

Supplementary Information

Effect of κ -carrageenan with different molecular weights and its acetylated derivatives on the structure and metabolites of intestinal flora

Shiqi Shen ^a, Cailing Tong^b, Yujia Ou^b, Tao Hong ^{a, c}, Zhipeng Li ^{a, c}, Yanbing Zhu ^{a, c},
Hui Ni ^{a, b, c}, Zedong Jiang ^{a, c}, Mingjing Zheng ^{a, c*}

^a College of Ocean Food and Biological Engineering, Jimei University, Xiamen, Fujian 361021, China

^b Xiamen Ocean Vocational College, Xiamen 361021, Fujian

^c Fujian Provincial Key Laboratory of Food Microbiology and Enzyme Engineering, Xiamen, Fujian 361021, China

Fig. S1 Total sugar contents of κ -carrageenan with different molecular weights and its acetylated derivatives digested in stomach (A-D) and small intestine (E-H): (A) & (E) κ -carrageenan; (B) & (F) F1- κ -carrageenan; (C) & (G) F2- κ -carrageenan; (D) & (H) F3- κ -carrageenan

Fig. S2 Reducing sugar contents of κ -carrageenan with different molecular weights and its acetylated derivatives digested in the stomach (A-D) and small intestine (E-H): (A) & (E) κ -carrageenan; (B) & (F) F1- κ -carrageenan; (C) & (G) F2- κ -carrageenan; (D) & (H) F3- κ -carrageenan carrageenan

Fig. S3 Sulfate contents of κ -carrageenan with different molecular weights and its acetylated derivatives in gastric (A-D) and small intestinal (E-H) digestion: (A) & (E) κ -carrageenan; (B) & (F) F1- κ -carrageenan; (C) & (G) F2- κ -carrageenan; (D) & (H) F3- κ -carrageenan

Fig. S4 Structure of intestinal flora during colonic fermentation of κ -carrageenan with different molecular weights and its acetylated derivatives: (A) *Streptococcus* (B) *Lactobacillus* (C) *Bifidobacterium*

Table S1 Preparation of *in vitro* simulated digestive solution (1L system)

