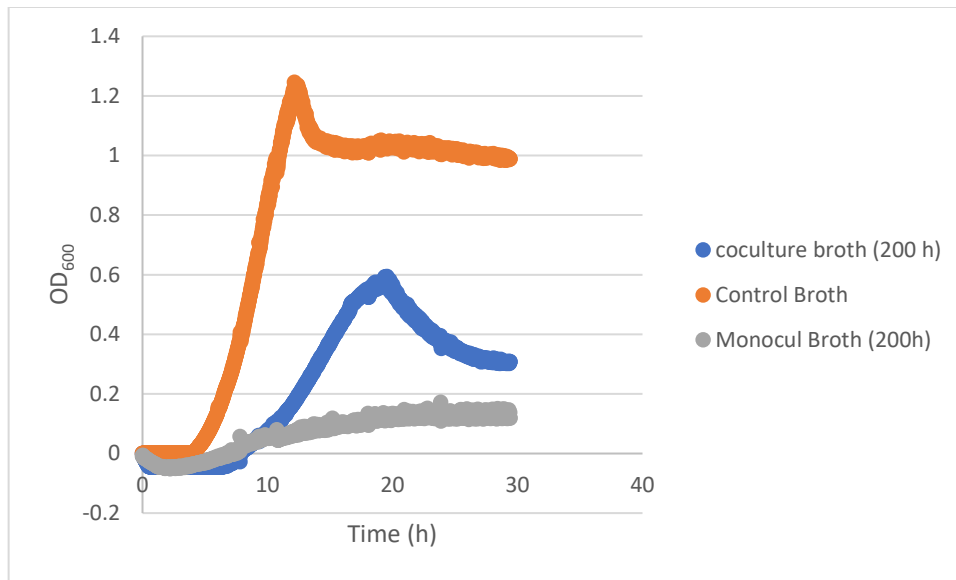
Supplementary Figure 3- Effect of different carbohydrates on *C. thermocellum* cellulase activity - 1 g/L initial Avicel was incubated with 10 mg/g *C. thermocellum* cellulase enzyme and activity was estimated by measuring the decrease in OD₆₀₀ after 24h. Carbohydrates were added at two different concentrations of 2 g/L and 10 g/L. The error bars show the SD for n=2.



Supplementary Figure 4- Effect of adding Xylooligosaccharides to *C. thermocellum* Avicel fermentations in bioreactors. Fermentation data from two pH controlled fermentors showing a) Avicel remaining and b) total pellet nitrogen for *C. thermocellum* growth on 20 g/l Avicel with and without the addition of 20 g/l XOS.



Supplementary Figure 5- Effect of various carbohydrates on the utilization of Avicel by *C. thermocellum*. The figure shows the time-course for substrate utilization by *C. thermocellum* at 10 g/l Avicel loading with the addition of various carbohydrates at a 10 g/l concentration. The curves have been made with Boltzmann Sigmoidal fitting and the derivative taken to calculate maximum rate of Avicel utilization. The data for one of the control replicates is shown here, the rest of the data are shown in Additional file 1.



Supplementary Figure 6- Effect of final spent broth from a corn fiber coculture fermentation on growth of *C. thermocellum* on cellobiose in a plate reader.