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Supplementary Materials

The Obesity Amelioration Effect in High-Fat-Diet Fed Mice of a Homogeneous Polysaccharide from *Codonopsis pilosula*

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Abstract: A homogeneous polysaccharide coded as CPP-1 was extracted and purified from the root of *Codonopsis pilosula* (Franch.) Nannf. by water extraction, ethanol precipitation, and column chromatography. Its structure was analyzed by HPGPC-ELSD, HPLC, GC-MS, FT-IR, and NMR techniques. The results indicated that CPP-1 was composed of mannose (Man), glucose (Glc), galactose (Gal), and arabinose (Ara) at a molar ratio of 5.86:51.69:34.34:8.08. The methylation analysis revealed that the main glycosidic linkage types of CPP-1 were (1→4)-linked-Gal residue, (1→3)-linked-Glc residue, (1→3,4)-linked-Glc residue, (1→2,3,4)-linked-Glc residue, (1→)-linked-Glc residue, (1→)-linked-Man residue, and (1→)-linked-Ara residue. In vivo efficacy trial illustrated that CPP-1 supplements could alleviate HFD-induced mice obesity significantly, as well as improve obesity-induced disorders of glucose metabolism, alleviate insulin resistance, and improve the effects of lipid metabolism. The findings indicate that this polysaccharide has the potential for the treatment of obesity.

Keywords: *Codonopsis pilosula*; polysaccharide; structural characterization; obesity

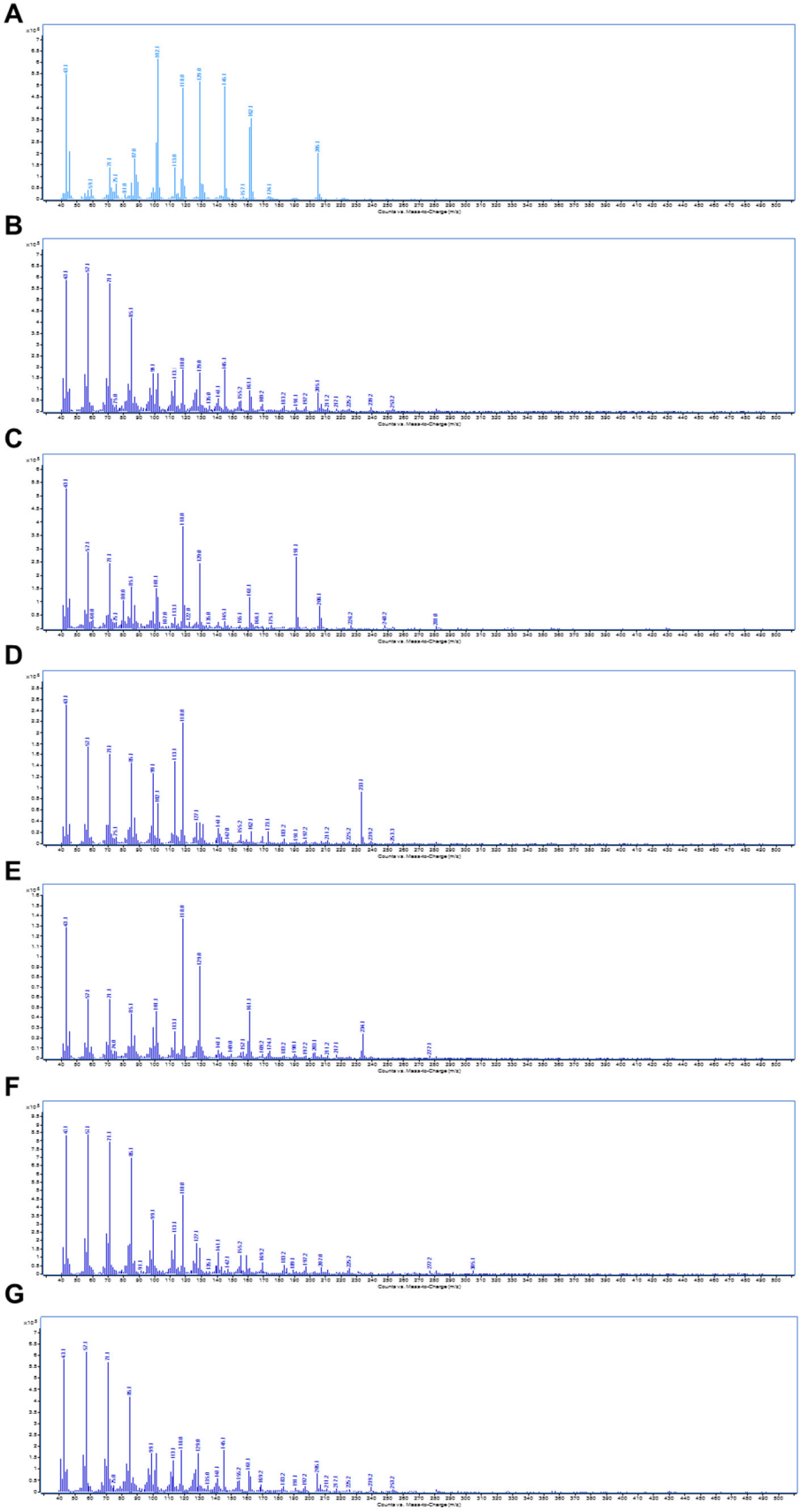

Figure S1. The ion fragments of different linkage patterns in GC/MS. (A) t-Glc(*p*), (B) t-Man(*p*), (C) t-Ara(*p*), (D) 1,4-Gal(*p*), (E) 1,3-Glc(*p*), (F) 1,3,4-Glc(*p*), (G) 1,2,3,4-Glc(*p*).