Refeeding with different levels of dietary carbohydrate modulates epigenetic stability through global DNA (de)methylation and histone modifications in juvenile and adult Nile tilapia (*Oreochromis niloticus*)

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Table S2. Nucleotide sequences of cDNA encoding enzymes involved in DNA (de)methylation, histone (de)methylation, and histone (de)acetylation. Underlined letters indicate primer positions. Bold letters indicate start and stop codons.

dnmt1	
NCBI NO.	XM_025906327.1
Position of Coding sequence	139-4671
>XM_025906327.1 PREDICTED: Oreochromis niloticus DNA (cytosine-5)-methyltransferase 1 (LOC100706458), transcript variant X1, mRNA GAATTGCTTATAGCATCCATCTGCACACGACAGACTGTCACCGTGGAGCCGCGCGGTGGTTAATGATAGTGGAGTTTTAAACG GTGTTTTAACGGTTTTAAAACATTTTTAGTCGCTCGTGTCTTACGCTCGTTTACG**ATG**CCAACCAGGACGTCCCTGCCTCTCCCG GACGATGTCAGGAAAAGCTTGCAGAGGTTGGATGAGGAAGGATCTGCAGAAGAGGAACATGTGAAAGAGAAGCTCAAGTTGG TGCAGGACTTTCTGCATGCTGATGCTCAGGATCAGCTGACCAGTCTGGAGGAAAAAATGAAAAGTTCAGAGATCTCAAAGGAG GTCTATATCTCTAAAGTGAAGGCCCTACTTGGAAAAGAACTTCATCTTGAAAATGGCTCCCACGTTGATGACGCAGAGAAGAA TGGAAAGACGAATGGCTTTTCAAATGGTTCGCACAAAGACGAGCATGATGAAGATGTAACCATGAGCGTACAGGAGGAGGAG GAGGAATCTTTCAAGTCACCAACTGCTTCGAAGGGGAAGGGTGGACGGAGGAGCAAGGCAAATTCTGACACAAAAAAGTCTC CAGCAAGTACCAGGGTTACCAGAAACAGTGGGAAACAGCCAACCATCTTGTCAATGTTCACTAAAGTTCAGAAGCGCAAGTCA GAGGACTTGAATGGAGAAGCTGTCAACGGACAGAATGAACCGAAGAAAGATGATGACGTTGAGGAGTCTCGGGAGGAGAAG CGTCTCAAAGTGGAGTCGGATGAAAATGCTGCTCCAGAAGAATCCAAGAGTGACATTGCAAAGCCGGTTTCTGCTGTAAAGAC GCCACCACCCAAATGTCAAGACTGTAGACAATACCTAGATGATTCTGACCTGAAGTTTTTTCAAGGGGATCCTGATAATGCGCT GGATGAGCCTGAAATGTTAACAGATGAGCGCCTCTCACTGTTTGACTCCAATGAGGATGGATTTGAGAGCTATGAGGATCTGC CACAGCACAAGATCACAAACTTCAGTGTTTATGACAAGCGTGGCCATCTCTGTCCATTCGACTCTGGACTTATTGAGAAGAATG TTGAGCTTTACTTCAGCTGTGTTGTCAAACCCATCTATGATGACAACCCTTGTATGGATGGTGGTGTTCCTGCCAAAAAGCTGG

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dnmt3aa	
NCBI NO.	XM_005475084.4
Position of Coding sequence	357-2885

>XM_005475084.4 PREDICTED: Oreochromis niloticus DNA (cytosine-5)-methyltransferase 3A (LOC100702269), transcript variant X3, mRNA

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dnmt3ab

NCBI NO.	XM_005477258.3
Position of Coding sequence	280-3228

>XM_005477258.3 PREDICTED: Oreochromis niloticus DNA (cytosine-5)-methyltransferase 3A (LOC100693331), mRNA
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dnmt3ba	
NCBI NO.	XM_025901732.1
Position of Coding sequence	184-4581

>XM_025901732.1 PREDICTED: Oreochromis niloticus DNA (cytosine-5-)-methyltransferase 3 beta, duplicate a (dnmt3ba), transcript variant X3, mRNA

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NCBI NO.	XM_025901790.1
Position of Coding sequence	378-2843

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NCBI NO.	XM_025897345.1
Position of Coding sequence	300-6794

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tet2	
NCBI NO.	XM_005457001.3

Position of Coding sequence	545-5947

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tet3

NCBI NO.	XM_019365521.2
Position of Coding sequence	3585-9461

>XM_019365521.2 PREDICTED: Oreochromis niloticus tet methylcytosine dioxygenase 3 (tet3), transcript variant X1, mRNA

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setd1a	
NCBI NO.	XM_005468973.4
Position of Coding sequence	62-6679

>XM_005468973.4 PREDICTED: Oreochromis niloticus SET domain containing 1A, histone lysine methyltransferase (setd1a), transcript variant X1, mRNA

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setd1ba

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Position of Coding sequence	890-6325

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48

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kmt2bb

NCBI NO.	XM_013277028.3
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>XM_013277028.3 PREDICTED: Oreochromis niloticus lysine (K)-specific methyltransferase 2Bb (kmt2bb), transcript variant X1, mRNA

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kdm5c

NCBI NO.	XM_005448517.4

Position of Coding sequence	551-5311

>XM_005448517.4 PREDICTED: Oreochromis niloticus lysine demethylase 5C (kdm5c), transcript variant X1, mRNA

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88

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riox1	
NCBI NO.	XM_005475002.4
Position of Coding sequence	96-1727

>XM_005475002.4 PREDICTED: Oreochromis niloticus ribosomal oxygenase 1 (riox1), transcript variant X1, mRNA

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suv39h1b

NCBI NO.	XM_003459875.5
Position of Coding sequence	87-1322

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kdm4aa	
NCBI NO.	XM_005457300.3
Position of Coding sequence	179-3472

>XM_005457300.3 PREDICTED: Oreochromis niloticus lysine (K)-specific demethylase 4A, genome duplicate a (kdm4aa), mRNA

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kdm4ab	
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Position of Coding sequence	208-3738

