

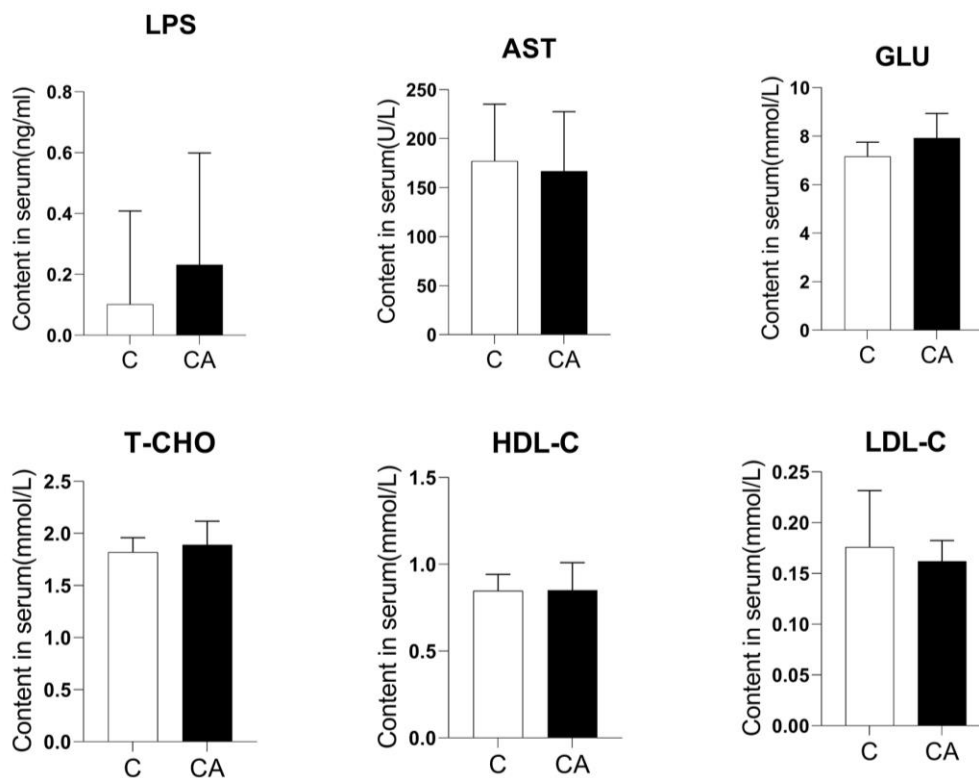
## Supplemental Data: Figures S1-S7, Tables S1-S3.

**Table S1. Nutrient content per 100 g of *Malus pumila* Mill**

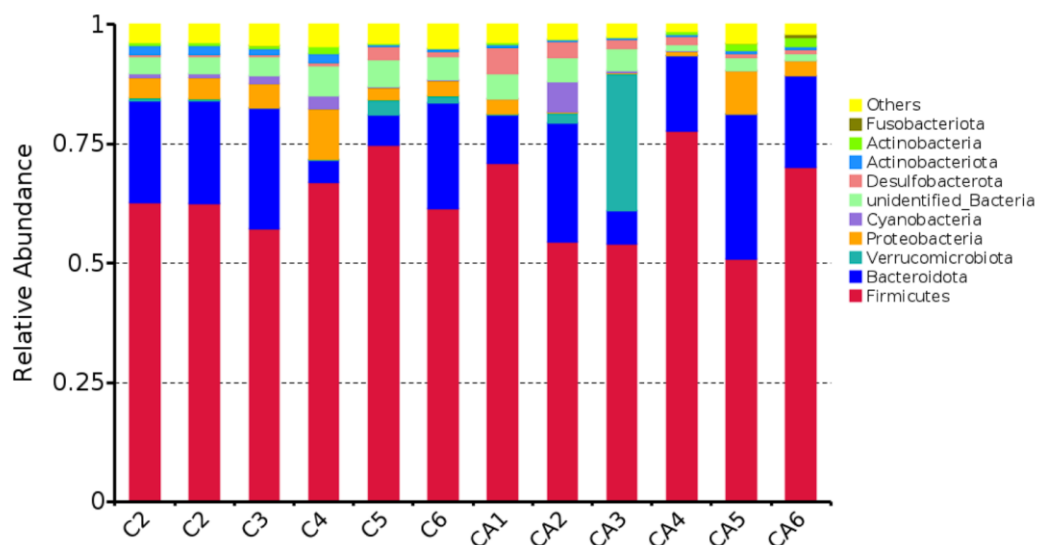
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Energy	63 kcal
Protein	0.20 g
Fat	0.18 g
Carbohydrate	15.22 g
Crude fiber	2.10 g
Lipids	
Carotene	17.00 µg
Lutein	22.00 µg
Minerals	
Calcium	7.00 mg
Magnesium	5.00 mg
Sodium	1.00 mg
Potassium	109.00 mg
Phosphorus	13.00 mg
Sulfur	0.001391 mg
Chlorine	1.542 mg
Iron	0.10 mg
Zinc	0.04 mg
Copper	0.025 mg
Manganese	0.031 mg
Vitamins	
Vitamin A	11.40 mg
Vitamin E	0.18 mg
Vitamin K	1.00 µg
Vitamin P (flavonoids)	75.60 mg
Vitamin B1 (thiamine)	0.013 mg
Vitamin B2 (Riboflavin)	0.026 mg
Vitamin B3 (Niacin)	0.07 mg
Vitamin B4 (choline)	3.40 mg
Vitamin B5 (pantothenic acid)	0.051 mg
Vitamin B6	0.045 mg
Vitamin B9 (folic acid)	3.00 µg

