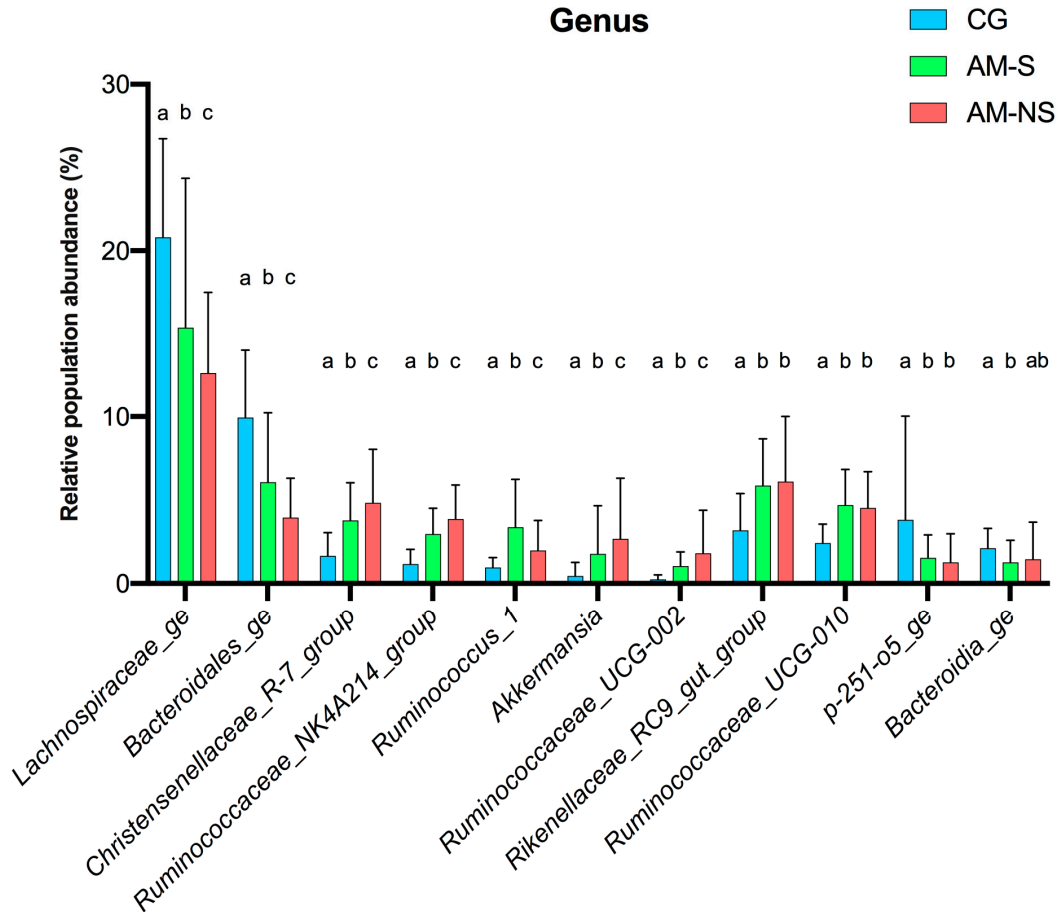




Supplementary material



**Figure S1.** Changes in bacterial genus populations in the feces assessed by 16S V1-V3 profiling and expressed in relative population abundance. Bar plot showing mean value with standard deviation of selected genera whose relative abundance is significantly different between the groups (2 way ANOVA with Benjamini-Hochberg's false discovery rate correction). Data with different superscript letters are significantly different at  $q < 0.05$ . Corresponding global p-values and q-values can be found in Table S1. CG: Co-grazers, AM-S: Atypical Myopathy-Survivor, AM-NS: Atypical Myopathy-Non-Survivors.

**Table S1.** q-values corresponding to comparisons between groups (2 way ANOVA with Benjamini-Hochberg's false discovery rate correction) of the 11 genera depicted in Figure S1. CG: Co-grazers, AM-S: Atypical Myopathy-Survivor, AM-NS: Atypical Myopathy-Non-Survivors.

