Supplementary information
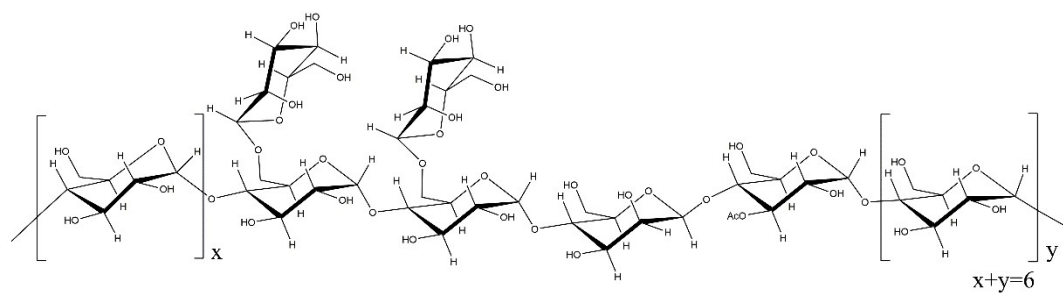

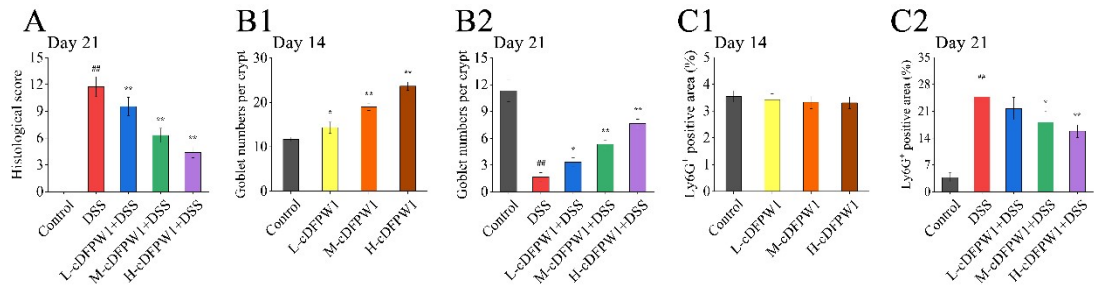
Fig. S1. The structure of cDFPW1[20].

