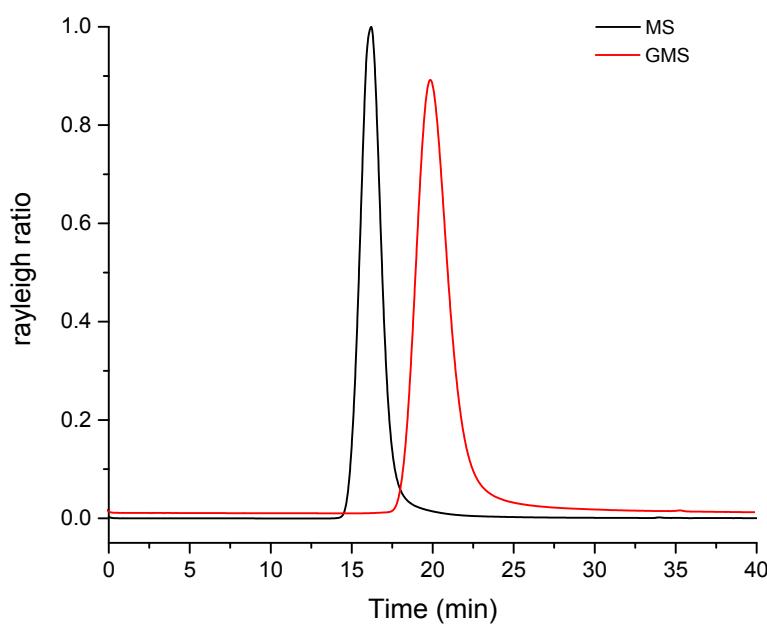
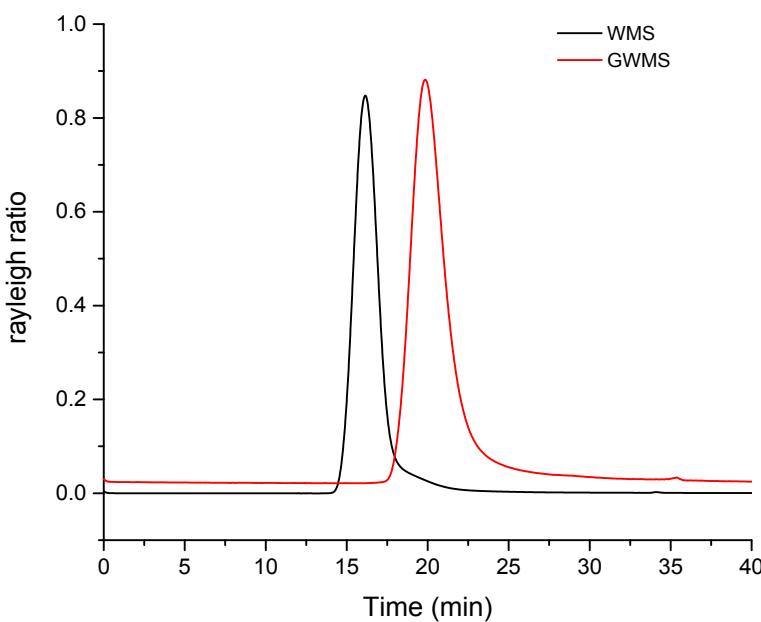