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NCBI NO.	XM_005453970.4
Position of Coding sequence	184-3897

>XM_005453970.4 PREDICTED: Oreochromis niloticus lysine (K)-specific demethylase 4B (kdm4b), mRNA

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kdm4c

NCBI NO.	XM_005456806.2
Position of Coding sequence	231-5135

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setd2	
NCBI NO.	XM_019364854.2
Position of Coding sequence	351-8159

>XM_019364854.2 PREDICTED: Oreochromis niloticus SET domain containing 2, histone lysine methyltransferase (setd2), transcript variant X1, mRNA

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kat2a	
NCBI NO.	XM_025906390.1
Position of Coding sequence	163-2559

>XM_025906390.1 PREDICTED: Oreochromis niloticus K(lysine) acetyltransferase 2A (kat2a), transcript variant X1, mRNA

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kat2b	
NCBI NO.	XM_003444058.3
Position of Coding sequence	493-2871

>XM_003444058.3 PREDICTED: Oreochromis niloticus K(lysine) acetyltransferase 2B (kat2b), mRNA

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kat6a	
NCBI NO.	XM_005472980.3
Position of Coding sequence	865-7641

>XM_005472980.3 PREDICTED: Oreochromis niloticus K(lysine) acetyltransferase 6A (kat6a), mRNA

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125

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gtf3c4

126

NCBI NO.	XM_003440231.5
Position of Coding sequence	43-2358

>XM_003440231.5 PREDICTED: Oreochromis niloticus general transcription factor IIIC, polypeptide 4 (gtf3c4), mRNA

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sirt2	
NCBI NO.	XM_003449264.5
Position of Coding sequence	153-1301

>XM_003449264.5 PREDICTED: Oreochromis niloticus sirtuin 2 (silent mating type information regulation 2, homolog) 2 (S. cerevisiae) (sirt2), transcript variant X1, mRNA

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sirt5	
NCBI NO.	XM_003457306.5
Position of Coding sequence	154-1059

>XM_003457306.5 PREDICTED: Oreochromis niloticus sirtuin 5 (sirt5), transcript variant X1, mRNA

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Table S3. Data for the analysis of global DNA (de)methylation in liver tissue in the present study.

Stages	Treatments	Replication	Concentration (nmol/ng DNA)					Cytosines composition (%)				
			5-mdC	5-hmdC	5-fdC	5-cadC	dC	5-mdC	5-hmdC	5-fdC	5-cadC	dC
Juvenile	Fasted	F1	24.70	0.43	0.46	0.28	343.78	6.58	0.11	0.14	0.08	93.08
		F2	22.45	0.64	0.34	0.10	318.06	6.69	0.19	0.10	0.03	92.99
		F3	23.63	0.62	0.13	0.07	270.55	8.05	0.21	0.05	0.03	91.67
		F4	24.29	0.57	0.03	0.12	320.94	7.07	0.17	0.01	0.03	92.72
		F5	21.25	0.82	0.07	0.12	256.30	7.87	0.30	0.03	0.05	91.76
		F6	21.83	0.93	0.21	0.09	296.53	6.82	0.29	0.07	0.03	92.80
	HC/LP	H1	24.83	0.08	0.14	0.05	305.11	7.54	0.02	0.04	0.02	92.38
		H2	33.39	0.16	0.16	0.02	387.74	7.93	0.04	0.04	0.00	91.99
		H3	21.10	0.17	0.14	0.14	248.16	7.95	0.06	0.05	0.05	91.89
		H4	25.47	0.14	0.17	0.36	294.35	8.00	0.05	0.06	0.12	91.78
		H5	35.19	0.14	0.13	0.15	332.12	9.19	0.04	0.04	0.04	90.70
		H6	35.42	0.35	0.19	0.46	409.02	7.93	0.08	0.04	0.10	91.85
	LC/HP	L1	24.56	0.12	0.19	0.17	251.31	8.95	0.04	0.07	0.06	90.87
		L2	32.94	0.26	0.16	0.16	368.07	8.18	0.07	0.04	0.04	91.66
		L3	38.31	0.30	0.20	0.04	486.09	7.28	0.06	0.04	0.01	92.61
		L4	38.92	0.33	0.21	0.08	490.92	7.34	0.06	0.04	0.02	92.54
		L5	42.60	0.40	0.22	0.18	501.31	7.82	0.07	0.04	0.03	92.03
		L6	42.94	0.26	0.21	0.14	473.44	8.31	0.05	0.04	0.03	91.58
Adult	Fasted	F1	20.25	0.78	0.29	0.17	253.64	7.36	0.30	0.11	0.06	92.17
		F2	17.97	1.01	0.07	0.12	239.41	7.45	0.39	0.03	0.05	92.07
		F3	19.94	0.94	0.23	0.29	225.81	8.32	0.38	0.08	0.14	91.09
		F4	19.72	0.78	0.21	0.14	201.47	8.92	0.35	0.10	0.06	90.57
		F5	21.52	0.73	0.10	0.21	206.25	9.35	0.32	0.05	0.08	90.20
		F6	24.89	1.04	0.10	0.15	262.93	8.82	0.37	0.03	0.05	90.73
	HC/LP	H1	32.64	0.93	0.15	0.05	355.90	8.27	0.24	0.04	0.01	91.44
		H2	47.42	0.64	0.24	0.06	456.51	9.12	0.11	0.05	0.01	90.71
		H3	23.20	1.02	0.13	0.12	241.42	8.84	0.38	0.05	0.04	90.69
		H4	27.06	0.20	0.15	0.12	245.65	9.78	0.08	0.05	0.04	90.05
		H5	20.65	0.74	0.13	0.04	219.25	8.88	0.35	0.05	0.02	90.70
		H6	42.27	0.85	0.18	0.07	451.62	8.54	0.17	0.04	0.01	91.24
	LC/HP	L1	30.08	0.76	0.20	0.27	325.19	8.59	0.22	0.06	0.08	91.05
		L2	22.16	0.64	0.14	0.13	212.24	9.48	0.27	0.06	0.05	90.13
		L3	26.70	0.24	0.15	0.06	280.18	8.66	0.08	0.05	0.02	91.19
		L4	27.98	0.85	0.16	0.06	246.57	10.05	0.30	0.06	0.02	89.57
		L5	33.96	1.10	0.21	0.09	345.03	8.93	0.29	0.05	0.02	90.70
		L6	28.45	0.40	0.23	0.15	264.23	9.71	0.14	0.08	0.05	90.03

Red letters indicate the outliers of each experimental group, which were not included in the statistical analysis of significance.

