Supplementary information

Table 1. Composition of the Experimental Diets for C57BL/6J Mouse

	Carbohydrate (%)						Protein	Fat	Energy
	total	maltodextrin	sucrose	WGLSF	starch	β-glucan	(%)	(%)	(kcal/kg)
NC [a]	71.2	/	/	/	/	/	18.8	10	3800
HF [b]	21.2	11.2	10	0	0	0	18.8	60	5500
HF-WGLSF [c]	21.2	10.6	0	10.6	0	0	18.8	60	5500
HF-PM [d]	21.2	10.6	0	0	9.7	0.9	18.8	60	5500

Note: a, normal control diet; b, high-fat diet; c, high-fat with whole-grain like structural form diet; and d, high-fat with physical mixture β-glucan and starch diet.

Table 2. The primer sequences of genes

Genes	Forward	Reward
β-actin	5’-GGGTCAGAAGGACTCCTATG-3’	5’-GTAACAATGCCATGTTCAAT-3’
IL-6	5’-ATACCACTCCCAACAGACC-3’	5’-CTCATTTCCACGATTTCC-3’
TNF-α	5’-CCCCTTTATTGTCTACTCCTC-3’	5’-CCCAGCATCTTGTGTTTC-3’
G-6-Pase	5’-GACCTGAGGAACGCCTTCTATG-3’	5’-AGTCGGTGTCCAGGACCCACCAA-3’
GK	5’-GAAGACCTGAAGAAGGTGATGAGC-3’	5’-GTCTATGTCTTCGTGCCTTACAGG-3’
PEPCK	5’-TCTTTGGTGGCCGTAGACCTG-3’	5’-CCAGGTATTTGCCGAAGTTGTAG-3’
AKT	5’-TCAGGATGTGGATCAGCGAGA-3’	5’-CTGCAGGCAGCGGATGATAA-3’
GSK-3β	5’-TTCTCGGTACTACAGGGCACCAG-3’	5’-GTCCTAGCAACAATTCAGCCAACA-3’

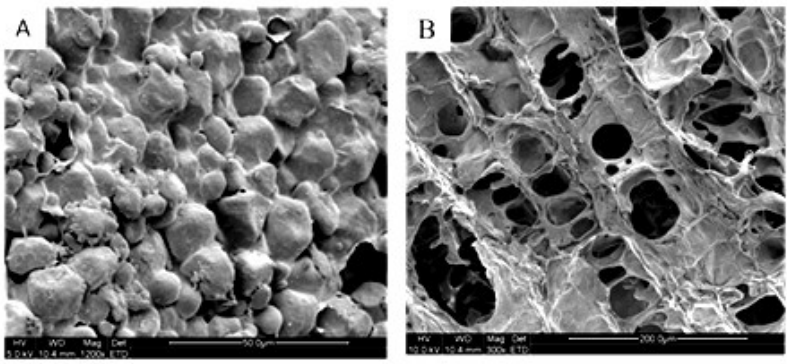

Figure 1. The structure of WGLSF-starch showing a cell-wall like physical structure [25].

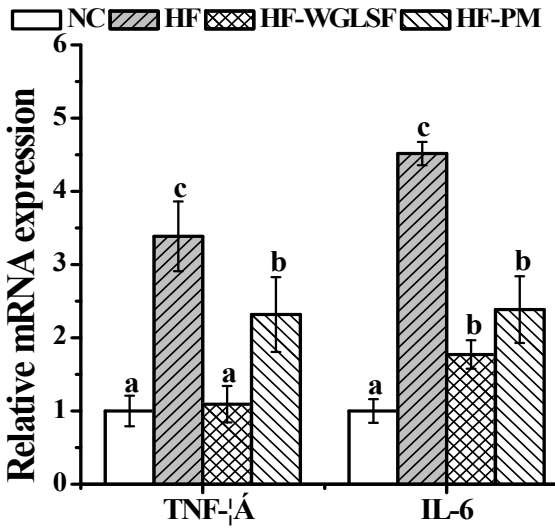

Figure 2. The mRNA expression of adipose tissue inflammation in high-fat-diet-fed C57/BL mice. Results are presented as the mean ± SEM (n = 6). Different letters represent significant difference at $p < 0.05$.

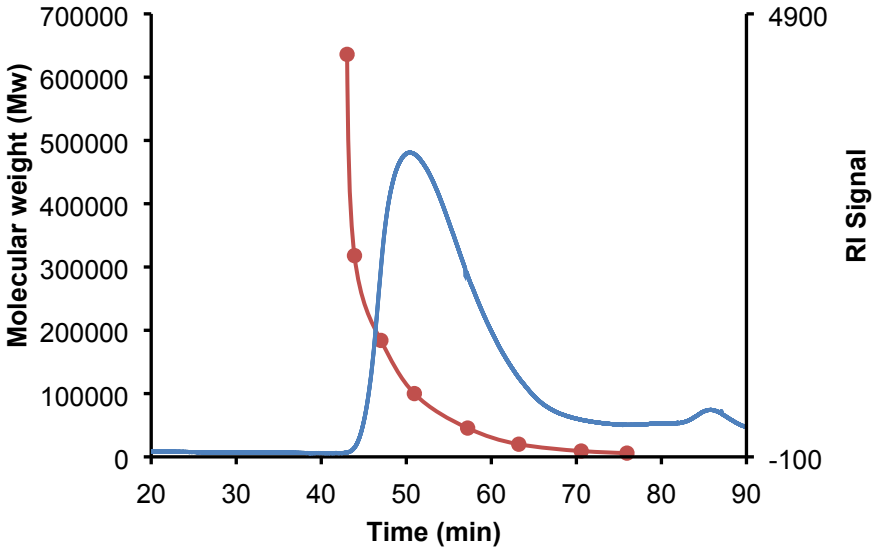

Figure 3. The HPLC analysis of the water-soluble oat β-glucan. The molecular weight is 1.29×10^5.