Supporting information

S.1
Sequential extraction and fractionalization procedure of *Dendrobium officinale* stems

**Dry *Dendrobium officinale* stems**
- extracted with 80% ethanol

**Residues**
- Ethanol extracts A

**Water extracts B**
- extracted with distilled water, 100 °C, 2 h, twice
- precipitated with 80% ethanol

**Ethanol precipitates D**
- deproteinized with Sevag method

**Total polysaccharides E**
- dialysed with a molecular weight cutoff of 3500 Da

**Dendrobium officinale polysaccharides (DOP) F**
- DEAE-Cellulose anion exchange column, eluted with distilled water
- 0.05 M NaCl

**DOP-W**
- fractionized with
  - 80% ethanol
  - 60% ethanol
  - 40% ethanol

**DOP-W3**
- fractionized on Sephadex G-100, eluted with distilled water

**DOP-W3-c**
- DOP-W3-b
- DOP-W3-a

**DOP-W2**
- DOP-W1
Elution chromatogram of DOP on DEAE-cellulose anion exchange column
S.3

Effects of oral administration period and doses of DOP-W3-b on body weight gains (A), spleen index (B), thymus index (C) and liver index (D) in mice. In A, means with different lowercases are significantly different ($p < 0.05$). In B-D, * and ** indicate significant differences at the level of $p < 0.05$ and $p < 0.01$ as compared with control, respectively. Body weight gain (%) = [(body weight of day 3 or 7 − body weight of day 0) / body weight of day 0] × 100. Index (mg/g) = (organ weight) / (body weight).
Number of goblet cells in the ileum of untreated mice and mice orally administrated with 2.0 g/kg DOP-W3-b. * and ** indicate significant differences at the level of $p < 0.05$ and $p < 0.01$ as compared with control, respectively.
S.5
Methylation analysis of DOP-W3-b.

**A.** TIC profile of methylated alditol acetylates; **B.** Mass fragment of 12.739 min (2,3,4,6-\text{Me}_4\text{-Glc}p); **C.** Mass fragment of 15.242 min (2,3,6-\text{Me}_3\text{-Man}p); **D.** Mass fragment of 16.576 min (2,3,6-\text{Me}_3\text{-Glc}p); **E.** Mass fragment of 19.173 min (2,4-\text{Me}_2\text{-Man}p); **F.** Mass fragment of 23.979 min (3,6-\text{Me}_2\text{-Man}p)