**Figure S1** HPSEC profiles of (A) MS and GMS, (B) WMS and GWMS, (C) HMS and GHMS.

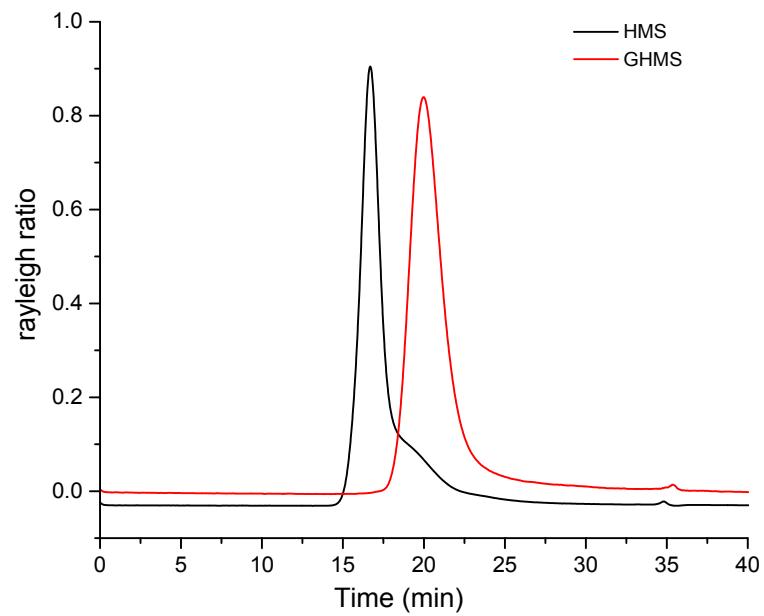
A



B

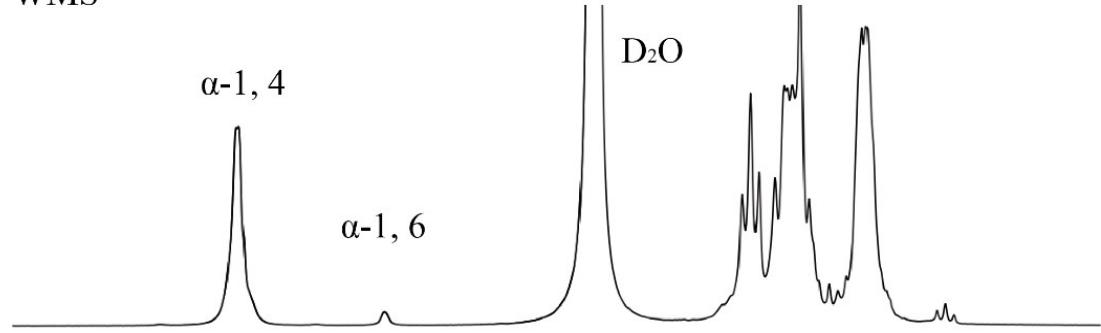


C

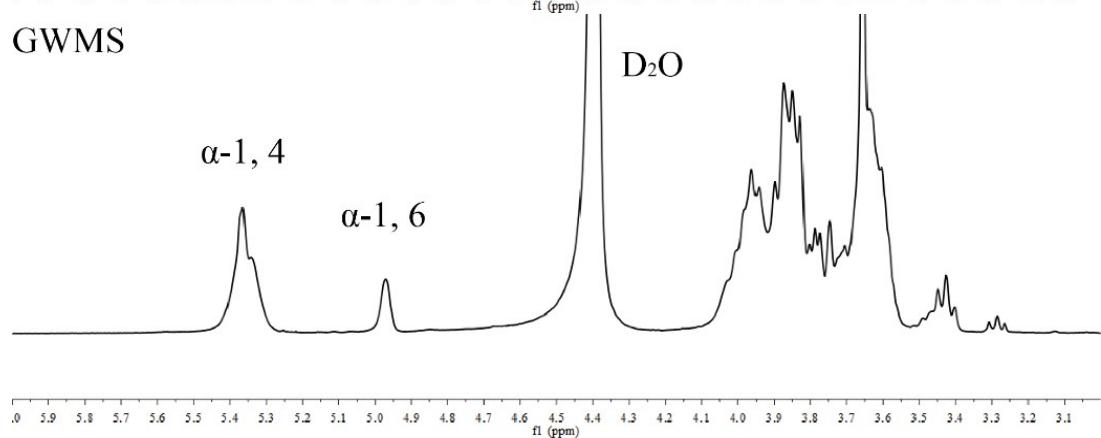


**Figure S2**  $^1\text{H}$  NMR spectra of native and GTase-treated starches.

WMS

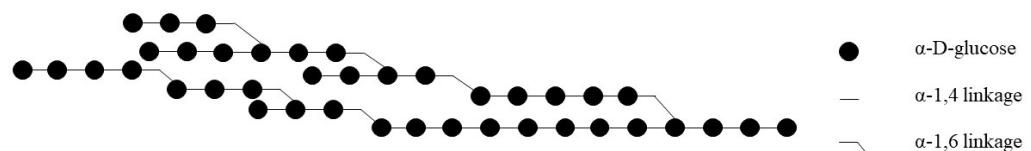


GWMS