Fig. S2. cDFPW1 attenuated the colon tissue damage in DSS-induced colitis mice. Histological score in colon tissue (A), goblet number per crypt (B1, B2), Ly6G$^+$ positive area in colon tissues (C1, C2). Data are presented as mean ± SEM (n = 3). *p < 0.05 and **p < 0.01 vs. control group on day 14. +p < 0.05 and ++p < 0.01 vs. DSS-induced model group. #p < 0.05 and ##p < 0.01 vs. control group on day 21.
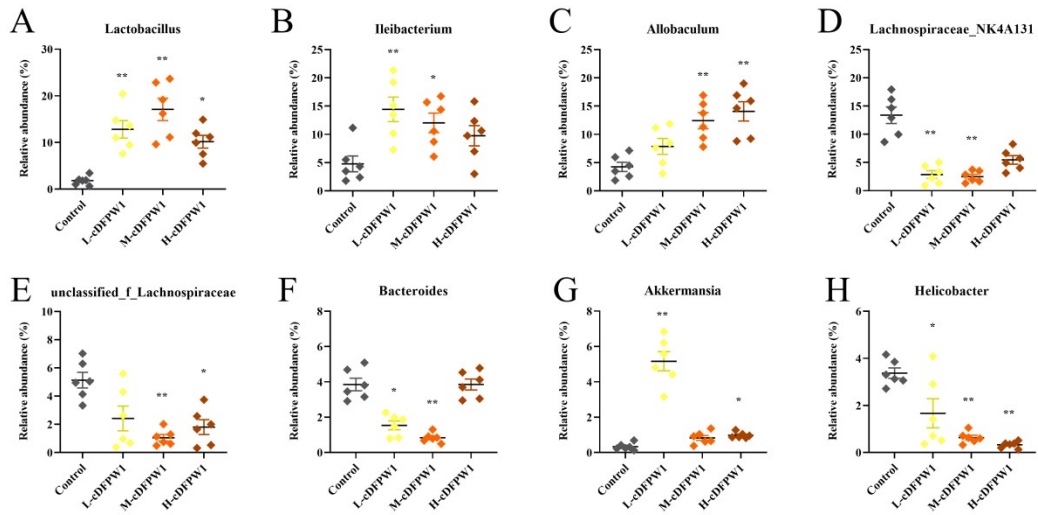
Fig. S3. Effects of cDFPW1 treatment for 14 days on specific gut microbiome at the genus level in mice. Data are presented as means ± SEM (n = 6). *$p < 0.05$ and **$p < 0.01$ vs the control group.
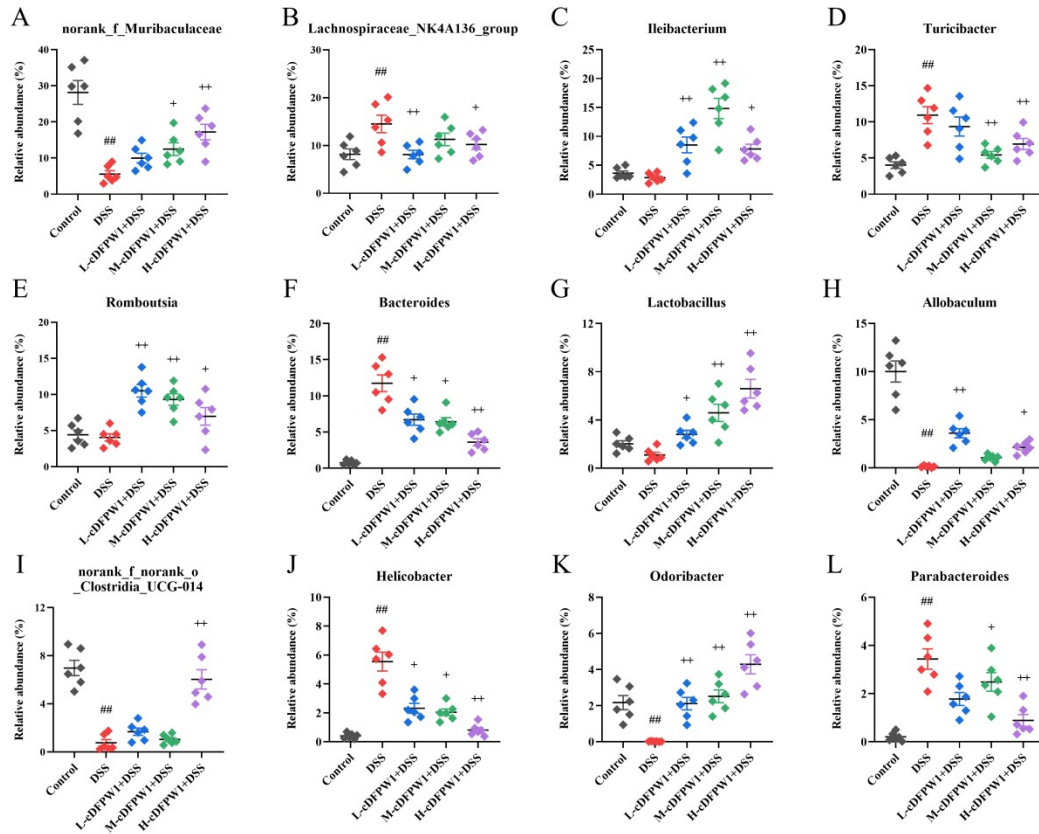
Fig. S4. Effects of cDFPW1 treatment for 21 days on specific gut microbiome at the genus level in DSS-induced mice. Data are presented