ADDITIONAL FILE 1

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Additional File : Figure S1. Impact of loosenin-like proteins on *Np*Xyn11A hydrolysis of azo-xylan in solution. Reactions were optimized to ensure absorbance values were within the linear range of the assay. The azo-xylan solution was treated with 0.003 mg/ mL PcaLOOL2, PcaLOOL12, BSA or buffer only at pH 5.0, 25°C for 24 h, followed by addition of 0.001 mg/ mL *Np*Xyn11A, or buffer only, and incubation at 40°C, 300 rpm for 10 min. After precipitation of non-hydrolyzed substrate, absorbance of the reaction solution was recorded at 590 nm. n=3, errors correspond to standard deviation of mean.

Additional File : Figure S2. Impact of loosenin-like proteins on cellulose/azo-xylan composites. Composites were treated with 0.1 mg/ mL PcaLOOL2, PcaLOOL12, BSA or buffer only at pH 5.0 and room temperature for 24 h. This was followed by incubation of the resulting mandrels at pH 5.0, 40°C and 300 rpm for up to 6 h (A) Representative cellulose/azo-xylan composites dried after treatment. (B) Average intensity values of dried cellulose/azo-xylan composites per segment. (C) Absorbance of the reaction solution at 590 nm recovered after composite incubation. n≥4, errors correspond to standard deviation of mean.

Additional File : Figure S3. In-solution hydrolysis of azo-xylan by *Pm*25 and its mutants. The azo-xylan solution was treated with 0.03 mg/ mL wild-type *Pm*25, 0.03 mg/ mL M5 (*Pm*25 Y213A + Y378A), 0.017 mg/ mL M6 (*Pm*25ΔCBMs), 0.03 mg/ mL M1 (*Pm*25 E546A), or buffer only, at pH 5.0 and 40°C, 300 rpm for 3-20 h. After precipitation of non-hydrolysed substrate, absorbance of the reaction solution was recorded at 590 nm. n≥4, errors correspond to standard deviation of mean.

Additional File : Figure S4. SDS-PAGE analysis of *Cm*Xyn10B (lane 2), *Np*Xyn11A (lane 3) and *Tf*Xyn11A (lane 4). Lane 1 shows the molecular weight standard.

Additional File : Figure S5. Replicate cellulose/azo-xylan composites after treatment for 1-h with (A) NpXyn11A or (B) TfXyn11A

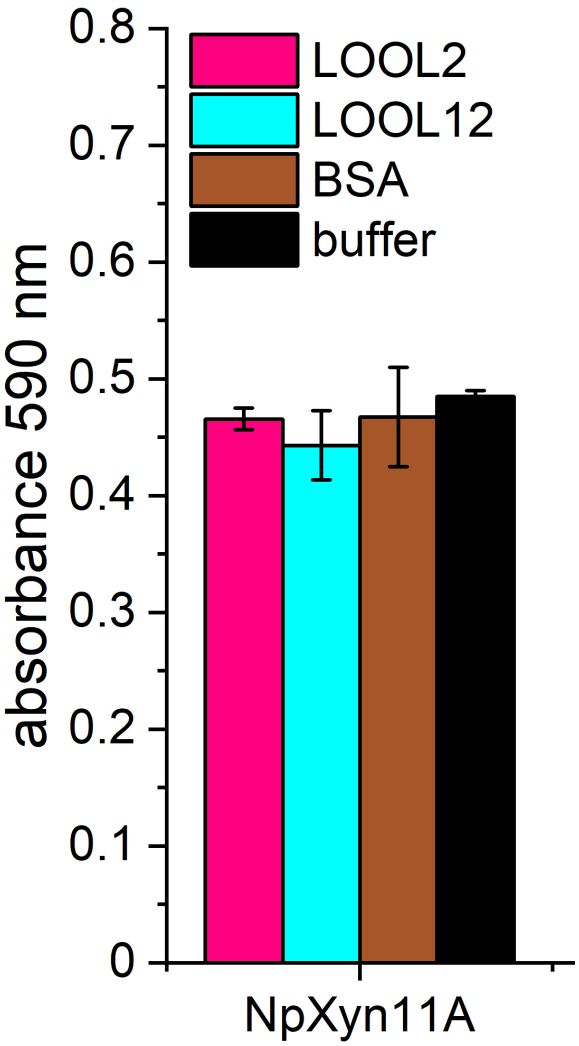
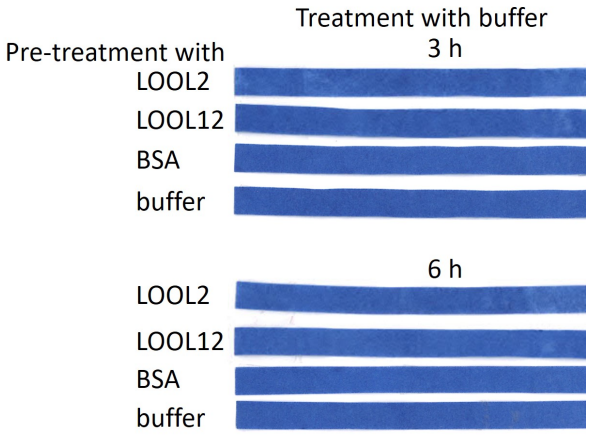
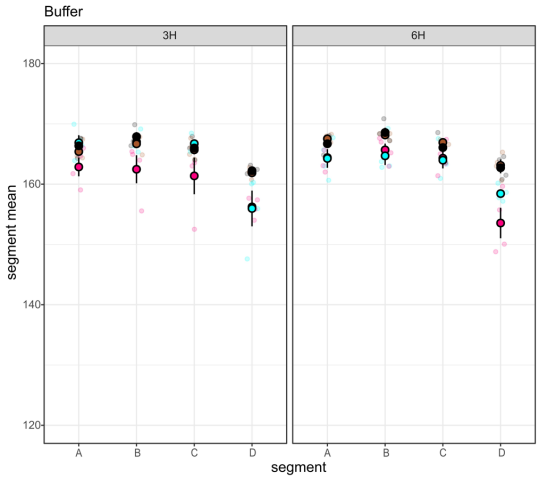