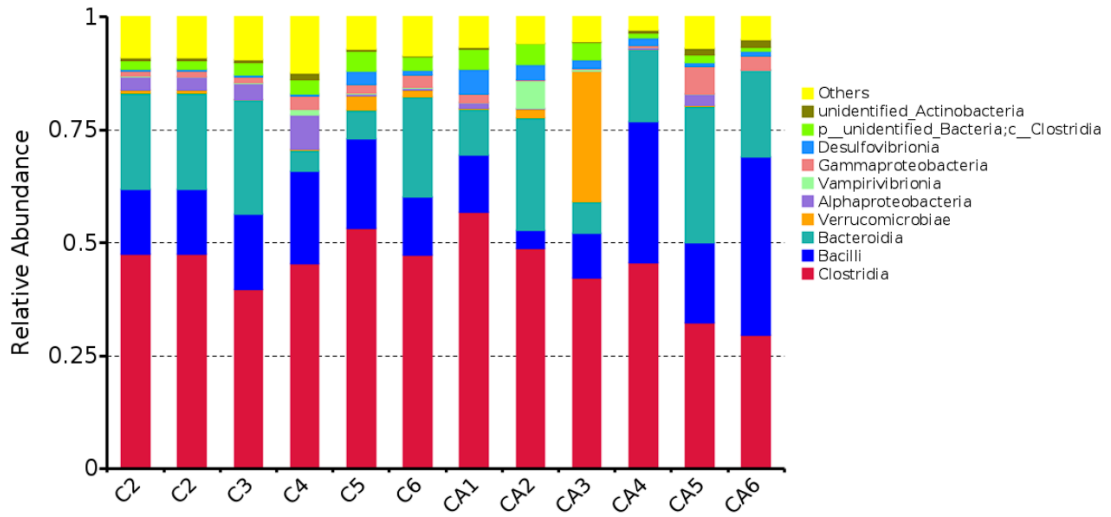
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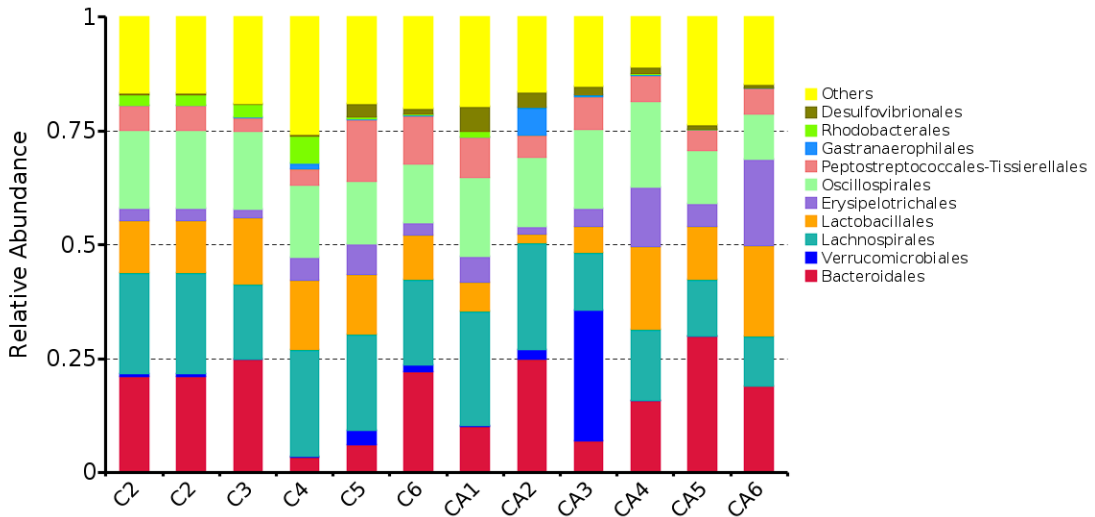
**Fig. S1. Levels of relevant indicators in the blood serum.** The indicator names are Lipopolysaccharide (LPS), Alanine aminotransferase (ALT), Aspartate aminotransferase (AST), Glucose (GLU), Total Cholesterol (T-CHO), High-density lipoprotein cholesterol (HDL-C), and Low-Density Lipoprotein Cholesterol (LDL-C).