as mean ± SEM (n = 6). $+p <$ 0.05 and $++p < 0.01$ vs. DSS-induced model group. $\#p < 0.05$ and $\#\#p < 0.01$ vs. control group on day 21.
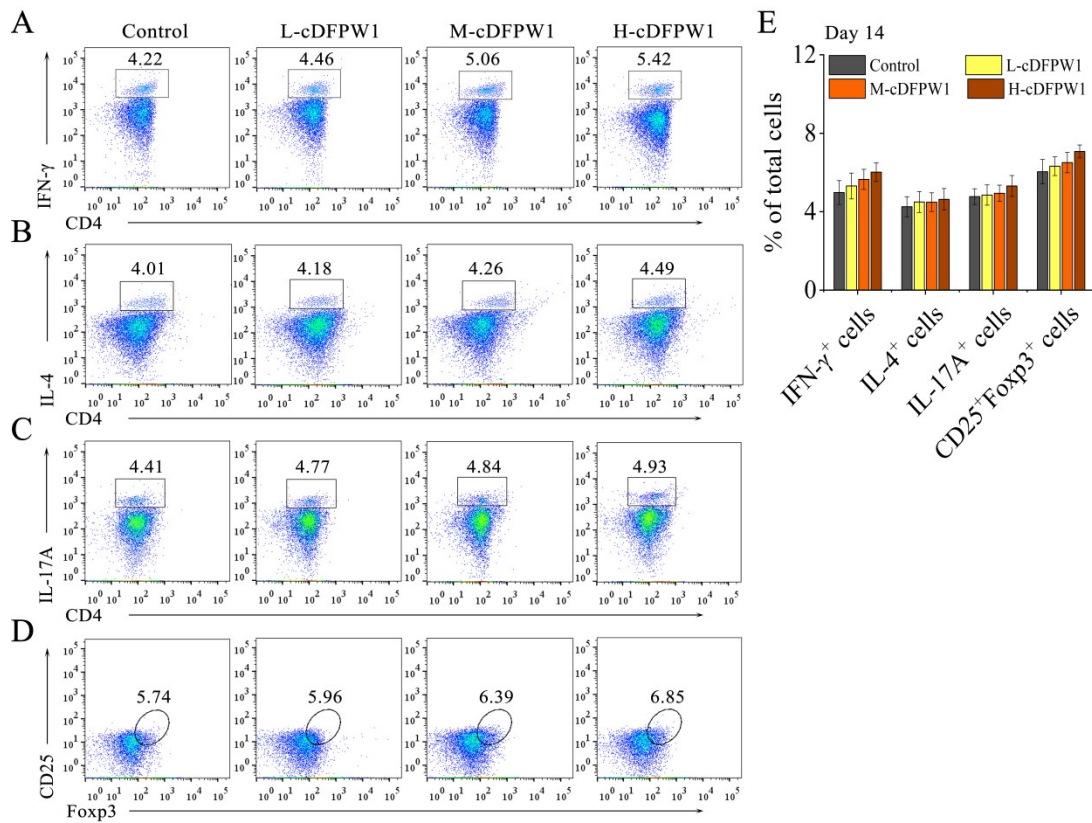
Fig. S5. Effects of cDFPW1 treatment for 14 days on Th1 (A), Th2 (B), Th17 (C) and Treg cells (D) in colonic lamina proprias (LPs) were detected by using flow cytometry assay. Percentage of T-cell subpopulations gated on CD4+ T cells (E). Data are presented as means ± SEM (n = 3). *$p < 0.05$ and **$p < 0.01$ vs the control group.
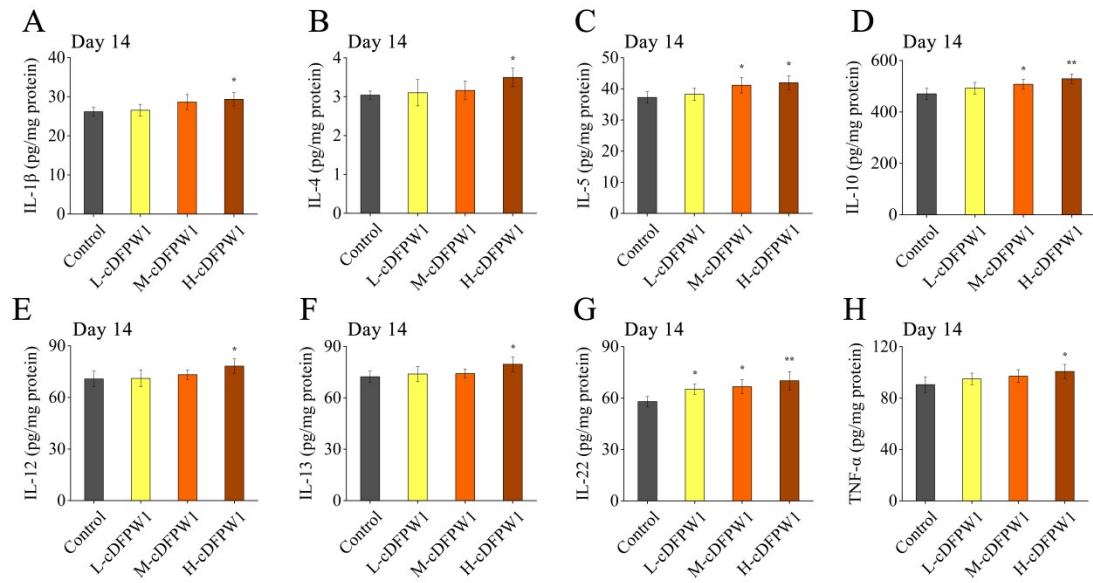
Fig. S6. Effects of cDFPW1 treatment for 14 days on inflammatory cytokines. IL-1β (A), IL-4 (B), IL-5 (C), IL-10 (D), IL-12 (E), IL-13 (F), IL-22 (G), TNF-α (H). Data are presented as means ± SEM (n = 4). *$p < 0.05$ and **$p < 0.01$ vs the control group.

