**Table S1**. Diet composition and ingredients of experimental diets

|  |
| --- |
| Ingredients (% of DM)1 |
| Alfalfa hay | 20 |
| Leymus chinensis | 30 |
| Rice Straw | 0.00 |
| Maize silage | 20 |
| Maize  | 15 |
| Wheat bran | 2 |
| Soybean meal | 10 |
| cottonseed meal | 0 |
| Calcium carbonate | 0.7 |
| Calcium hydrogen phosphate | 0.8 |
| Sodium chloride | 0.50 |
| Dairy premix2 | 1 |
| Nutrient composition (% of DM) |
| NEL (Mcal/kg of DM) | 1.43 |
| Crude protein (CP)  | 12.9 |
|

|  |  |
| --- | --- |
| Rumen degradable protein (RDP)c | 9.8 |

 |

|  |  |
| --- | --- |
| 8.2 | 9.8 |

 |
| Neutral detergent fibre (NDF) | 44.3 |
| Non-fibre carbohydrates (NFC)d | 28.1 |
| Calcium | 1.08 |
| Phosphorous | 0.55 |

1Fed as TMR.

2Contained Zn, 3,000 mg/kg; Cu, 1,000 mg/kg; Mn, 2,800 mg/kg; I, 60 mg/kg; Co, 5 mg/kg; vitamin A, 1,200,000 IU/kg; vitamin D, 2,600,000 IU/kg; and vitamin E, 90,000 IU/kg.

c Estimated based on NRC (2001).

**Table S2**. Primers for quantitative real time PCR

|  |  |  |  |
| --- | --- | --- | --- |
| Gene Name | Reference | Primer sequence (5’→3’) | Amplicon Size, bp |
| MCT-1 | Naeem et al., 2012 | For: GTCAACGCTCGTATTTATTTCACAAR: AAAACACTGATCGGGTGATGATC | 101 |
| MCT-2 | Naeem et al., 2012 | For: AGGAGGTTTGTTATGCTGTTTGGR: CAGACCTAAACCGCAAATTAATCC | 101 |
| MCT-4 | Naeem et al., 2012 | For: CCTGTGGGACTGAAGGGTAAATR: ATGATTCCCACAGAAATGTCCAGTAT | 110 |
| Na/K ATPase | Kuzinski et al., 2011 | For: GAG ATTACC CCC TTC CTG ATA TTT R: TGG ATC ATA CCA ATC TGT CCA TAG | 227 |
| GAPDH | Wang et al., 2012 | For: GGGTCATCATCTCTGCACCTR: GGTCATAAGTCCCTCCACGA | 180 |

