

Supplementary materials

Structural characterization, acute toxicity assessment and protective effects of selenylated apple pectin on dextran sulfate sodium-induced ulcerative colitis

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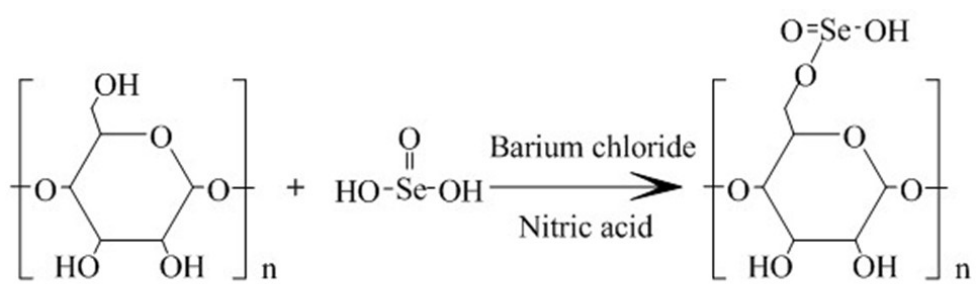


Fig. S1. Synthesis process of selenium-polysaccharide.

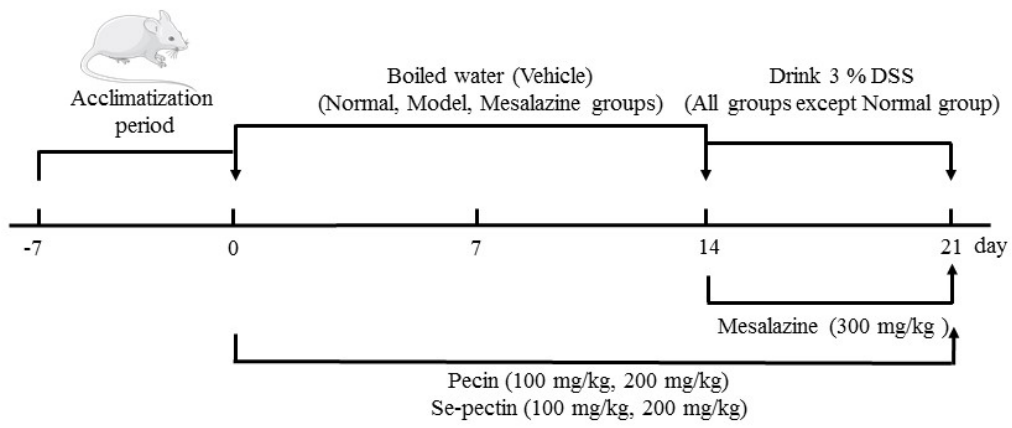


Fig. S2. The in vivo experimental scheme. Here, Pectin: non-selenylated apple pectin; Se-pectin: selenylated apple pectin.

a)



b)



Fig. S3. The appearance of non-selenylated (a) and selenylated (b) apple pectins.