Table S1. Criteria for disease activity index (DAI) scoring in the DSS-induced colitis

Score	Weight loss	Stool consistency	Stool bleeding
0	None	Normal	Negative hemocult
1	1-5%	Soft but still formed	Negative hemocult
2	6-10%	Soft	Positive hemocult
3	11-18%	Very soft; wet	Blood traces in stool visible
4	>18%	Watery diarrhea	Gross retal bleeding

Scoring criteria were recorded according to the literature's method[10].

Table S2. The criteria for histopathological scoring

Score	Inflammation	Crypt damage	Ulceration	Edema
0	No infiltrate	None	None	None
1	Occasional cell limited to submucosa	Some crypt damage, spaces between crypts	Small, focal ulcers	Absent
2	Significant presence of inflammatory cells in submucosa, limited to focal areas	Larger spaces between crypts, loss of goblet cells, some shortening of crypts	Frequent small ulcers	Present
3	Infiltrate present in both submucosa and lamina propria, limited to focal areas	Large areas without crypts, surrounded by normal crypts	Large areas lacking surface epithelium	
4	Large amount of infiltrate in submucosa, lamina propria and surrounding blood vessels, covering large areas of mucosa	No crypts		
5	Transmural inflammation (mucosa to muscularis)			

Scoring criteria were recorded according to the literature's method[24].

Table S3. Primers specific for RT-qPCR

Gene ID	Gene	Forward primer	Reverse primer
18260	Occludin	TTGAAAGTCCACCTCCTT	CCGGATAAAAAGAGTACG
21872	ZO-1	ACCACCAACCCGAGAAG	CAGGAGTCATGGACGCAC
14433	GAPDH	GGTGAAGGTCGGTGTGAAAACG	CTCGCTCCTGGAAGATGGTG