Electronic Supplementary Material (ESI) for Food & Function.

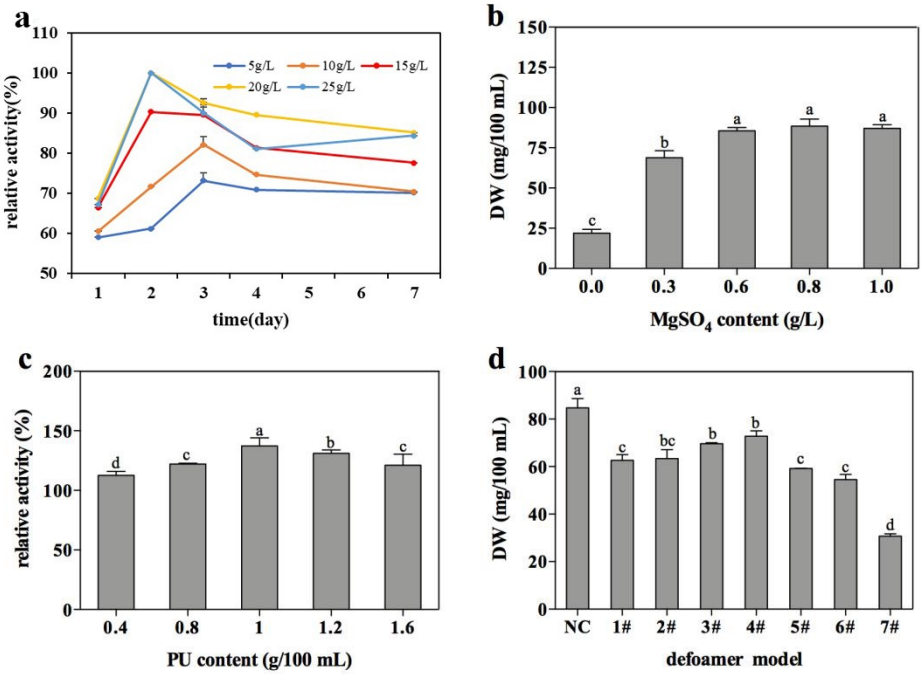

Fig. S1 The optimization of fermentation parameters of strain EGB. The effects of yeast cell content (a) and PU content (c) on the activity of GluM. The effect of MgSO4 content (c) and various types of defoamers (d) on the biomass of strain EGB (DW, dry weight), 1# ,2#, 3# and 4# are organosilicon-polyether; 5# and 6# are modified organosilicon-polyether; and 7# is polyether-polyol. The values are the means ± SD (n=3).

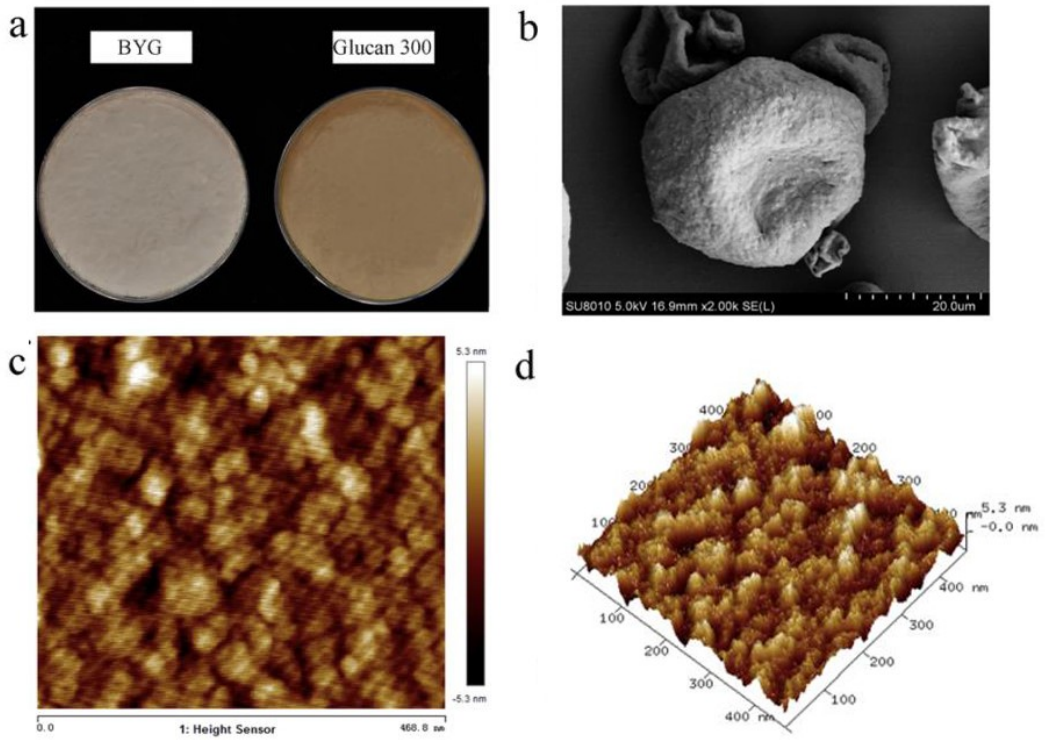

Fig. S2. Macroscopical appearance, SEM and AFM of Glucan 300. (a) Macroscopical appearance of BYG and Glucan 300; (b) SEM of Glucan 300; (c) AFM phase shift of Glucan 300; (d) 3D topography of Glucan 300.