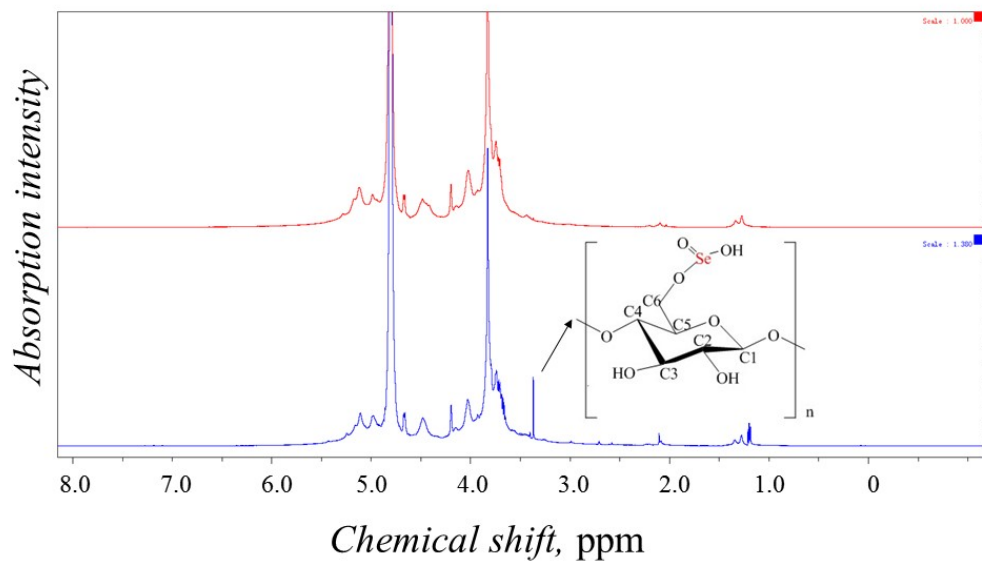
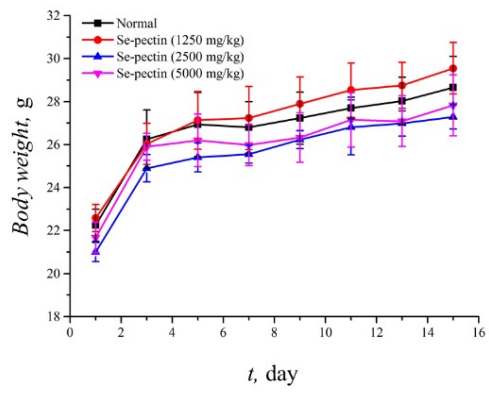


Fig. S4. One dimensional ¹H Nuclear Magnetic Resonance (1 D ¹H NMR) spectrum of non-selenylated (blue line) and selenylated (red line) apple pectins.

a)



b)

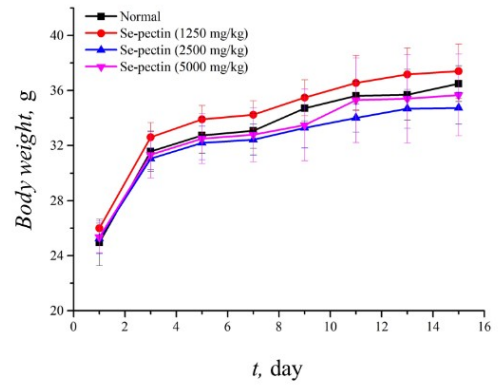


Fig. S5. Changes in body weight of female (a) and male (b) mice.

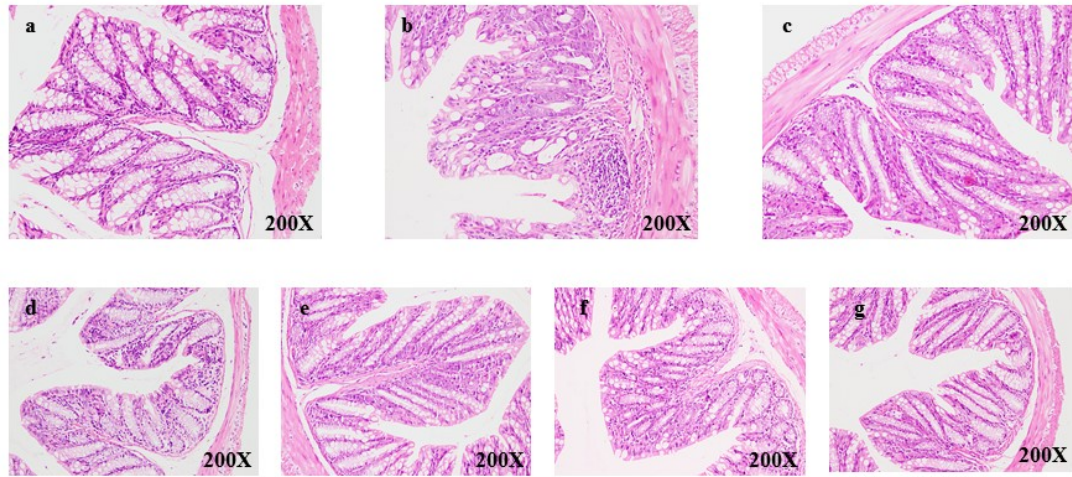


Fig. S6. Hematoxylin-Eosin stained colon tissues (Magnification 200 ×) in mice of Normal (a), Model (b), Mesalazine (300 mg/kg) (c), Pectin (100 mg/kg) (d), Pectin (200 mg/kg) (e), Se-pectin (100 mg/kg) (f) and Se-pectin (200 mg/kg) (g) groups.