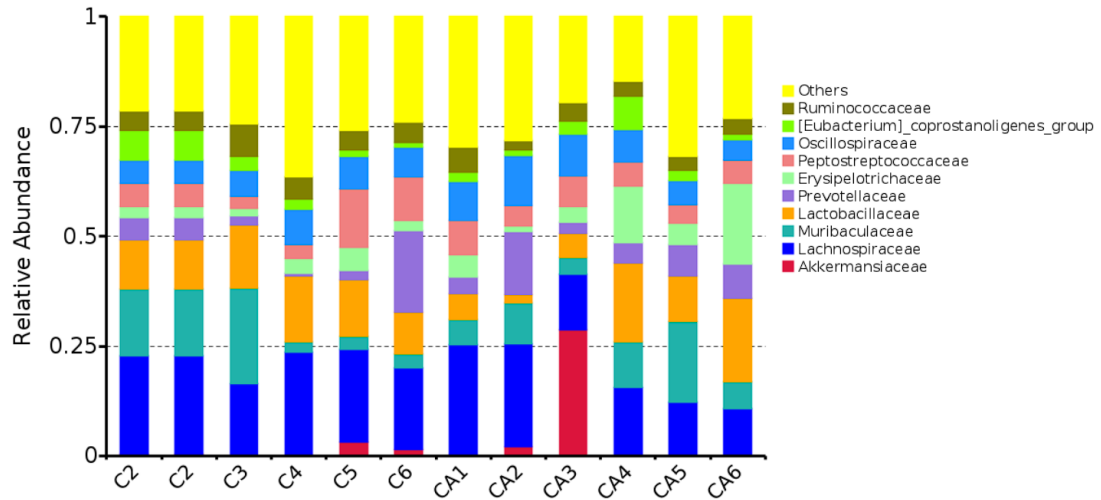
**Fig. S2. Histogram of relative abundance of species at the phylum level**



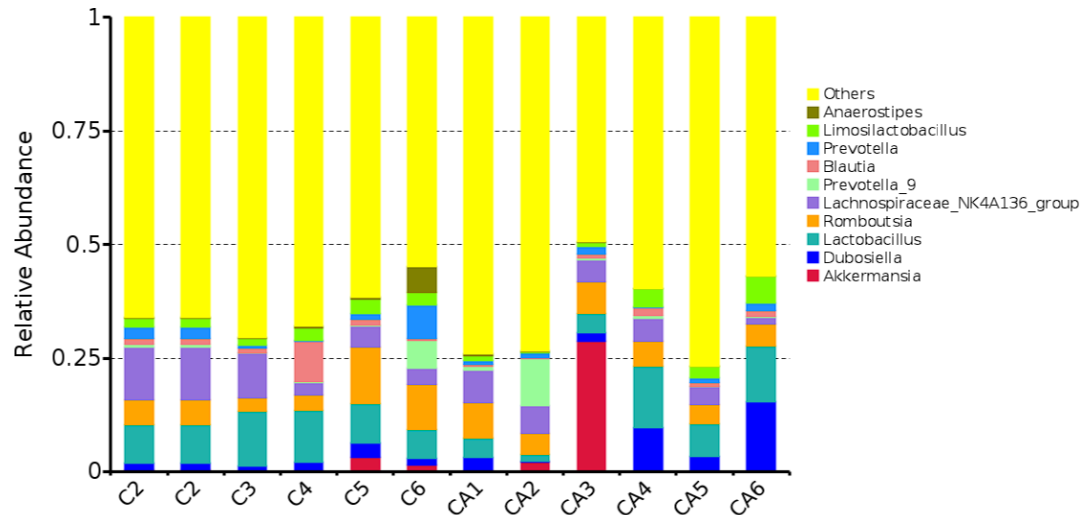
**Fig. S3. Histogram of relative abundance of species at the class level**