Table S4. Data for the analysis of global DNA (de)methylation in muscle tissue in the present study.

Stages	Treatments	Replication	Concentration (nmol/ng DNA)					Cytosines composition (%)				
			5-mdC	5-hmdC	5-fdC	5-cadC	dC	5-mdC	5-hmdC	5-fdC	5-cadC	dC
Juvenile	Fasted	F1	27.49	2.55	0.43	0.18	350.68	7.31	0.66	0.11	0.05	91.87
		F2	27.31	2.92	0.37	0.20	315.79	7.93	0.84	0.12	0.08	91.03
		F3	22.78	2.43	0.43	0.29	294.46	7.13	0.73	0.13	0.09	91.92
		F4	29.15	1.06	0.55	0.60	340.39	7.89	0.27	0.16	0.16	91.52
		F5	34.39	1.67	0.56	0.38	336.91	9.21	0.46	0.14	0.09	90.10
		F6	22.10	1.50	0.53	0.33	267.38	7.57	0.53	0.18	0.11	91.60
	HC/LP	H1	5.72	0.53	0.19	0.06	92.57	5.75	0.54	0.17	0.07	93.47
		H2	10.00	1.27	0.06	0.01	180.29	5.38	0.74	0.03	0.00	93.85
		H3	12.69	1.21	0.21	0.15	137.48	8.43	0.81	0.14	0.10	90.52
		H4	11.21	1.77	0.10	0.11	196.96	5.24	0.86	0.03	0.09	93.77
		H5	6.66	0.75	0.16	0.13	84.44	7.02	0.78	0.17	0.10	91.92
		H6	13.66	1.78	0.16	0.05	190.26	7.05	0.83	0.13	0.03	91.96
	LC/HP	L1	11.50	0.64	0.08	0.06	139.63	7.64	0.33	0.04	0.03	91.96
		L2	7.40	0.42	0.05	0.09	83.85	7.95	0.36	0.05	0.08	91.56
		L3	17.86	2.10	0.17	0.14	247.69	7.00	0.83	0.07	0.14	91.95
		L4	20.25	2.28	0.10	0.22	267.18	7.16	0.76	0.03	0.08	91.97
		L5	32.06	1.99	0.19	0.32	482.18	6.41	0.50	0.03	0.08	92.97
		L6	11.45	1.19	0.04	0.04	147.73	6.74	0.83	0.05	0.02	92.36
Adult	Fasted	F1	20.10	0.33	0.07	0.07	273.40	7.04	0.13	0.03	0.03	92.77
		F2	24.48	0.27	0.08	0.06	326.22	6.94	0.08	0.02	0.02	92.95
		F3	22.25	1.03	0.12	0.12	301.38	6.97	0.33	0.03	0.04	92.63
		F4	18.45	0.29	0.08	0.09	248.28	6.90	0.11	0.03	0.04	92.93
		F5	25.96	0.53	0.10	0.12	326.96	7.41	0.16	0.03	0.04	92.36
		F6	12.67	0.51	0.07	0.09	224.15	4.98	0.20	0.03	0.04	94.75
	HC/LP	H1	9.03	0.23	0.04	0.11	149.11	5.69	0.15	0.02	0.06	94.07
		H2	10.56	0.23	0.05	0.03	174.17	5.65	0.13	0.03	0.02	94.17
		H3	10.09	0.22	0.08	0.06	137.64	6.82	0.15	0.05	0.04	92.94
		H4	14.27	0.39	0.25	0.11	226.32	6.01	0.12	0.09	0.03	93.76
		H5	20.52	0.82	0.72	0.15	284.44	6.70	0.27	0.23	0.05	92.74
		H6	7.60	0.44	0.14	0.11	113.13	6.64	0.30	0.17	0.16	92.74
	LC/HP	L1	18.16	0.36	0.19	0.10	209.28	8.01	0.15	0.09	0.04	91.70
		L2	18.08	0.46	0.05	0.20	207.95	8.10	0.20	0.02	0.09	91.60
		L3	16.34	0.51	0.13	0.11	190.51	7.84	0.25	0.07	0.06	91.79
		L4	12.48	1.34	0.01	0.04	170.00	6.73	0.71	0.01	0.02	92.54
		L5	18.14	1.31	0.02	0.14	221.26	7.54	0.55	0.01	0.06	91.85
		L6	21.57	1.74	0.08	0.16	250.22	7.87	0.63	0.03	0.06	91.41

Red letters indicate the outliers of each experimental group, which were not included in the statistical analysis of significance.

Table S5. Data used for the analysis of global histone modification in liver tissue in the present study.

Stages	Treatments	Replication	H3K4me3/H3	H3K9me3/H3	H3K36me3/H3	H3K9ac/H3
Juvenile	Fasted	F1	1.20	0.89	1.05	0.86
		F2	1.24	1.47	1.52	1.30
		F3	0.97	0.84	0.92	0.94
		F4	1.13	0.85	0.87	1.13
		F5	0.65	1.35	1.16	1.22
		F6	0.85	1.85	1.90	2.61
	HC/LP	H1	0.60	0.93	1.04	0.50
		H2	0.82	1.11	0.95	0.46
		H3	1.06	0.86	0.87	0.51
		H4	0.86	0.79	0.52	0.00
		H5	2.90	2.17	0.00	0.00
		H6	1.10	1.95	0.68	0.00
	LC/HP	L1	1.45	1.80	1.56	1.79
		L2	1.01	1.16	1.07	1.41
		L3	1.06	0.98	1.25	2.24
		L4	1.07	0.78	0.95	1.45
		L5	1.08	1.50	1.59	1.76
		L6	0.88	1.67	1.59	4.03
Adult	Fasted	F1	0.10	0.94	0.66	0.50
		F2	0.21	1.04	0.65	1.28
		F3	1.11	1.71	1.57	2.98
		F4	2.50	1.34	1.23	1.57
		F5	0.63	1.27	1.07	1.03
		F6	0.87	1.67	1.58	1.60
	HC/LP	H1	0.15	0.54	0.74	0.14
		H2	0.72	1.13	1.55	0.20
		H3	1.32	1.54	1.18	1.70
		H4	0.67	1.01	0.90	1.09
		H5	2.57	1.76	2.48	1.11
		H6	0.30	0.89	0.73	1.03
	LC/HP	L1	1.60	0.89	0.83	0.50
		L2	2.94	1.05	0.96	0.57
		L3	34.04	15.05	6.21	121.18
		L4	10.24	1.25	1.49	8.25
		L5	0.63	1.36	1.20	1.29
		L6	7.87	1.70	2.50	5.54