0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
absorbance 590 nm
LOOL2
LOOL12
BSA
buffer
NpXyn11A

Figure S1

A



B



C

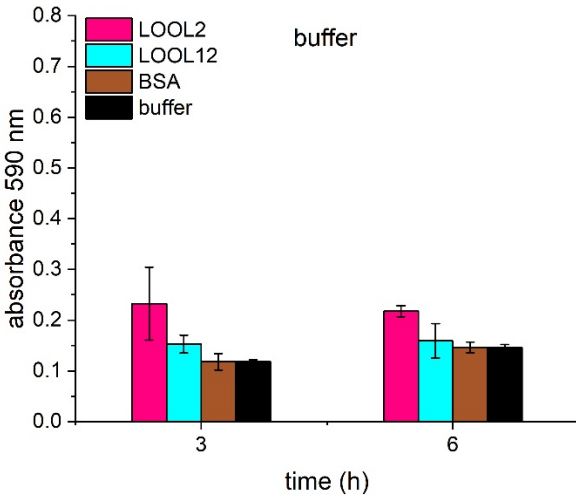


Figure S2

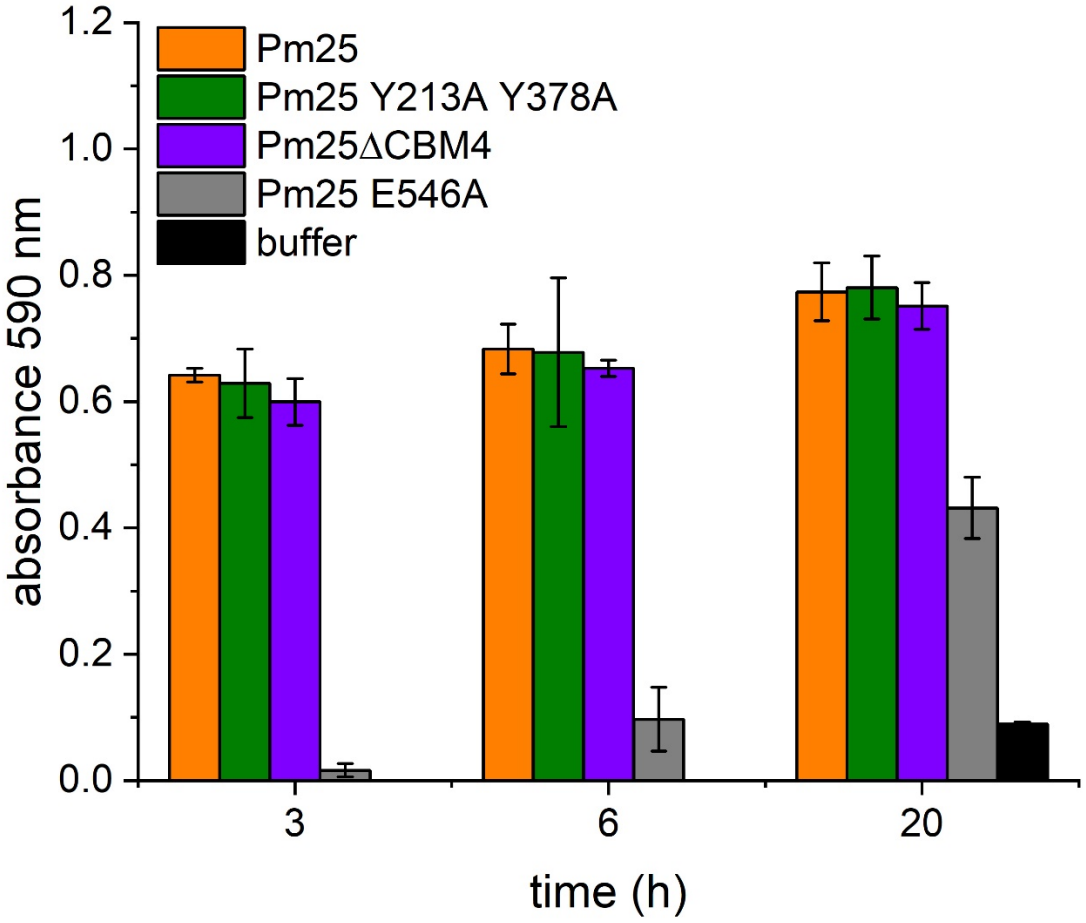

Pm25
