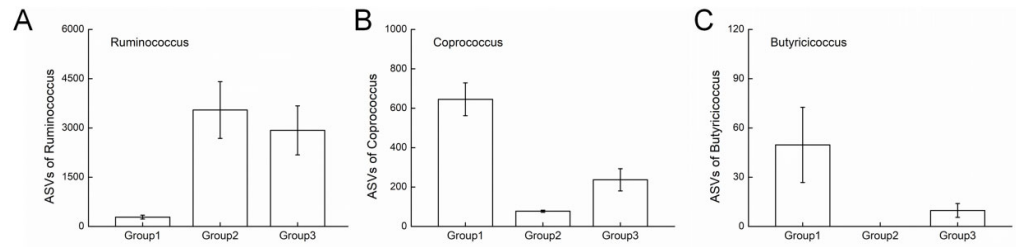


## Supplementary material

**Supplementary Table S1** The effects of ADe on body weight and organ index.

	Week	NCD	NCD+400 mg/kg ADe	HFD	HFD+400 mg/kg ADe	HFD+800 mg/kg ADe	HFD+3 mg/kg Sim
Body weight (g)	0	23.5±0.3	24.5±0.6 <sup>#</sup>	33.4±1 <sup>###</sup>	32.3±0.9	34.7±1	34.9±1.6
	1	25.1±0.5	23.6±0.4 <sup>#</sup>	34±0.9 <sup>###</sup>	32.5±1.3	32.2±1.3	34.5±1
	2	26.4±0.4	24.5±0.5 <sup>#</sup>	36.3±1.8 <sup>###</sup>	33.5±1.6	32.9±1.2	33.4±1.4
	3	26.1±0.4	24.7±0.5 <sup>#</sup>	34.7±0.9 <sup>###</sup>	35.6±1.4	34.4±1	34.7±1.7
	4	25.8±0.4	24.5±0.3 <sup>#</sup>	39.5±1.1 <sup>###</sup>	34±1 <sup>**</sup>	36.1±0.8 <sup>*</sup>	37.5±1.3
	5	26±0.4	24.7±0.3 <sup>#</sup>	43.9±1.3 <sup>###</sup>	36.5±1.2 <sup>**</sup>	37.7±0.8 <sup>**</sup>	37.8±1.3 <sup>**</sup>
	6	26.3±0.5	24.6±0.5 <sup>#</sup>	45.9±1.4 <sup>###</sup>	39.4±1.5 <sup>**</sup>	38.5±1 <sup>**</sup>	39.5±1.6 <sup>*</sup>
	7	27±0.2	25.8±0.4 <sup>#</sup>	46.4±1.2 <sup>###</sup>	40.7±1.5 <sup>*</sup>	41.8±1.5 <sup>*</sup>	41.6±1.2 <sup>*</sup>
	8	27.2±0.6	24.7±0.5 <sup>#</sup>	48.2±1.1 <sup>###</sup>	42.9±0.9 <sup>**</sup>	42.9±1.1 <sup>**</sup>	41.8±2.4 <sup>*</sup>
	9	27.2±0.3	25.4±0.5 <sup>#</sup>	47.9±1.1 <sup>###</sup>	42.8±1.6 <sup>*</sup>	44.1±1.2 <sup>*</sup>	41.4±2 <sup>*</sup>
	10	27.5±0.5	25.2±0.6 <sup>#</sup>	50.6±1.2 <sup>###</sup>	44.8±2.2 <sup>*</sup>	45.8±1.5 <sup>*</sup>	45.4±1.9 <sup>*</sup>
Organ index (%)	Spleen	0.239±0.01	0.239±0.01	0.174±0.006 <sup>###</sup>	0.19±0.001 <sup>*</sup>	0.195±0.006 <sup>*</sup>	0.179±0.005
	Kidney	1.19±0.017	1.255±0.009 <sup>###</sup>	0.689±0.022 <sup>###</sup>	0.852±0.037 <sup>**</sup>	0.834±0.021 <sup>***</sup>	0.825±0.042 <sup>*</sup>
	Heart	0.543±0.018	0.51±0.022	0.384±0.011 <sup>###</sup>	0.443±0.02 <sup>*</sup>	0.46±0.019 <sup>**</sup>	0.43±0.015 <sup>*</sup>

Data were analyzed using a one-way ANOVA and are expressed as the means ± S.E.M. (n = 6). <sup>#</sup>  $p < 0.05$ , <sup>##</sup>  $p < 0.01$  and <sup>###</sup>  $p < 0.001$  versus NCD-fed mice; <sup>\*</sup>  $p < 0.05$ , <sup>\*\*</sup>  $p < 0.01$  and <sup>\*\*\*</sup>  $p < 0.001$  versus HFD- fed mice.



**Figure S1** The ASVs number of *Ruminococcus* (A), *Coprococcus* (B), and *Butyrificoccus* (C). Data are presented as the mean  $\pm$  S.E.M. ( $n = 3$  for NCD-fed mice and HFD-fed mice, and  $n=4$  for ADe-treated HFD-fed mice). Group 1: NCD-fed mice, Group 2: HFD-fed mice, Group 3: ADe-treated HFD-fed mice.