Red letters indicate the outliers of each experimental group, which were not included in the statistical analysis of significance.

Table S6. Data used for the analysis of global histone modification in muscle tissue in the present study.

Stages	Treatments	Replication	H3K4me3/H3	H3K9me3/H3	H3K36me3/H3	H3K9ac/H3
Juvenile	Fasted	F1	0.54	1.21	0.52	1.23
		F2	0.32	0.69	0.46	0.87
		F3	0.63	1.21	0.92	0.75
		F4	0.73	1.52	1.02	1.16
		F5	0.98	0.89	1.41	0.88
		F6	0.80	0.75	1.07	0.71
	HC/LP	H1	0.79	1.18	1.56	2.42
		H2	3.21	2.38	4.23	4.57
		H3	1.11	1.29	2.45	1.16
		H4	1.18	1.41	3.21	1.37
		H5	0.86	0.56	1.40	0.91
		H6	0.55	0.27	1.19	0.73
	LC/HP	L1	0.52	0.91	0.51	1.01
		L2	0.51	0.60	0.60	0.89
		L3	1.31	1.18	2.65	1.30
		L4	0.55	0.96	0.95	1.23
		L5	0.98	1.16	0.46	1.08
		L6	0.88	0.71	0.79	0.74
Adult	Fasted	F1	0.23	0.25	0.22	0.09
		F2	0.80	0.66	0.98	0.32
		F3	0.24	0.51	0.22	0.31
		F4	4.46	2.49	0.79	1.19
		F5	0.53	0.31	0.61	0.72
		F6	0.24	0.47	0.60	0.43
	HC/LP	H1	2.51	2.02	1.79	1.03
		H2	1.12	0.47	0.75	0.34
		H3	0.97	1.19	0.00	0.24
		H4	0.40	0.57	0.08	0.35
		H5	1.17	1.07	2.21	1.42
		H6	0.35	0.31	0.37	0.24
	LC/HP	L1	12.34	12.00	19.61	3.85
		L2	1.95	1.14	1.63	0.66
		L3	0.87	2.36	1.47	2.31
		L4	0.15	1.00	0.19	1.07
		L5	1.79	1.25	2.00	1.82
		L6	8.85	2.27	6.63	7.00

Red letters indicate the outliers of each experimental group, which were not included in the statistical analysis of significance.

Table S7. Data used for the analysis of mRNA expression of genes involved in (de)methylation in liver tissue in the present study.

Stages	Treatments	Replication	DNA methylation writer					DNA methylation eraser		
			dnmt1	*dnmt3aa*	*dnmt3ab*	*dnmt3ba*	*dnmt3bb*	*tet1*	*tet2*	*tet3*
Juvenile	Fasted	F1	0.49	0.53	nd	0.16	0.20	0.76	0.60	0.79
		F2	0.41	0.49	nd	0.14	0.20	0.87	0.65	0.76
		F3	0.37	0.43	nd	0.28	0.18	0.82	0.64	0.77
		F4	0.41	0.57	nd	0.25	0.20	0.62	0.65	0.76
		F5	0.40	0.55	nd	0.23	0.23	0.47	0.82	0.78
		F6	0.39	0.55	nd	0.27	0.25	0.59	0.85	0.92
	HC/LP	H1	1.78	0.94	nd	0.59	0.59	0.38	0.41	0.65
		H2	1.63	0.78	nd	0.50	0.51	0.32	0.57	0.66
		H3	1.74	0.86	nd	0.85	0.85	0.64	0.45	0.66
		H4	1.86	0.90	nd	0.70	0.70	0.41	0.52	0.83
		H5	1.66	0.72	nd	0.61	0.61	0.34	0.39	0.56
		H6	1.85	0.81	nd	0.74	0.75	0.45	0.76	1.09
	LC/HP	L1	0.95	0.72	nd	0.13	0.50	0.35	0.51	0.54
		L2	1.02	0.70	nd	0.14	0.43	0.28	0.43	0.61
		L3	0.95	0.52	nd	0.12	0.57	0.40	0.46	0.47
		L4	1.01	0.70	nd	0.12	0.38	0.23	0.38	0.46
		L5	0.87	0.51	nd	0.13	0.54	0.42	0.33	0.43
		L6	0.95	0.57	nd	0.11	0.56	0.44	0.42	0.48
Adult	Fasted	F1	1.33	1.53	nd	0.25	0.34	1.00	1.32	1.20
		F2	1.80	1.49	nd	0.31	0.38	1.09	1.18	1.09
		F3	2.34	1.31	nd	0.37	0.36	1.29	1.06	1.42
		F4	1.54	1.13	nd	0.30	0.36	1.45	2.13	0.97
		F5	2.09	1.26	nd	0.33	0.24	1.05	1.89	1.27
		F6	1.60	1.17	nd	0.37	0.29	1.08	1.91	1.23
	HC/LP	H1	1.20	0.69	nd	0.84	0.85	0.33	0.68	0.66
		H2	1.39	0.72	nd	0.72	0.72	0.26	0.72	1.03
		H3	1.44	0.65	nd	1.15	1.16	0.47	0.69	0.58
		H4	1.21	0.67	nd	0.87	0.87	0.32	0.57	0.57
		H5	1.38	0.57	nd	0.78	0.79	0.27	0.72	0.84
		H6	1.22	0.69	nd	0.99	1.00	0.36	0.88	0.72
	LC/HP	L1	0.32	0.35	nd	0.59	0.60	0.21	0.30	0.44
		L2	0.27	0.41	nd	0.54	0.55	0.23	0.45	0.56
		L3	0.28	0.32	nd	0.64	0.65	0.30	0.24	0.28
		L4	0.31	0.40	nd	0.54	0.54	0.16	0.27	0.50
		L5	0.31	0.41	nd	0.58	0.59	0.23	0.20	0.32
		L6	0.54	0.40	nd	0.41	0.41	0.20	0.37	0.61

Red letters indicate the outliers of each experimental group, which were not included in the statistical analysis of significance.