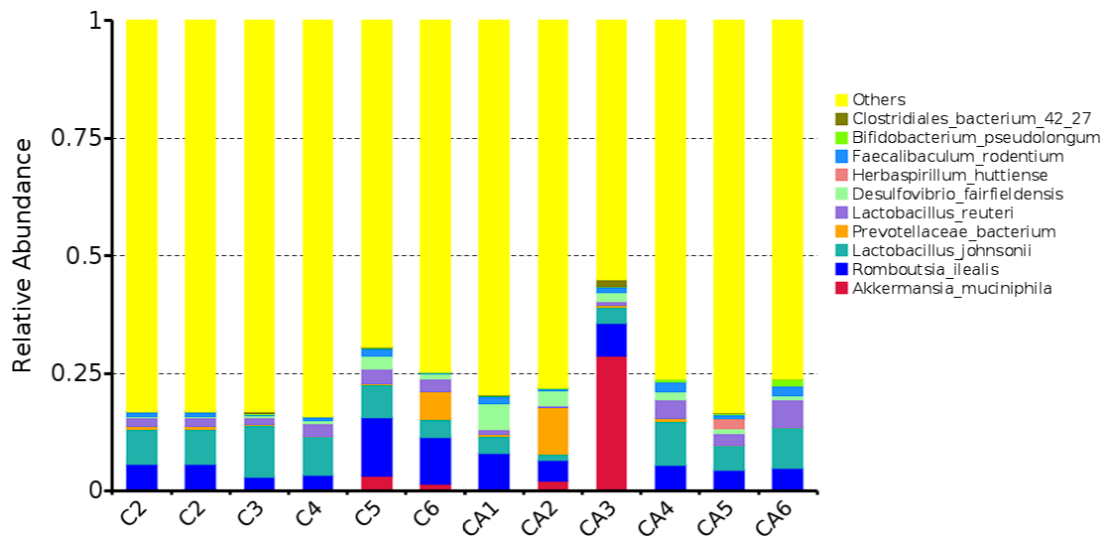
**Fig. S4. Histogram of relative abundance of species at the order level**



**Fig. S5. Histogram of relative abundance of species at the family level**



**Fig. S6. Histogram of relative abundance of species at the genus level**



**Fig. S7. Histogram of relative abundance of species at the species level**

**Table S2. The primers that were used in this study.**

Gene name	Gene ID	FORWARD	REVERSE
ACTB	XM_039089807.1	GGAGATTACTGCCCTGGCTCCTA	GACTCATCGTACTCCTGCTTGCTG
NRF2	NM_001399173.1	GCCTTCCTCTGCTGCCATTAGTC	TGCCTTCAGTGTGCTTCTGGTTG
HO-1	NM_012580.2	CAGGTGTCCAGGGAAGGCTTTAAG	TGGGTTCTGCTTGTTTCGCTCTATC
NQO1	NM_017000.3	AGGATGGGAGGTGGTCGAATCTG	GCCTTCCTTATACGCCAGAGATGAC
TLR4	NM_019178.2	CAGAATGAGGACTGGGTGAGAAACG	TCCTGGATGATGTTGGCAGCAATG
IL-6	NM_012589.2	ACTTCCAGCCAGTTGCCTTCTTG	TGGTCTGTTGTGGGTGGTATCCTC
TNF- $\alpha$	NM_012675.3	ATGGGCTCCCTCTCATCAGTTCC	CCTCCGCTTGGTGGTTTGCTAC
IL-1 $\beta$	NM_031512.2	AATCTCACAGCAGCATCTCGACAAG	TCCACGGCAAGACATAGGTAGC
IL-10	NM_012854.2	GGCAGTGGAGCAGGTGAAGAATG	TGTCACGTAGGCTTCTATGCAGTTG
Bax	NM_017059.2	AGACACCTGAGCTGACCTTGGAG	TTCATCGCCAATTCGCCTGAGAC
Casp3	NM_012922.2	GCGGTATTGAGACAGACAGTGG AAC	AACCATGACCCGTCCTTGAATTC
Casp9	NM_031632.2	CAAGAAGAGCGGTTCTGGTACATC	CAGCATTGGCGACCCTGAGAAG
ZO-1	NM_001106266.1	GCCAAGCCAGTCCATTCTCAGAG	TCCATAGCATCAGTTTCGGGTTTCC
Claudin-1	NM_031699.3	CTTCTGGGTTTCATCCTGGCTTCG	CCTGAGCAGTCACGATGTTGTCC