Genus	Global p-values (corrected)	CG vs AM-S	CG vs AM-NS	AM-S vs AM-NS
<i>Lachnospiraceae_ge</i>	0.0009	<0.0001	<0.0001	<0.0001
<i>Bacteroidales_ge</i>	0.0001	<0.0001	<0.0001	<0.0001
<i>Christensenellaceae_R-7_group</i>	0.0002	<0.0001	<0.0001	<b>0.0023</b>
<i>Ruminococcaceae_NK4A214_group</i>	<0.0001	<0.0001	<0.0001	<b>0.0083</b>
<i>Ruminococcus_1</i>	0.0080	<0.0001	<b>0.0046</b>	<0.0001
<i>Akkermansia</i>	0.0017	<b>0.0004</b>	<0.0001	<b>0.0090</b>
<i>Ruminococcaceae_UCG-002</i>	0.0010	<b>0.0314</b>	<0.0001	<b>0.0314</b>
<i>Rikenellaceae_RC9_gut_group</i>	0.0075	<0.0001	<0.0001	0.1596
<i>Ruminococcaceae_UCG-010</i>	0.0011	<0.0001	<0.0001	0.2240
<i>p-251-05_ge</i>	0.0278	<0.0001	<0.0001	0.1616
<i>Bacteroidia_ge</i>	0.0026	<b>0.0332</b>	<b>0.0649</b>	0.3928

Bold values represent  $q$ -Value < 0.05.

**Table S2.** Serum concentrations (median, maximal and minimal values) of free carnitine and acylcarnitines ( $\mu\text{mol/L}$ ) from horses with atypical myopathy included in this study. AM-S: Atypical Myopathy-Survivors, AM-NS: Atypical Myopathy-Non-Survivors.

Group	Variable	AM-S			AM-NS		
		Min	Median	Max	Min	Median	Max
Free Carnitine	Free Carnitine	11.16	49.62	378.79	23.78	104.41	392.11
Short chain AC (C2 to C5)	C3DC-Carnitine	0.03	0.12	0.95	0.07	0.33	1.60
	C5DC-Carnitine	0.24	1.14	2.95	0.45	2.23	9.42
	C2-Carnitine	6.31	25.59	82.79	3.63	39.57	123.52
	C3-Carnitine	0.63	1.44	5.47	0.40	2.95	6.91
	C4-Carnitine	1.22	10.98	47.72	1.84	21.81	60.31
	C5-Carnitine	1.41	6.13	30.85	4.25	22.08	49.62
	C5-OH-Carnitine	0.10	0.24	1.21	0.16	0.64	1.90
Medium chain AC (C6 to C10)	C8-Carnitine	0.14	1.21	5.10	0.20	1.77	14.75
	C10:2-Carnitine	0.06	0.56	2.78	0.08	0.71	6.73
	C10:1-Carnitine	0.03	0.37	1.28	0.07	0.36	2.43
	C10-Carnitine	0.05	0.42	1.91	0.10	0.46	4.68
	C6-Carnitine	0.18	2.14	15.60	0.52	4.03	28.22
	C8:1-Carnitine	0.07	0.57	5.16	0.18	1.00	5.98

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Long chain (C12 to C18)	AC	C12:1-Carnitine	0.03	0.15	0.54	0.05	0.22	0.85
		C12-Carnitine	0.05	0.21	0.65	0.09	0.25	1.35
		C14:1-Carnitine	0.03	0.26	0.98	0.11	0.27	1.58
		C14-Carnitine	0.04	0.20	0.42	0.08	0.23	0.92
		C16:1-Carnitine	0.04	0.17	0.50	0.09	0.22	1.74
		C16-Carnitine	0.20	0.51	2.41	0.28	0.65	3.05
		C18:1-Carnitine	0.15	0.46	1.55	0.21	0.61	2.80
		C18-Carnitine	0.09	0.19	0.75	0.10	0.32	1.07

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