Table S8. Data used for the analysis of mRNA expression of genes involved in (de)methylation in muscle tissue in the present study.

Stages	Treatments	Replication	DNA methylation writer					DNA methylation eraser		
			dnmt1	*dnmt3aa*	*dnmt3ab*	*dnmt3ba*	*dnmt3bb*	*tet1*	*tet2*	*tet3*
Juvenile	Fasted	F1	2.09	0.86	nd	1.96	0.93	1.44	1.67	1.48
		F2	3.07	0.83	nd	1.87	0.72	1.41	1.59	1.39
		F3	2.29	0.80	nd	1.87	0.97	1.46	1.64	1.44
		F4	2.04	0.83	nd	2.40	0.82	1.40	1.63	1.53
		F5	2.13	0.82	nd	1.75	0.77	1.34	1.54	1.48
		F6	1.97	0.88	nd	1.92	0.77	1.28	1.45	1.41
	HC/LP	H1	1.66	1.52	nd	1.22	1.63	1.47	0.98	1.21
		H2	1.78	1.57	nd	1.52	1.70	1.48	1.03	1.17
		H3	1.82	1.55	nd	1.29	1.92	1.61	1.03	1.13
		H4	1.70	1.55	nd	0.90	1.94	1.51	1.02	1.14
		H5	1.79	1.50	nd	1.02	1.76	1.27	0.88	1.13
		H6	1.78	1.54	nd	1.10	1.78	1.38	0.95	1.11
	LC/HP	L1	1.39	1.24	nd	0.98	1.44	1.35	0.87	0.90
		L2	1.37	1.29	nd	1.19	1.43	1.46	0.86	0.89
		L3	1.53	1.31	nd	0.94	1.46	1.30	0.84	0.93
		L4	1.74	1.36	nd	1.21	1.51	1.37	0.86	0.93
		L5	1.52	1.31	nd	0.96	1.40	1.38	0.85	0.90
		L6	1.41	1.26	nd	1.02	1.46	1.41	0.88	0.91
Adult	Fasted	F1	0.95	0.93	nd	0.87	0.55	1.06	1.15	1.03
		F2	0.97	0.92	nd	1.14	0.57	1.05	1.29	1.04
		F3	0.94	0.95	nd	1.41	0.60	1.06	1.29	1.11
		F4	1.12	0.95	nd	1.17	0.65	0.98	1.34	1.07
		F5	1.06	0.97	nd	0.96	0.56	1.04	1.34	1.11
		F6	0.99	0.97	nd	1.24	0.70	1.05	1.38	1.14
	HC/LP	H1	1.61	1.02	nd	1.31	1.37	1.41	1.13	1.21
		H2	1.53	1.04	nd	1.06	1.28	1.21	0.93	1.14
		H3	1.55	1.00	nd	0.98	1.26	1.22	0.93	1.13
		H4	2.15	1.01	nd	1.19	1.24	1.22	1.05	1.32
		H5	2.05	0.94	nd	1.09	1.33	1.28	1.12	1.49
		H6	2.02	0.95	nd	1.12	1.18	1.15	1.07	1.23
	LC/HP	L1	1.21	1.41	nd	0.65	0.82	1.03	0.73	0.73
		L2	1.14	1.39	nd	0.86	0.79	1.05	0.77	0.76
		L3	0.95	1.36	nd	0.85	0.77	1.03	0.74	0.75
		L4	1.26	1.38	nd	0.99	0.84	0.99	0.71	0.78
		L5	1.72	1.37	nd	0.73	0.85	0.97	0.79	0.73
		L6	1.24	1.41	nd	0.97	0.82	0.94	0.81	0.83

Red letters indicate the outliers of each experimental group, which were not included in the statistical analysis of significance.

Table S9. Data used for the analysis of mRNA expression of genes involved in H3K4me3 modification in liver tissue in the present study.