**Table S3. Metabolite index and name in metabolomics data of cecum contents.**

Index	Name
MEDN1461	(±)7(8)-DiHDPE(A)
MW0012259	12S-Hydroxy-5Z,8Z,10E,14Z-eicosatetraenoic acid
MEDP0074	N-Propionylglycine
MEDP0184	3,3',5-Triiodo-L-Thyronine
MEDP0244	All-Trans-13,14-Dihydroretinol
MEDP0394	4-Hydroxyretinoic Acid
MEDP0525	N-Acetyl-L-alanine
MEDP0529	Indole-3-acetamide
MW0063250	Quadrone
MEDP1097	MG(18:2/0:0/0:0)
MW0152946	Lys-Gln-Val
MW0012210	12'-Apo-b-carotene-3,12'-diol
MEDP1430	Carnitine C7:0
MW0012403	15(S)-15-Methylprostaglandin E2
MEDP1926	Cyclo(Pro-Phe)
MW0001570	1H-1,2,3-Triazole-1-octanamide, N-[1,1'-biphenyl]-2-yl-4-(3-pyridinyl)-
MW0002223	2,4-Diaminotoluene
MW0010972	(24S)-Cholest-5-ene-3beta,7alpha,24-triol
MW0010977	(25R)-3beta,4beta-dihydroxycholest-5-en-26-al
MW0013918	3alpha,7alpha,12alpha,24(S)-tetrahydroxy-5beta-cholestan-27-al
MW0012861	1-Myristoyl-2-hydroxy-sn-glycero-3-phosphoethanolamine
MW0011423	(5α)-Androstane-3,11,17-trione
MW0011450	(6R,8Z)-6-Hydroxy-3-oxotetradecenoic acid
MW0158846	Urocortisol;Tetrahydrocortisol;5beta-Pregnane-3alpha,11beta,17alpha,21-tetrol-20-one
MEDP1193	Flavin Single Nucleotide(FMN)
MEDP0029	Cysteamine
MW0013961	3beta,5alpha,6beta-Trihydroxycholestane
MW0013112	2,3-dinor Prostaglandin E1
MW0013883	3a,11b,21-Trihydroxy-20-oxo-5b-pregnan-18-al
MEDP0556	Herniarin
MW0142913	3-Epiecdysone
MW0016315	Camellenodiol

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MW0017043	Chenodeoxycholic acid sulfate
MW0017134	cis-11-Methyl-2-dodecenoic acid
MW0053462	Ganodosterone
MW0053831	Hecogenin
MW0054786	Methoprene acid
MW0061077	Persenone B
MW0061088	Petromyzonol
MW0062133	Polyporusterone F
MEDP1690	LPC(20:0/0:0)
MW0063491	Secasterone
MW0103264	$\beta$ -Tocotrienol
MW0011223	(3beta,5alpha,6beta,9alpha,22E,24R)-5,9-Epideoxyergosta-7,22-diene-3,6-diol
MW0109005	Orlistat
MW0120090	4,6-Dihydroxyquinoline
MW0155702	Pregnan-20-one, 17-(acetyloxy)-3-hydroxy-6-methyl-,(3b,5b,6a)-
MW0011227	(3beta,5alpha,9alpha,22E,24R)-5,9-Epideoxy-3-hydroxyergosta-7,22-dien-6-one
MW0122903	Arachidonoyl Serotonin
MW0123330	Cilostazol
MEDP1396	Carnitine C15:1:DC
MW0143742	6,8a-Seco-6,8a-deoxy-5-oxoavermectin "1b" aglycone
MW0144017	8,12-Diethylbacteriochlorophyllide d
MW0107715	Leu-Cys-Arg
MW0152026	Kikkanol A
MW0152260	Leu-Asp-Gln-Gln-Val
MW0122849	AMP-Deoxynojirimycin
MW0153035	Lys-Leu-Glu-Arg
MW0153596	Met-Leu-His
MW0155639	Podecdysone B
MW0122717	Acepromazine
MW0151774	Iriomoteolide 1a;Iriomoteolide-1a
MW0160858	N-[(E,2S,3R)-3-hydroxy-1-[(2R,5S,6R)-3,4,5-trihydroxy-6-(hydroxymethyl)oxan-2-yl]oxyoctadec-4-en-2-yl]docosanamide
MW0164209	(2R,5R,7S,16S)-15-[(2S,3R,4R,5S)-3,4-dihydroxy-5,6-dimethylheptan-2-yl]-5-hydroxy-2,16-dimethyl-9-oxatetracyclo[9.7.0.0.2,7.0]octadecan-8-one

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