Table S2 Sample Name and Abbreviation

Fig.S1

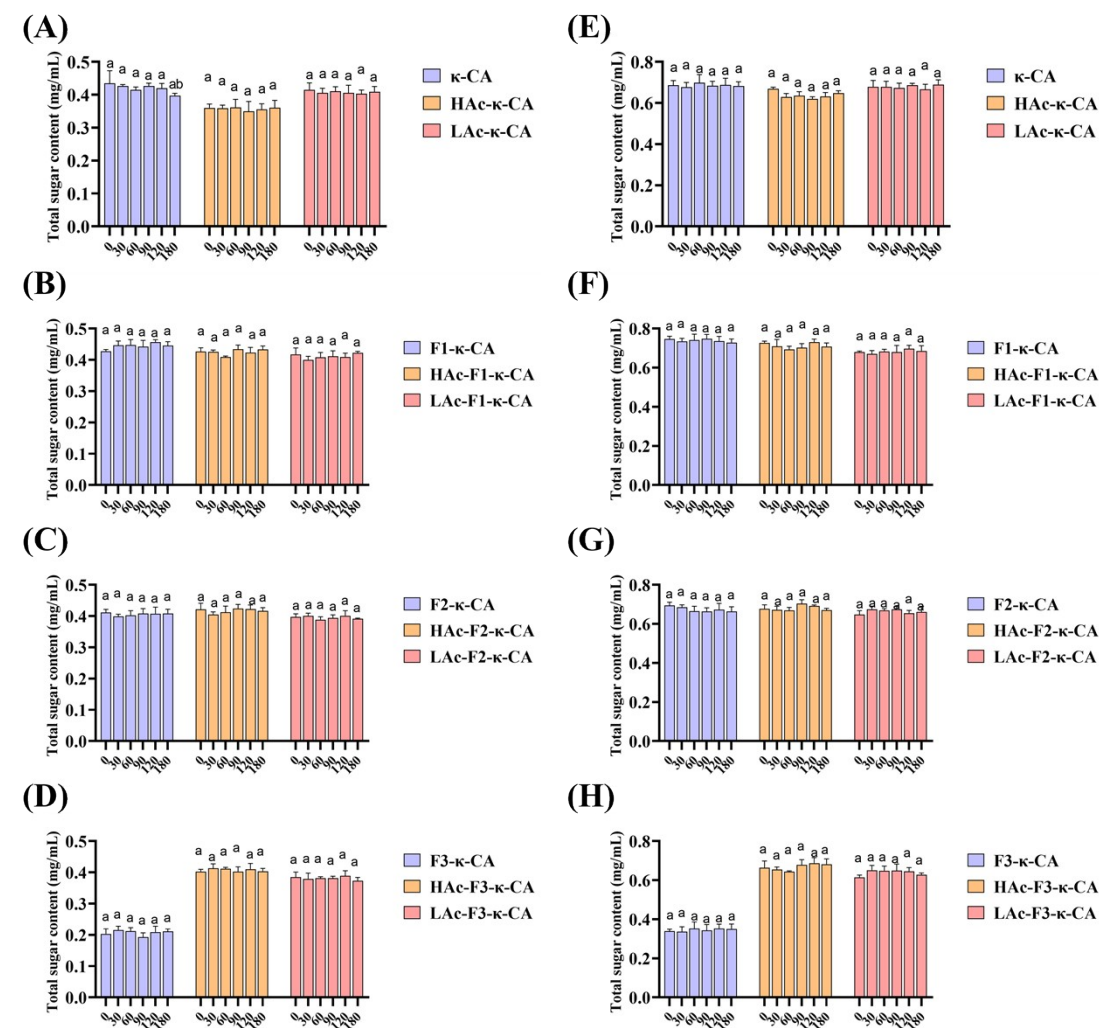


Fig.S2

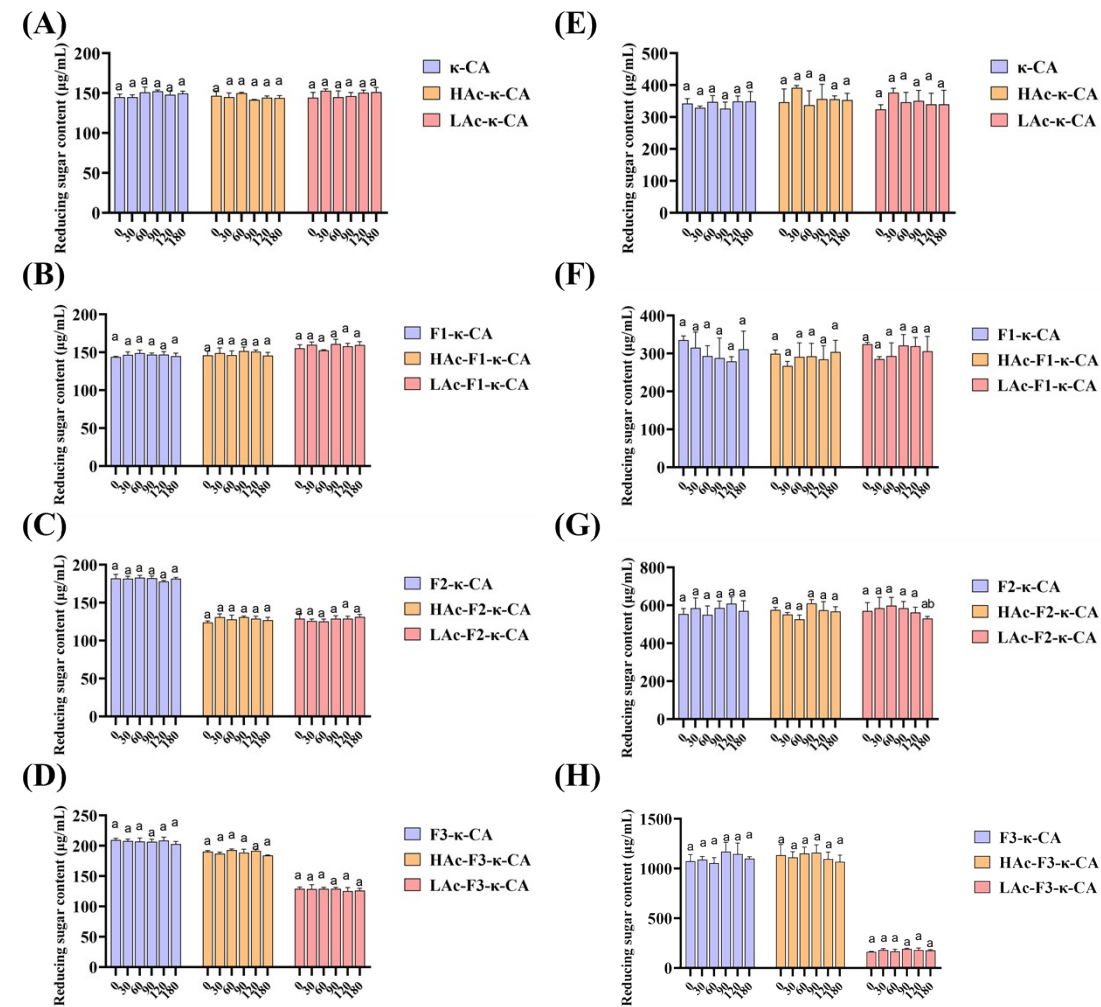


Fig.S3

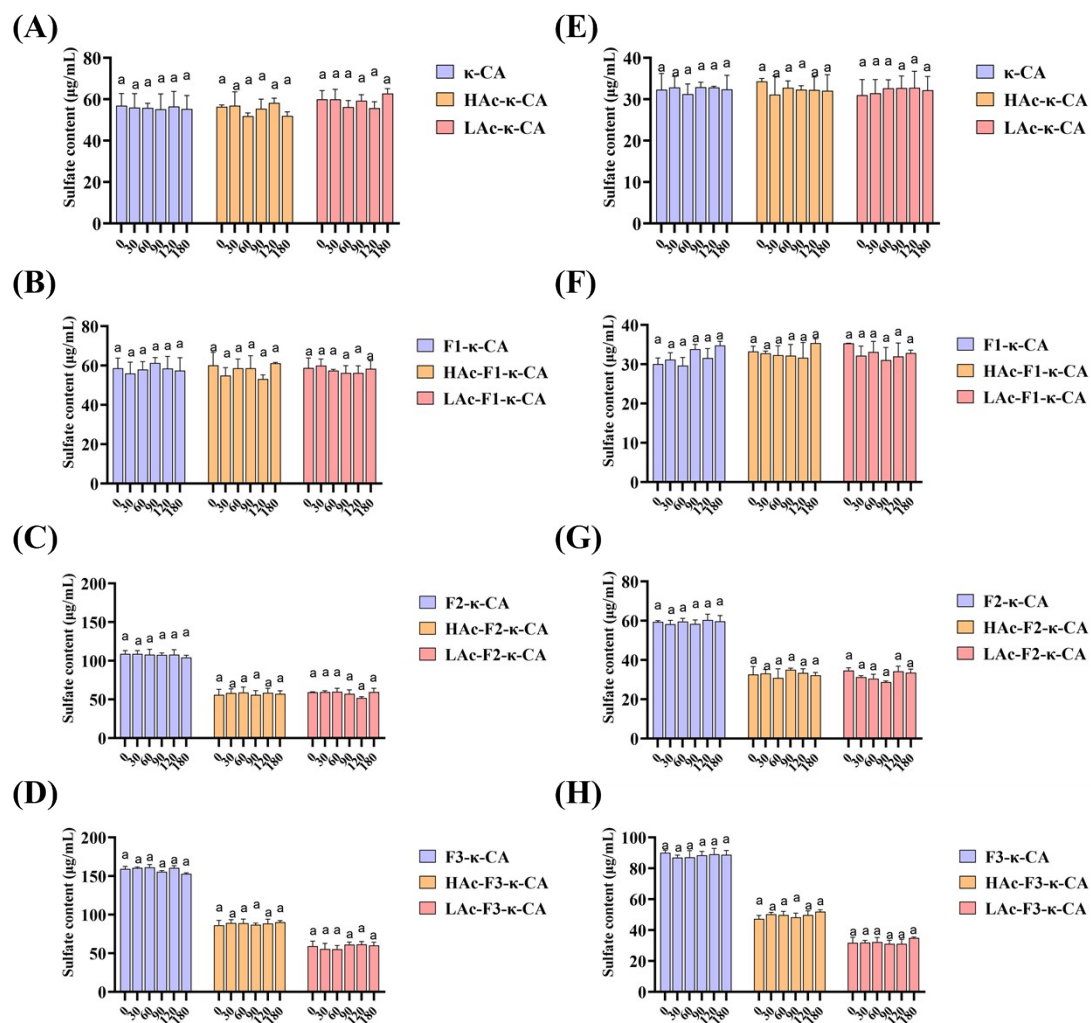


Fig.S4

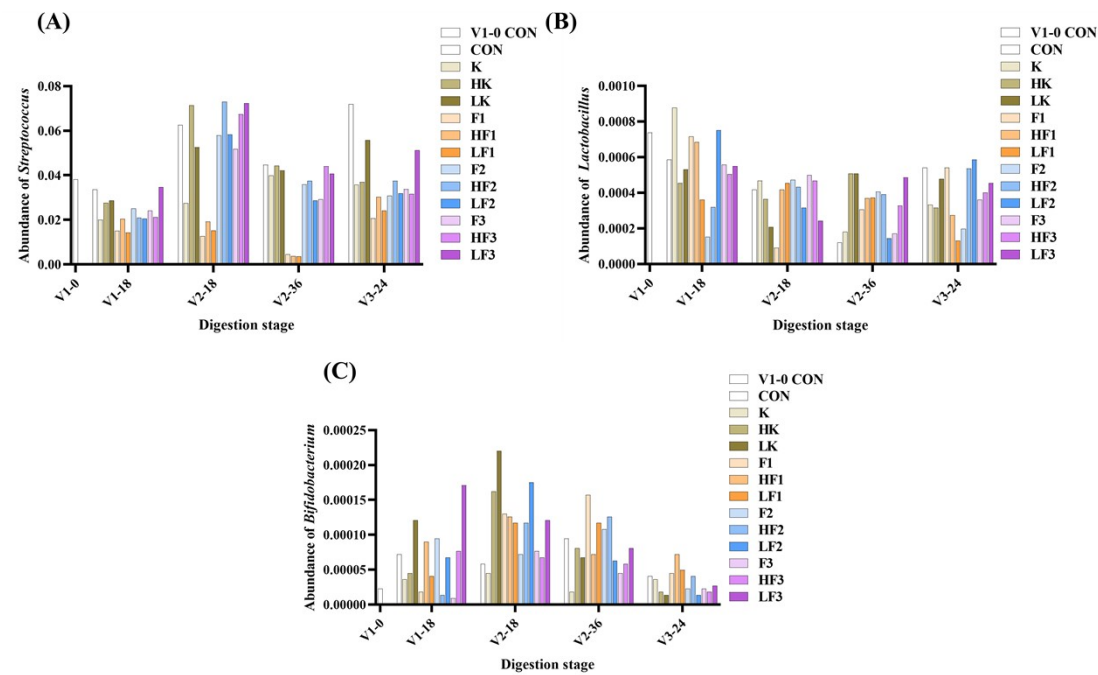


Table S1 Preparation of *in vitro* simulated digestive solution (1L system)

	SSF (pH 7)	SGF (pH 3)	SIF (pH 7)
KCl (mM)	15.1	6.9	6.8
KH ₂ PO ₄ (mM)	3.7	0.9	0.8
NaHCO ₃ (mM)	13.6	25	85
NaCl (mM)	-	47.2	38.4
MgCl ₂ (H ₂ O) ₆ (mM)	0.15	0.12	0.33
(NH ₄) ₂ CO ₃ (mM)	0.06	0.5	-
HCl (mM)	1.1	15.6	8.4
CaCl ₂ (H ₂ O) ₂ (mM)	1.5	0.15	0.6
alpha-amylase (U/mL)	75	-	-
pepsin (U/mL)	-	2000	-
pancreatic enzyme (U/mL)	-	-	1000
bile salt (mM)	-	-	10

Table S2 Sample Name and Abbreviation

Full Name	Abbreviation
κ -CA	K
LA κ -CA	LK
HA κ -CA	HK
F1- κ -CA	F1
LA κ -F1-CA	LF1
HA κ -F1-CA	HF1
F2- κ -CA	F2
LA κ -F2-CA	LF2
HA κ -F2-CA	HF2
F3- κ -CA	F3
LA κ -F3-CA	LF3
HA κ -F3-CA	HF3