Stages	Treatments	Replication	H3K4me3 writer					H3K4me3 eraser				
			setd1a	*setd1ba*	*kmt2a*	*kmt2ba*	*kmt2bb*	*kdm5a*	*kdm5ba*	*kdm5bb*	*kdm5c*	*riox1*
Juvenile	Fasted	F1	0.64	0.42	0.95	0.99	0.83	0.47	0.79	0.37	0.32	0.12
		F2	0.59	0.50	0.96	0.97	0.79	0.44	0.75	0.31	0.28	0.07
		F3	0.64	0.47	0.94	0.94	0.78	0.49	0.84	0.29	0.25	0.06
		F4	0.63	0.45	0.93	0.95	0.75	0.50	0.72	0.30	0.30	0.16
		F5	0.68	0.47	1.13	0.94	0.89	0.54	0.93	0.35	0.31	0.06
		F6	0.78	0.73	1.16	1.08	0.99	0.33	0.91	0.42	0.37	0.09
	HC/LP	H1	0.76	0.36	0.55	0.64	0.79	1.02	1.28	0.73	0.50	0.79
		H2	0.64	0.39	0.48	0.72	0.79	1.30	1.25	0.77	0.43	0.56
		H3	0.72	0.32	0.48	0.49	0.62	1.31	1.21	0.60	0.39	0.79
		H4	0.75	0.39	0.53	0.54	0.73	1.24	1.45	0.60	0.33	1.08
		H5	0.59	0.28	0.44	0.46	0.71	1.18	0.88	0.47	0.34	1.43
		H6	0.62	0.39	0.42	0.59	0.72	1.05	1.39	0.68	0.49	0.36
	LC/HP	L1	0.48	0.47	0.35	0.56	0.77	0.48	0.69	0.26	0.31	0.39
		L2	0.51	0.43	0.37	0.57	0.70	0.53	0.63	0.29	0.27	0.59
		L3	0.45	0.43	0.31	0.48	0.59	0.58	0.63	0.18	0.22	0.31
		L4	0.52	0.36	0.43	0.68	0.76	0.52	0.70	0.29	0.29	0.36
		L5	0.40	0.28	0.34	0.56	0.53	0.51	0.45	0.21	0.16	0.24
		L6	0.46	0.34	0.52	0.60	0.67	0.51	0.72	0.24	0.28	0.16
Adult	Fasted	F1	1.36	2.36	1.66	1.68	1.86	2.24	1.37	0.79	0.67	0.48
		F2	1.39	1.99	1.49	1.52	2.15	1.98	1.54	0.62	0.53	0.48
		F3	2.14	2.66	2.04	2.07	2.12	1.87	3.28	1.34	0.49	1.20
		F4	2.03	1.54	1.27	1.57	1.47	1.85	3.60	0.96	1.33	1.20
		F5	2.41	2.51	1.70	2.11	2.50	1.81	3.47	1.30	0.97	0.77
		F6	2.31	2.18	1.49	1.84	2.29	1.96	3.01	1.20	0.88	0.69
	HC/LP	H1	0.29	0.44	0.39	0.56	0.50	0.60	0.68	0.22	0.26	0.12
		H2	0.66	0.96	0.97	0.69	0.96	0.51	1.29	0.34	0.36	0.21
		H3	0.58	0.64	0.92	0.93	0.82	0.84	0.96	0.37	0.25	0.25
		H4	0.84	1.33	0.91	0.81	1.12	0.71	1.12	0.44	0.43	0.57
		H5	0.79	1.05	0.90	0.99	0.88	0.68	1.17	0.46	0.43	0.52
		H6	0.92	0.87	0.70	0.89	0.94	0.53	0.88	0.44	0.40	0.85
	LC/HP	L1	0.23	0.43	0.49	0.39	0.40	0.21	0.32	0.08	0.11	0.04
		L2	0.37	0.49	0.83	0.60	0.57	0.14	0.42	0.14	0.19	0.01
		L3	0.21	0.28	0.66	0.37	0.41	0.17	0.29	0.08	0.10	0.03
		L4	0.40	0.94	0.79	0.93	0.77	0.11	0.43	0.18	0.23	0.06
		L5	0.15	0.14	0.30	0.28	0.26	0.25	0.12	0.04	0.06	0.11
		L6	0.38	0.42	0.76	0.75	0.75	0.16	0.33	0.13	0.18	0.15

Red letters indicate the outliers of each experimental group, which were not included in the statistical analysis of significance.

Table S10. Data used for the analysis of mRNA expression of genes involved in H3K9me3, H3K36me3 and H3K9ac modification in liver tissue in the present study.

Stages	Treatments	Replication	H3K9me3 writer	H3K9me3 and H3K36me3 eraser				H3K36me3 eraser	H3K9ac writer				H3K9ac eraser	
			suv39h1b	*kdm4aa*	*kdm4ab*	*kdm4b*	*kdm4c*	*setd2*	*kat2a*	*kat2b*	*kat6a*	*gtf3c4*	*sirt2*	*sirt5*
Juvenile	Fasted	F1	0.17	0.47	0.25	0.40	0.28	0.49	0.19	0.44	0.52	0.44	0.15	0.43
		F2	0.17	0.44	0.27	0.32	0.23	0.39	0.21	0.39	0.68	0.36	0.14	0.45
		F3	0.19	0.47	0.24	0.31	0.27	0.45	0.16	0.37	0.80	0.39	0.16	0.45
		F4	0.21	0.44	0.28	0.37	0.27	0.48	0.19	0.63	0.67	0.52	0.17	0.43
		F5	0.25	0.41	0.22	0.37	0.23	0.42	0.20	0.55	0.77	0.40	0.20	0.47
		F6	0.14	0.46	0.27	0.34	0.25	0.45	0.31	0.42	0.70	0.41	0.18	0.43
	HC/LP	H1	1.04	0.55	0.64	0.82	0.65	0.54	0.76	0.82	0.25	0.59	0.95	0.64
		H2	0.94	0.55	0.50	0.73	0.59	0.45	0.42	0.78	0.23	0.53	0.90	0.56
		H3	0.93	0.52	0.52	0.76	0.56	0.42	0.37	0.57	0.21	0.46	1.79	0.63
		H4	1.02	0.53	0.45	0.68	0.57	0.40	0.25	0.33	0.12	0.43	1.83	0.67
		H5	0.95	0.49	0.52	0.74	0.59	0.39	0.41	0.48	0.11	0.68	1.22	0.64
		H6	0.88	0.54	0.46	0.78	0.49	0.42	0.49	0.50	0.42	0.45	0.76	0.63
	LC/HP	L1	0.70	0.38	0.40	0.40	0.33	0.42	0.41	0.54	0.25	0.54	0.37	0.38
		L2	0.59	0.38	0.31	0.41	0.30	0.40	0.47	0.44	0.23	0.58	0.39	0.45
		L3	0.62	0.38	0.33	0.37	0.29	0.40	0.45	0.24	0.26	0.49	0.35	0.37
		L4	0.67	0.39	0.33	0.34	0.32	0.38	0.34	0.19	0.37	0.50	0.30	0.27
		L5	0.72	0.34	0.30	0.36	0.28	0.38	0.45	0.32	0.25	0.50	0.28	0.31
		L6	0.73	0.32	0.26	0.36	0.31	0.40	0.48	0.29	0.29	0.45	0.28	0.28
Adult	Fasted	F1	0.73	1.83	1.02	1.24	0.85	1.40	0.86	1.81	0.97	0.95	1.13	1.04
		F2	1.26	1.88	1.19	1.26	0.92	1.41	0.79	1.74	1.15	0.89	1.15	0.87
		F3	0.60	2.11	1.16	1.32	0.82	1.47	0.72	0.83	1.35	0.94	1.52	1.28
		F4	1.10	1.85	1.06	1.11	0.83	1.46	1.24	0.89	1.00	0.83	1.20	0.96
		F5	1.23	1.98	1.09	1.12	0.87	1.40	1.00	1.36	0.91	0.60	0.83	0.91
		F6	1.13	1.76	1.08	1.28	0.78	1.42	0.65	0.84	0.88	0.45	1.09	1.12
	HC/LP	H1	0.38	0.80	0.60	1.23	0.62	0.42	0.66	1.54	0.39	0.80	0.35	0.42
		H2	0.34	0.65	0.50	1.29	0.60	0.45	0.61	0.94	0.40	0.77	0.31	0.28
		H3	0.34	0.69	0.41	1.30	0.54	0.46	0.74	0.70	0.16	0.71	0.36	0.36
		H4	0.59	0.76	0.50	1.17	0.61	0.46	0.52	0.64	0.24	0.51	0.31	0.30
		H5	0.40	0.76	0.54	1.38	0.62	0.43	1.02	0.38	0.50	0.31	0.27	0.31
		H6	0.16	0.70	0.51	1.15	0.56	0.41	0.36	0.45	0.56	0.44	0.32	0.41
	LC/HP	L1	0.53	0.26	0.17	0.28	0.15	0.33	0.23	0.44	0.20	0.61	0.07	0.13
		L2	0.29	0.28	0.18	0.26	0.21	0.29	0.20	0.54	0.20	0.41	0.05	0.13
		L3	0.31	0.29	0.18	0.24	0.19	0.28	0.22	0.43	0.28	0.29	0.06	0.15
		L4	0.24	0.25	0.18	0.30	0.19	0.28	0.21	0.26	0.68	0.31	0.07	0.10
		L5	0.17	0.18	0.21	0.16	0.15	0.25	0.37	0.28	0.43	0.19	0.04	0.10
		L6	0.17	0.21	0.15	0.21	0.21	0.31	0.40	0.26	0.30	0.14	0.05	0.13