Pm25 Y213A Y378A
Pm25ΔCBM4
Pm25 E546A
buffer
absorbance 590 nm
1.2
1.0
0.8
0.6
0.4
0.2
0.0
3
6
20
time (h)

Figure S3

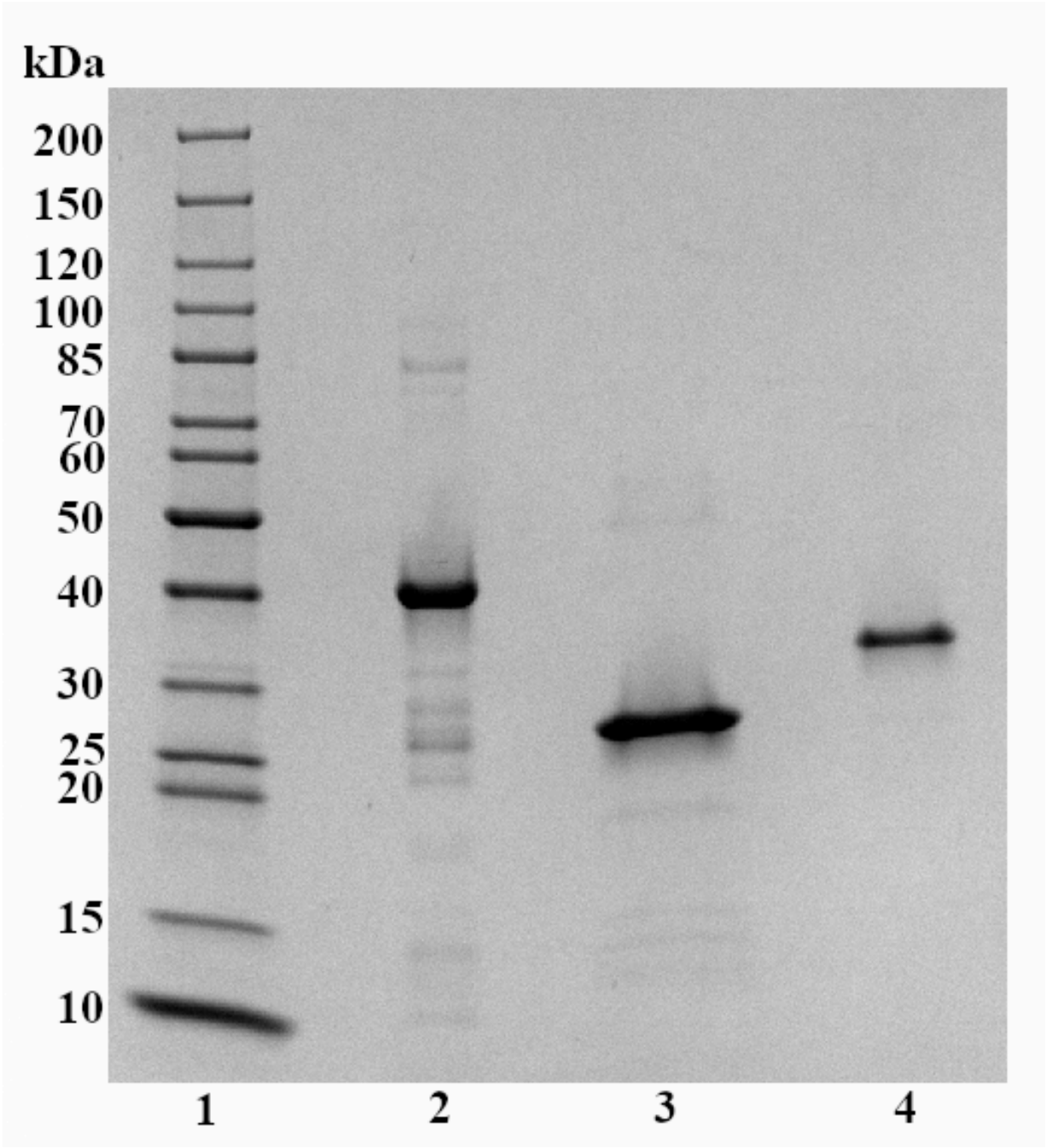


Figure S4

A. *Np*Xyn11A treatments

B. *Tf*Xyn11A treatments

Figure S5