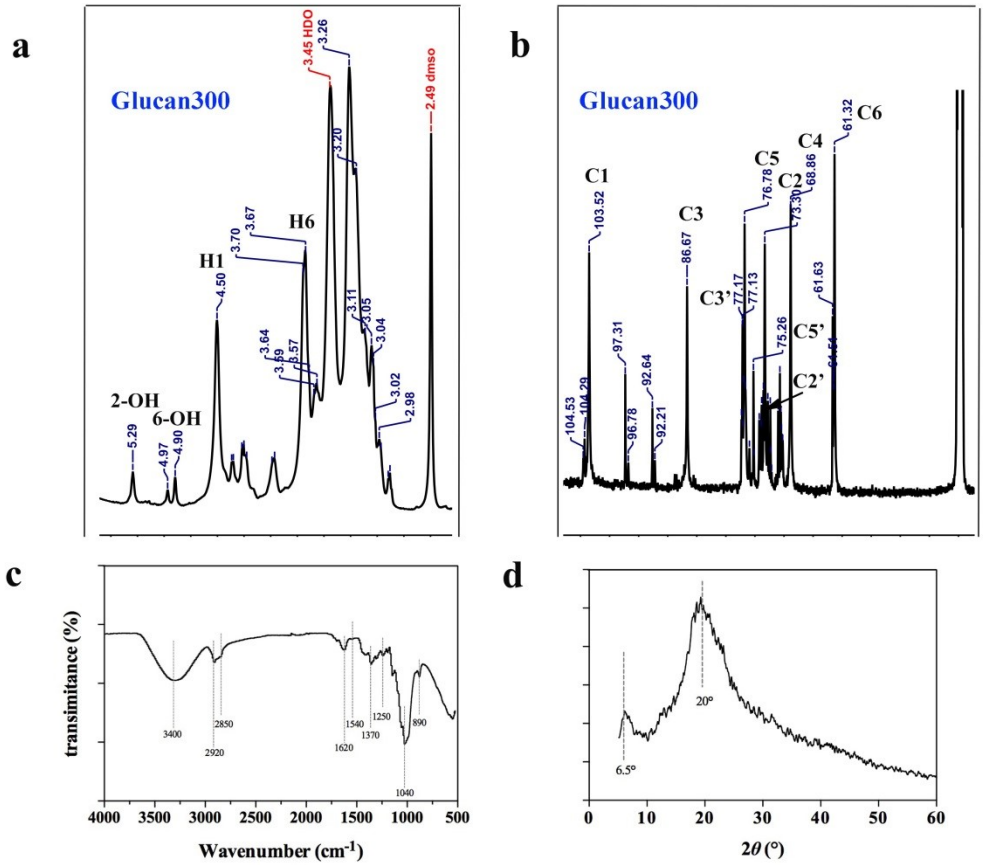

Fig. S3 Structural representation of Glucan 300. 1H (a) and 13C (b) NMR spectra, FT-IR (c) and XRD (d) spectrometry measurements of Glucan 300 were performed.

Table S1. Primer sequences used in qRT-PCR

Primers	Sequences
β-actin	Forward: TCGTACCACTGGCATTGTGAT
	Reverse: CGAAGTCTAGGGCAACATAGCA
IL-1β	Forward: CACTACAGGCTCCGAGATGAAC
	Reverse: TCCATCTTCTTCTTTGGGTATTGC
IL-6	Forward: CCCCAATTTCCAATGCTCTCC
	Reverse: CGCACTAGGTTTGCCGAGTA
IL-10	Forward: AGCCGGGAAGACAATAACTG
	Reverse: CATTTCCGATAAGGCTTGG
TNF-α	Forward: CAAAATTCGAGTGACAAGCCTG
	Reverse: GAGATCCATGCCGTTGGC
IFN-γ	Forward: ACAGCAAGGCGAAAAAGGATG
	Reverse: TGGTGGACCACTCGGATGA
ZO-1	Forward: TCATCCCAAATAAGAACAGAGC
	Reverse: GAAGAACAACCCTTTCATAAGC

Table S2. The ^{13}C NMR chemical shifts (ppm) of β-glucan

	C-1/1’	C-2/2’	C-3/3’	C-4/4’	C-5/5’	C-6/6’	Reference
BYG	103.5	73.3/73.5	86.6/77.1	68.8	76.7/75.2	61.3	This study
Glucan 300	103.5	73.3/73.5	86.6/77.1	68.8	76.8/75.2	61.3	This study
BYGlc	105.5	73.3	86.7	68.9	76.8	61.4	(Cao et al., 2016)
Glucan	102.5	72.5	85.8	68.2	76.0	60.7	(Freimund et al., 2003)
N-glucan	103.5	73.3	86.7/73.9	68.8	76.8/76.0	61.3/70.4	(Liu et al., 2008)
NG	103.0/103.3	72.8/73.2	86.2/76.5	68.4/69.4	76.3/75.8	60.9/68.1	(Shi et al., 2014)

Supplementary Reference

Cao, Y., Zou, S., Xu, H., Li, M., Tong, Z., Xu, M., Xu, X. 2016. Hypoglycemic activity of the Baker's yeast beta-glucan in obese/type 2 diabetic mice and the underlying mechanism. Mol. Nutr. Food Res. 60, 2678-2690.

Freimund, S., Sauter, M., Käppeli, O., Dutler, H. 2003. A new non-degrading isolation process for β-1,3-d-glucan of high purity from baker's yeast *Saccharomyces cerevisiae*. Carbohydr. Polym. 54, 159-171.

Liu, X., Wang, Q., Cui, S., Liu, H. 2008. A new isolation method of β-d-glucans from spent yeast *Saccharomyces cerevisiae*. Food Hydrocolloids 22, 239-247.

Shi, F., Shi, J., Li, Y. 2014. Mechanochemical phosphorylation and solubilisation of β-D-glucan from yeast *Saccharomyces cerevisiae* and its biological activities. PLoS One 9, e103494. https://doi: 10.1371/journal.pone.0103494.