

Table S1. Composition of experimental diets of early-stage diabetes (ED), late-stage diabetes (LD), and late-stage diabetes-silicon (LD-Si) groups.

Dietary components	ED diet	LD diet	LD-Si diet
Nutrient composition			
Proteins (% En ^(a))	14.2	14.0	14.0
Meat Fat (% En)	49.4	49.0	49.0
SFA ^(b) /MUFA ^(c) /PUFA ^(d) ratio	2.7/3.0/1.0	2.1/2.3/1.0	2.1/2.3/1.0
Cholesterol (%)	0.02	0.93	0.93
Energy content (MJ/kg)	20.13	20.31	20.31
Ingredients (g/kg)			
Sucrose	68.25	68.25	68.25
Corn starch	286.73	275.73	275.71
Casein	94.25	94.25	94.25
Maltodextrin	94.25	94.25	94.25
Cellulose	48.86	48.86	48.86
PM 205B SAFE ^(e)	50.05	50.05	50.05
PV 200 SAFE ^(f)	7.15	7.15	7.15
Soybean oil	47.91	47.91	47.91
L-Cysteine	2.02	2.02	2.02
Cholesterol	0	9.1	9.1
Cholic acid	0	1.3	1.3
Silicon	0	0	0.02
Lyophilized restructured meat	301.14	301.14	301.14

ED: Early-stage diabetic control group; LD: Late-stage diabetic group; LD-Si: Late-stage diabetic silicon-enriched meat group, these two late-stage groups contain 1.4% cholesterol and 0.2% cholic acid. (a) En: Total energy; (b) SFA: saturated fatty acids; (c) MUFA: monounsaturated fatty acids; (d) PUFA: polyunsaturated fatty acids; (e) PM 205B SAFE: mineral mix; (f) PV 200 SAFE: vitamin mix. *Calculated data considered energy equivalents for carbohydrates 16.73 kJ/g (4.0 kcal/g), fat 37.65 kJ/g (9.0 kcal/g), and protein 16.73 kJ/g (4.0 kcal/g)

Table S2. Primer sets used in the quantitation of 16S rRNA genes by qPCR.

Target organism	Primer set	Sequence (5 to 3)	Product size (bp)	Annealing temperature (°C)	Reference
<i>Bacteroides</i> spp.	Bfra-F	ATAGCCTTTCGAAAGRAAGAT	495	50° C	(Matsuki, Watanabe, Fujimoto, Takada, & Tanaka, 2004)
	Bfra-R	CCAGTATCAACTGCAATTTTA			
<i>Blautia</i> - <i>coccoides</i> <i>Eubacterium</i> <i>rectale</i> group	gCcoc-F	AAATGACGGTACCTGACTAA	440	50° C	(Matsuki et al., 2004)
	gCcoc-R	CTTTGAGTTTCATTCTTGCGAA			
<i>Clostridium</i> <i>leptum</i> group	sg-Clept-F	GCACAAGCAGTGGAGT	239	50° C	(Matsuki et al., 2004)
	sg-Clept-R3	CTTCCTCCGTTTTGTCAA			
<i>Bifidobacterium</i> spp.	Lm26-F	GATTCTGGCTCAGGATGAACG	211	60° C	(Walter et al., 2001)
	Bif228-R	CTGATAGGACGCGACCCCAT			
<i>Faecalibacterium</i> <i>prausnitzii</i>	Fprau223 F	GATGGCCTCGCGTCCGATTAG	199	58° C	(Bartosch, Fite, Macfarlane, & McMurdo, 2004)
	Fprau420 R	CCGAAGACCTTCTTCCTCC			
<i>Lactobacillus</i> spp.	LbF	AGCAGTAGGGAATCTTCCA	200	56° C	(Heilig et al., 2002)
	LbR	CACCGCTACACATGGAG			
<i>Enterobacteriaceae</i>	Eco1457 F	CATTGACGTTACCCGCAGAAGA AGC	195	63° C	(Bartosch et al., 2004)

	Eco1652 R	CTCTACGAGACTCAAGCTTGC			
<i>Enterococcus</i> spp.	Enteroc_ F	CCCTTATTGTTAGTTGCCATCA TT	123	61° C	(Rinttilä, Kassinen, Malinen, Krogius, & Palva, 2004)
	Enteroc_ R	ACTCGTTGTACTTCCCATTGT			

Table S3. Plasmatic Glucose, Insulin, HOMA- β , Triglycerides, Cholesterol and Atherogenic (AI), Diabetic (DTscore) and Dyslipemic (DDscore) indexes of early-stage diabetes (ED), late-stage diabetes (LD) and late-stage diabetes-silicon (LD-Si) groups.

	ED group	LD group	LD-Si group	<i>p</i>
Glucose (mmol/L)	13.92 $\pm$ 0.91 ^a	18.11 $\pm$ 1.65 ^b	15.26 $\pm$ 2.07 ^a	< 0.001
Insulin (μ UI/mL)	15.84 $\pm$ 0.73 ^c	5.41 $\pm$ 1.23 ^a	8.11 $\pm$ 1.79 ^b	< 0.0001
HOMA- β ^(a)	31.13 $\pm$ 3.33 ^c	7.24 $\pm$ 1.35 ^a	12.75 $\pm$ 3.04 ^b	< 0.001
Triglycerides (mg/dL)	1.79 $\pm$ 0.25 ^c	0.88 $\pm$ 0.11 ^b	0.60 $\pm$ 0.16 ^a	< 0.001
Cholesterol (mmol/L)	2.05 $\pm$ 2.76 ^a	2.79 $\pm$ 2.04 ^b	2.24 $\pm$ 1.35 ^c	< 0.0001
AI ^(b)	1.43 $\pm$ 0.24 ^a	2.68 $\pm$ 0.55 ^c	2.04 $\pm$ 0.16 ^b	< 0.001
DTscore ^(c) (3 to 9)	3.29 $\pm$ 0.49 ^a	8.57 $\pm$ 0.79 ^c	6.14 $\pm$ 0.90 ^b	< 0.001
DDscore ^(d) (3 to 9)	5.29 $\pm$ 0.95 ^a	7.71 $\pm$ 1.25 ^b	5.14 $\pm$ 0.90 ^a	< 0.001

Values expressed as mean $\pm$ SD. Different letters (a, b, c) indicate significant differences between groups ($p < 0.05$, Bonferroni test). NS: No significant differences between groups. (a) HOMA- β : 20 x fasting plasma insulin (μ UI/mL)/ (fasting glucose (mmol/L) – 3.5); (b) Atherogenic index (AI): Total cholesterol/HDLc; (c) DTscore, Diabetes trend score: Glucose score + Insulin score + HOMA- β score; (d) DDscore, Dyslipaemic Diabetes score: Triglyceride score + Cholesterol score + Atherogenic index scores