

Table.S1 Proteins in fermented egg milk beverage (FEMB)

Accession	Protein	Coverage (%)	Peptides number	PSMs	MW (kDa)	Score sequent HT
A0A2H4Y810	OVA	63	24	1826	42.900	3024.130
A0A2H4Y816	OVA	62	23	1748	42.900	2967.220
A0A2H4Y879	OVA	62	23	1744	42.900	2964.790
A0A2H4Y7Z9	OVA	61	24	1635	42.800	2939.020
A0A2H4Y7Z2	OVA	55	20	1719	42.900	2862.850
A0A2H4Y8G6	OVA	55	19	1750	42.800	2822.960
A0A2H4Y7U4	OVA	55	22	1529	42.700	2722.820
A0A2H4Y8B2	OVA	59	23	1562	42.800	2722.130
A0A2H4Y7R6	OVA	53	19	1533	42.800	2625.840
A0A2H4Y8I1	OVA	60	22	1524	42.800	2545.760
A0A2H4Y821	OVA	60	22	1531	42.900	2431.510
A0A2H4Y7X8	OVA	54	19	1418	42.800	2295.110
A0A2H4Y842	OVA	58	20	1391	43.000	2287.900
A0A2H4Y8E8	OVA	43	17	1330	42.800	2065.710
A0A2H4Y8B1	OVA	48	16	1133	42.800	1988.620
A0A2H4Y814	OVA	42	10	890	42.800	1296.620
P02789	OTF	58	51	851	77.700	488.100
B8YK75	Lysozyme C	80	14	166	16.200	147.660

Notes: PSMs: Peptide spectrum matches, the number of recognized peptide sequences of the protein. MW, molecular weight, the sum of the relative atomic masses of all the atoms that make up the molecule. OVA and OTF are short for Ovalbumin and Ovotransferrin.

Table.S2 Organ parameter and colon length of mice in different groups

	Liver index	Kidney index	Spleen index	Colon length (cm)
CK	0.044 ± 0.003c	0.015 ± 0.001a	0.003 ± 0.001a	7.310 ± 0.680a
CK+FDB	0.047 ± 0.004bc	0.016 ± 0.001a	0.003 ± 0.001a	7.390 ± 0.600a
DSS+FDW	0.052 ± 0.003a	0.016 ± 0.002a	0.004 ± 0.001a	5.160 ± 0.340d
DSS+GB	0.044 ± 0.004c	0.016 ± 0.001a	0.004 ± 0.001a	5.700 ± 0.170c
DSS+FDB	0.048 ± 0.003b	0.015 ± 0.001a	0.004 ± 0.001a	6.200 ± 0.530b

Notes: Data represents as means ± SD (n=12). DSS (Dextran sulfate sodium), CK (Control check), CK+FDB (Control check and freely drinking beverage), DSS+FDW (DSS and freely drinking water), DSS+GB (DSS and gavage beverage), DSS+FDB (DSS and freely drinking beverage). Different letters in each row indicate significant difference ($p < 0.05$) between different groups.

Table.S3 Alpha community diversity of cecum content in different groups

	shannon	simpson	ace	chao	coverage
CK	3.126 ± 0.075b	0.114 ± 0.024a	299.842 ± 25.898b	299.404 ± 25.270b	0.999
CK+FDB	4.102 ± 2.390a	0.140 ± 0.016a	394.260 ± 11.036a	394.576 ± 15.253a	0.999
DSS+FDW	2.865 ± 0.461b	0.150 ± 0.075a	261.059 ± 28.281c	260.300 ± 28.483b	0.999
DSS+GB	3.087 ± 0.626b	0.152 ± 0.141a	376.177 ± 44.098a	379.270 ± 62.753a	0.998
DSS+FDB	3.221 ± 0.787b	0.152 ± 0.173a	364.854 ± 21.330a	376.877 ± 34.243a	0.998

Notes: Data represents as means ± SD (n=12). DSS (Dextran sulfate sodium), CK (Control check), CK+FDB (Control check and freely drinking beverage), DSS+FDW (DSS and freely drinking water), DSS+GB (DSS and gavage beverage), DSS+FDB (DSS and freely drinking beverage). Different letters in each row indicate significant difference ($p < 0.05$) between different groups.

Table.S4 Short chain fatty acids (SCFAs) content in mice cecum of different groups ($\mu\text{g/mL}$)

SCFAs	CK	CK+FDB	DSS+FDW	DSS+GB	DSS+FDB
Acetic acid	113.901 \pm 16.734ab	90.791 \pm 30.685b	120.935 \pm 14.602ab	120.172 \pm 20.941ab	130.764 \pm 20.033a
Propanoic acid	69.402 \pm 13.047b	75.706 \pm 25.317b	68.325 \pm 9.204b	88.582 \pm 25.017ab	105.281 \pm 22.206a
Isobutyric acid	12.031 \pm 4.992a	10.262 \pm 3.273a	9.192 \pm 1.447a	7.493 \pm 1.364a	11.464 \pm 1.867a
Butanoic acid	166.267 \pm 27.906a	110.627 \pm 47.394bc	145.049 \pm 24.756ab	56.412 \pm 10.766d	87.735 \pm 33.111cd
Isovaleric acid	10.502 \pm 5.551a	9.667 \pm 3.261a	7.051 \pm 1.097a	5.357 \pm 0.955a	9.576 \pm 2.734a
Valeric acid	25.682 \pm 4.239a	12.292 \pm 4.495ab	24.465 \pm 3.303a	7.857 \pm 2.256b	7.197 \pm 3.762b
Isohexanoic acid	0.225 \pm 0.032a	0.163 \pm 0.738ab	0.192 \pm 0.063ab	0.127 \pm 0.046b	0.170 \pm 0.060ab
Hexanoic acid	0.685 \pm 0.109a	0.518 \pm 0.113b	0.647 \pm 0.133a	0.432 \pm 0.014b	0.484 \pm 0.549b

Notes: Data represents as means \pm SD (n=12). DSS (Dextran sulfate sodium), CK (Control check), CK+FDB (Control check and freely drinking beverage), DSS+FDW (DSS and freely drinking water), DSS+GB (DSS and gavage beverage), DSS+FDB (DSS and freely drinking beverage). Different letters in each row indicate significant difference ($p < 0.05$) between different groups.