Table S1 Scoring standards of Disease Activity Index (DAI).

Loss of body weight (%)	Fecal traits	Hematochezia	Score
0	Normal	Normal	0
1~5	Soft stools	Positive faint blood+	1
5~10	Crumbly stools	Positive faint blood++	2
10~15	Loose stools	Slight blood	3
>15	Diarrhoea	Apparent blood	4

Table S2 The relative molecular weight distribution of non-selenylated and selenylated apple pectins.

Samples	Time (min)	Molecular weight (Da)	Content (%)
Non-selenylated apple pectin	6.82 - 7.80	$1.30 \times 10^7 \pm 8.17 \times 10^4$	2.8
	8.00 - 14.04	$5.17 \times 10^5 \pm 4.77 \times 10^3$	56.1
	14.27 - 19.05	$6.49 \times 10^4 \pm 6.16 \times 10^3$	23.6
	19.05 - 23.40	$1.88 \times 10^4 \pm 2.96 \times 10^3$	17.4
Selenylated apple pectin	7.04 - 8.09	$2.54 \times 10^7 \pm 2.23 \times 10^5$	3.3
	8.09 - 16.29	$6.03 \times 10^5 \pm 6.89 \times 10^3$	91.5
	16.29 - 19.30	$3.30 \times 10^5 \pm 3.25 \times 10^4$	1.9
	19.30 - 22.66	$4.55 \times 10^4 \pm 9.67 \times 10^3$	3.3

Table S3 Monosaccharide composition and content of non-selenylated and selenylated apple pectins. Here, Rha-Rhamnose, Ara-Arabinose, Gal-Galactose, Glc-Glucose, Xyl-Xylose, GalA-Galacturonic acid.

Samples	Monosaccharide composition and content					
	(mg/g _{sample})					
	Rha	Ara	Gal	Glc	Xyl	GalA
Non-selenylated apple pectin	39.1	12.4	224.8	70.2	81.2	465.6
Selenylated apple pectin	27.7	3.6	192.9	57.4	51.4	553.4

Table S4 Effects of selenylated apple pectin of three doses on organ coefficients of mice.

Gender	Group	Heart (%)	Liver (%)	Spleen (%)	Kidney (%)	Intestines (%)
Male	Normal	0.54±0.03 ^a	4.30±0.27 ^a	0.44±0.05 ^a	1.19±0.09 ^a	7.56±0.68 ^a
	Se-pectin (1250 mg/kg)	0.48±0.03 ^a	4.23±0.03 ^a	0.40±0.07 ^a	1.18±0.09 ^a	7.94±0.75 ^a
	Se-pectin (2500 mg/kg)	0.53±0.09 ^a	4.12±0.16 ^a	0.37±0.05 ^a	1.15±0.08 ^a	8.06±0.48 ^a
	Se-pectin (5000 mg/kg)	0.52±0.04 ^a	4.09±0.17 ^a	0.35±0.03 ^a	1.19±0.10 ^a	7.48±0.95 ^a
Female	Normal	0.49±0.06 ^a	4.53±0.59 ^a	0.31±0.03 ^a	1.32±0.03 ^a	7.49±0.48 ^a
	Se-pectin (1250 mg/kg)	0.49±0.09 ^a	4.44±0.33 ^a	0.29±0.03 ^a	1.42±0.02 ^a	7.33±0.27 ^a
	Se-pectin (2500 mg/kg)	0.55±0.07 ^a	4.62±0.33 ^a	0.32±0.04 ^a	1.53±0.02 ^a	7.59±0.97 ^a
	Se-pectin (5000 mg/kg)	0.53±0.06 ^a	4.71±0.08 ^a	0.31±0.04 ^a	1.54±0.26 ^a	7.28±0.47 ^a

Date are expressed as the mean ± SD.