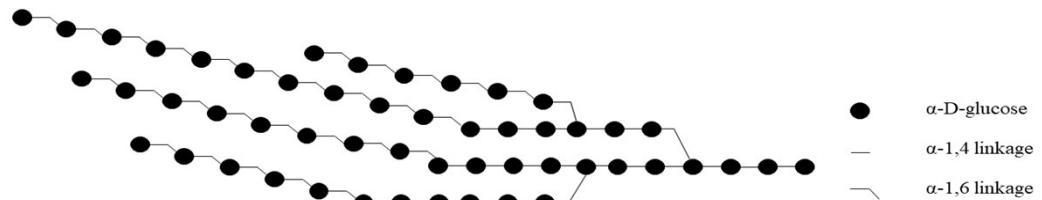


**Figure S3.** Schematic of structure for *A. chroococcum* NCIMB 8003 GTase-treated starches (A), *L. reuteri* 121 4,6- $\alpha$ -GTase-treated starches (B) and glycosidic chain-converting mechanism by *A. chroococcum* NCIMB 8003 GTase (C).

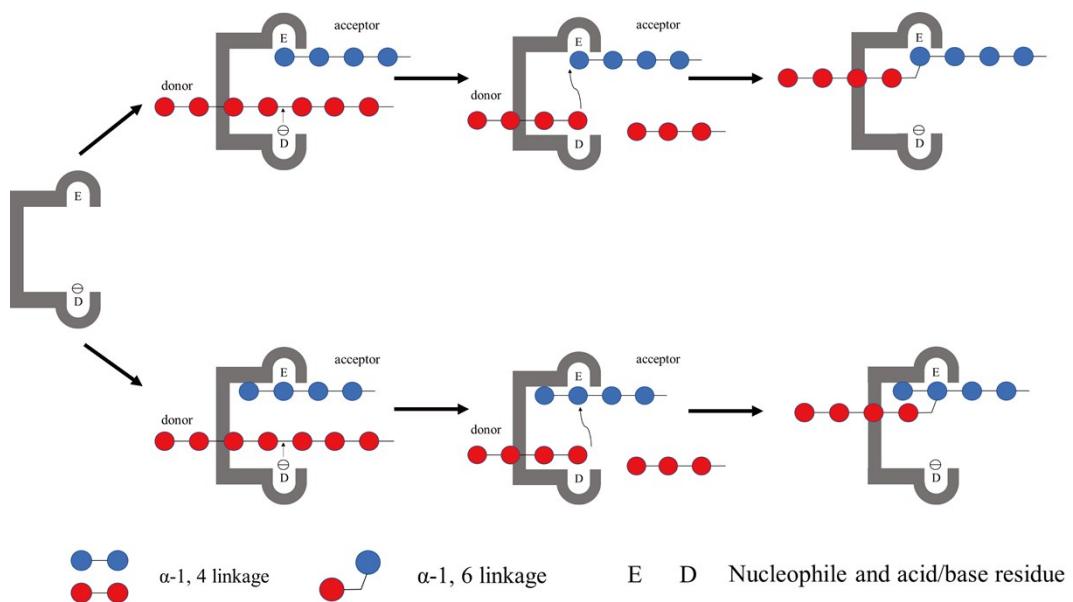
A



B



C



\* D is the nucleophile, E is the acid/base residue.