Red letters indicate the outliers of each experimental group, which were not included in the statistical analysis of significance.

Table S11. Data used for the analysis of mRNA expression of genes involved in H3K4me3 modification in muscle tissue in the present study.

Stages	Treatments	Replication	H3K4me3 writer					H3K4me3 eraser				
			setd1a	setd1ba	kmt2a	kmt2ba	kmt2bb	kdm5a	kdm5ba	kdm5bb	kdm5c	riox1
Juvenile	Fasted	F1	1.62	1.75	1.50	1.35	2.04	1.85	1.16	1.94	1.43	0.80
		F2	1.82	1.95	1.57	1.34	1.89	2.00	1.24	1.91	1.46	0.86
		F3	1.62	1.80	1.52	1.32	1.88	2.09	1.18	1.89	1.45	0.82
		F4	1.66	1.83	1.52	1.40	1.97	2.21	1.20	1.85	1.43	0.82
		F5	1.43	1.64	1.47	1.35	1.77	1.50	1.28	1.52	1.18	0.83
		F6	1.52	1.72	1.47	1.25	1.72	1.49	1.09	1.72	1.33	0.79
	HC/LP	H1	1.51	1.62	0.80	1.04	1.24	1.25	1.20	0.96	1.08	1.78
		H2	1.30	1.60	0.71	1.00	1.15	1.20	1.40	0.97	1.07	1.89
		H3	1.20	1.63	0.83	1.12	1.21	1.18	1.14	1.01	1.10	1.87
		H4	1.28	1.64	0.80	0.97	1.19	1.12	1.27	1.00	1.21	1.93
		H5	1.22	1.49	0.74	0.96	1.21	1.10	1.24	0.94	1.02	1.99
		H6	1.19	1.46	0.82	0.98	1.15	1.26	1.28	0.99	1.09	1.80
	LC/HP	L1	1.30	1.27	0.71	0.88	1.13	0.94	1.00	0.95	0.93	1.38
		L2	1.27	1.44	0.78	0.90	1.26	0.96	0.96	1.00	1.18	1.51
		L3	1.29	1.36	0.72	0.82	1.00	0.93	0.95	0.97	1.11	1.42
		L4	1.30	1.38	0.78	0.84	1.15	1.01	0.94	0.98	1.19	1.47
		L5	1.20	1.39	0.85	0.88	0.99	0.91	0.98	0.75	0.89	1.34
		L6	1.14	1.42	0.90	0.83	1.22	0.91	0.93	0.97	1.11	1.41
Adult	Fasted	F1	1.14	0.96	0.92	0.94	1.03	1.33	0.78	1.16	1.06	0.83
		F2	1.19	1.04	1.00	0.98	0.98	1.37	0.71	1.13	1.07	0.86
		F3	1.15	0.98	1.03	0.99	0.98	1.50	0.74	1.22	1.09	0.84
		F4	1.17	1.02	1.02	0.98	1.03	1.39	0.74	1.07	1.09	0.88
		F5	1.10	1.04	0.91	0.98	1.12	1.30	0.67	1.18	1.06	0.87
		F6	1.23	1.04	1.03	0.97	1.08	1.28	0.71	1.14	0.70	0.79
	HC/LP	H1	1.14	1.18	0.87	1.00	1.25	1.19	0.90	0.88	0.91	1.28
		H2	1.10	1.21	0.98	1.02	1.46	1.19	0.85	0.89	0.89	1.29
		H3	1.17	1.24	1.09	1.07	1.38	1.24	0.79	0.93	0.88	1.22
		H4	1.05	1.19	0.88	0.91	1.34	1.17	0.67	0.89	0.90	1.26
		H5	1.43	1.15	0.93	0.86	1.23	1.02	0.73	0.84	0.84	1.30
		H6	1.38	1.08	0.86	0.89	1.15	1.04	0.74	0.85	0.85	1.17
	LC/HP	L1	1.24	0.95	0.75	0.79	0.92	0.97	0.67	0.83	0.94	0.89
		L2	1.24	0.97	0.78	0.87	0.97	1.18	0.72	0.90	0.95	0.96
		L3	1.21	0.98	0.79	0.82	1.05	1.08	0.67	0.86	0.65	0.94
		L4	1.25	0.96	0.71	0.79	0.88	1.04	0.63	0.86	0.75	0.96
		L5	1.17	1.06	0.65	0.84	0.89	0.99	0.58	0.81	0.60	0.87
		L6	1.17	1.06	0.70	0.79	1.06	1.02	0.61	0.89	0.82	0.88

Red letters indicate the outliers of each experimental group, which were not included in the statistical analysis of significance.

Table S12. Data used for the analysis of mRNA expression of genes involved in H3K9me3, H3K36me3 and H3K9ac modification in muscle tissue in the present study.

Stages	Treatments	Replication	H3K9me3 writer	H3K9me3 and H3K36me3 eraser				H3K36me3 eraser	H3K9ac writer				H3K9ac eraser	
			suv39h1b	*kdm4aa*	*kdm4ab*	*kdm4b*	*kdm4c*	*setd2*	*kat2a*	*kat2b*	*kat6a*	*gtf3c4*	*sirt2*	*sirt5*
Juvenile	Fasted	F1	1.95	1.40	nd	1.22	1.61	1.56	0.74	1.88	1.65	1.69	1.17	1.42
		F2	1.76	1.43	nd	1.21	1.68	1.59	0.76	1.94	1.67	1.80	1.15	1.40
		F3	1.71	1.35	nd	1.22	1.72	1.58	0.80	2.01	1.65	1.63	1.24	1.49
		F4	1.77	1.36	nd	1.24	1.58	1.46	0.72	1.76	1.65	1.60	1.20	1.43
		F5	1.40	1.27	nd	1.19	1.53	1.48	0.76	1.98	1.40	1.45	1.20	1.35
		F6	1.36	1.27	nd	1.12	1.49	1.37	0.71	1.67	1.56	1.42	1.12	1.26
	HC/LP	H1	1.07	1.00	nd	0.91	1.19	1.32	1.67	0.63	1.12	1.19	1.04	1.12
		H2	1.09	1.09	nd	0.99	1.22	1.47	1.79	0.65	1.09	1.23	1.07	1.10
		H3	1.02	1.08	nd	0.95	1.14	1.40	1.56	0.60	1.03	1.13	1.03	1.05
		H4	0.91	1.05	nd	0.99	1.22	1.40	1.76	0.76	1.04	1.12	0.85	0.89
		H5	1.04	1.25	nd	1.01	1.18	1.39	1.82	0.73	1.12	1.04	0.90	0.91
		H6	0.90	1.09	nd	0.98	1.14	1.37	1.73	0.70	1.12	0.97	0.84	0.84
	LC/HP	L1	0.72	1.11	nd	0.91	1.12	1.26	1.45	0.67	0.88	0.89	0.94	0.98
		L2	0.82	0.93	nd	0.94	1.23	1.37	1.49	0.70	0.98	1.00	0.99	1.00
		L3	0.75	0.87	nd	0.93	1.13	1.38	1.41	0.63	0.88	0.93	0.91	0.87
		L4	0.86	0.94	nd	1.02	1.20	1.37	1.49	0.69	0.97	1.01	0.97	0.94
		L5	0.84	0.70	nd	0.94	1.19	1.36	1.50	0.72	0.96	1.00	0.95	0.96
		L6	0.95	0.85	nd	0.93	1.15	1.31	1.37	0.62	0.90	0.92	0.92	0.83
Adult	Fasted	F1	0.83	1.07	nd	0.80	0.99	1.24	0.66	1.27	1.18	1.07	0.94	1.05
		F2	0.78	1.07	nd	0.82	0.96	1.19	0.74	1.43	1.11	0.99	0.98	0.95
		F3	0.60	1.14	nd	0.85	0.97	1.14	0.84	1.56	1.21	1.01	0.96	0.95
		F4	0.64	1.06	nd	0.78	0.96	1.14	0.71	1.34	1.23	1.08	0.99	1.01
		F5	0.67	1.09	nd	0.80	0.95	1.12	0.71	1.21	1.20	0.99	0.87	0.98
		F6	0.73	1.24	nd	0.85	1.03	1.20	0.72	1.28	1.23	0.95	0.94	1.01
	HC/LP	H1	1.74	0.88	nd	1.26	1.16	1.36	1.22	0.86	0.93	1.39	0.73	0.97
		H2	1.68	0.91	nd	1.21	1.16	1.32	1.18	1.01	1.05	1.30	0.93	0.87
		H3	1.76	1.00	nd	1.15	1.04	1.19	1.20	1.14	1.00	1.27	0.96	0.86
		H4	1.64	0.90	nd	1.21	1.12	1.32	1.18	0.86	0.93	1.34	0.99	0.91
		H5	2.08	0.91	nd	1.21	0.94	1.14	1.18	0.93	0.90	1.38	0.94	0.85
		H6	1.73	0.87	nd	1.24	1.05	1.21	1.19	0.91	0.89	1.20	0.89	0.82
	LC/HP	L1	0.99	0.67	nd	0.83	1.00	1.22	1.18	0.59	0.71	0.90	0.76	0.79
		L2	1.04	0.67	nd	0.89	1.02	1.22	1.18	0.60	0.76	0.97	1.02	0.82
		L3	1.11	0.67	nd	0.83	0.99	1.16	1.14	0.55	0.73	0.89	0.71	0.79
		L4	1.01	0.66	nd	0.86	1.01	1.20	1.18	0.60	0.74	0.81	0.70	0.78
		L5	1.08	0.62	nd	0.77	0.87	1.10	1.18	0.57	0.73	0.89	0.67	0.73
		L6	1.19	0.61	nd	0.82	0.91	1.12	1.15	0.58	0.71	0.81	0.71	0.76

Red letters indicate the outliers of each experimental group, which were not included in the statistical analysis of significance.