**Table S3**. Number of sequences, estimated sample coverage, diversity and OTU richness in each sample.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Lable | LPS dose(μg /kg.BW) | SamplesReads | Of UsableSequences | OTUs | Chao | Shannon | Coverage |
| P1-B3-D0-T1 | 0 | 5420 | 4234 | 2614  | 3284(2952-3685) | 6.92(6.88-6.96) | 0.62 |
| P1-B3-D0-T2 | 0 | 6653 | 5408 | 3214  | 3691(3350-4098) | 6.95(6.91-6.99) | 0.66 |
| P1-B3-D0-T3 | 0 | 6815 | 5449 | 3679  | 4820(4383-5334) | 7.27(7.23-7.3) | 0.56 |
| P1-B3-D0-T4 | 0 | 8496 | 6811 | 3881  | 4308(3961-4716) | 7.14(7.11-7.18) | 0.69 |
| P1-B3-D0-T5 | 0 | 8038 | 6206 | 3644  | 4020(3691-4406) | 7.12(7.08-7.16) | 0.68 |
| P2-B1-D0-T1 | 0 | 6918 | 5457 | 3306  | 3741(3433-4105) | 7.13(7.09-7.16) | 0.65 |
| P2-B1-D0-T2 | 0 | 7492 | 6127 | 3351  | 3642(3346-3994) | 7.07(7.03-7.11) | 0.72 |
| P2-B1-D0-T3 | 0 | 7923 | 6314 | 3648  | 3867(3582-4201) | 7.21(7.17-7.24) | 0.67 |
| P2-B1-D0-T4 | 0 | 7370 | 5960 | 3536  | 3790(3490-4144) | 7.13(7.09-7.17) | 0.67 |
| P2-B1-D0-T5 | 0 | 7081 | 5577 | 3057  | 3258(2956-3621) | 6.93(6.88-6.97) | 0.64 |
| P3-B2-D0-T1 | 0 | 6980 | 5332 | 3578  | 4190(3829-4616) | 7.24(7.2-7.27) | 0.6 |
| P3-B2-D0-T2 | 0 | 6549 | 5145 | 3626  | 4933(4492-5448) | 7.34(7.31-7.37) | 0.52 |
| P3-B2-D0-T3 | 0 | 6581 | 5078 | 3554  | 4603(4187-5091) | 7.3(7.27-7.33) | 0.56 |
| P3-B2-D0-T4 | 0 | 6201 | 4837 | 3215  | 3976(3623-4394) | 7.09(7.05-7.13) | 0.59 |
| P3-B2-D0-T5 | 0 | 7333 | 5855 | 3852  | 4935(4517-5423) | 7.32(7.29-7.35) | 0.58 |
| P1-B2-D4-T1 | 4 | 4996 | 3919 | 2649  | 3403(3050-3830) | 6.97(6.94-7.01) | 0.57 |
| P1-B2-D4-T2 | 4 | 5455 | 4380 | 3024  | 4161(3750-4649) | 7.15(7.11-7.19) | 0.54 |
| P1-B2-D4-T3 | 4 | 5567 | 4494 | 3107  | 4619(4155-5169) | 7.19(7.15-7.22) | 0.53 |
| P1-B2-D4-T4 | 4 | 5905 | 4802 | 3233  | 4071(3693-4518) | 7.18(7.15-7.22) | 0.57 |
| P1-B2-D4-T5 | 4 | 6127 | 4889 | 3318  | 4347(3940-4828) | 7.21(7.17-7.25) | 0.55 |
| P2-B3-D4-T1 | 4 | 5620 | 4454 | 2556  | 2822(2513-3201) | 6.75(6.7-6.79) | 0.62 |
| P2-B3-D4-T2 | 4 | 6499 | 5304 | 3014  | 3019(2786-3296) | 6.99(6.96-7.03) | 0.71 |
| P2-B3-D4-T3 | 4 | 6728 | 5230 | 3399  | 4540(4104-5055) | 7.16(7.12-7.19) | 0.58 |
| P2-B3-D4-T4 | 4 | 5929 | 4558 | 3106  | 3794(3452-4199) | 7.15(7.11-7.18) | 0.58 |
| P2-B3-D4-T5 | 4 | 7146 | 5431 | 3618  | 4501(4109-4961) | 7.22(7.18-7.26) | 0.58 |
| P3-B1-D4-T1 | 4 | 6335 | 4916 | 3366  | 4115(3752-4543) | 7.21(7.17-7.25) | 0.56 |
| P3-B1-D4-T2 | 4 | 6583 | 5194 | 3410  | 3893(3543-4307) | 7.11(7.08-7.15) | 0.62 |
| P3-B1-D4-T3 | 4 | 6005 | 4698 | 3201  | 4273(3838-4793) | 7.09(7.05-7.13) | 0.57 |
| P3-B1-D4-T4 | 4 | 6913 | 5685 | 3856  | 4621(4225-5084) | 7.27(7.24-7.31) | 0.58 |
| P3-B1-D4-T5 | 4 | 7275 | 5936 | 4075  | 4847(4437-5326) | 7.34(7.31-7.38) | 0.57 |
| P1-B1-D8-T1 | 8 | 5636 | 4431 | 3131  | 4523(4057-5079) | 7.16(7.12-7.19) | 0.51 |
| P1-B1-D8-T2 | 8 | 5220 | 4323 | 2940  | 3756(3398-4183) | 7.09(7.05-7.12) | 0.57 |
| P1-B1-D8-T3 | 8 | 6205 | 5118 | 3454  | 4448(4032-4939) | 7.18(7.14-7.21) | 0.58 |
| P1-B1-D8-T4 | 8 | 5724 | 4651 | 2655  | 2950(2679-3278) | 6.88(6.84-6.92) | 0.69 |
| P1-B1-D8-T5 | 8 | 6518 | 5125 | 3193  | 3528(3238-3872) | 7.12(7.08-7.15) | 0.63 |
| P2-B2-D8-T1 | 8 | 7460 | 5886 | 3557  | 4138(3786-4552) | 7.16(7.12-7.2) | 0.64 |
| P2-B2-D8-T2 | 8 | 7043 | 5830 | 3806  | 4347(3988-4767) | 7.23(7.19-7.27) | 0.61 |
| P2-B2-D8-T3 | 8 | 7545 | 5995 | 3628  | 4439(4045-4903) | 7.18(7.14-7.21) | 0.65 |
| P2-B2-D8-T4 | 8 | 6212 | 4907 | 3271  | 3658(3350-4022) | 7.16(7.12-7.19) | 0.6 |
| P2-B2-D8-T5 | 8 | 7433 | 5865 | 3269  | 3447(3168-3779) | 7.03(6.99-7.07) | 0.71 |
| P3-B3-D8-T1 | 8 | 6786 | 5535 | 3726  | 4552(4148-5027) | 7.25(7.21-7.28) | 0.58 |
| P3-B3-D8-T2 | 8 | 4200 | 3591 | 2262  | 2643(2327-3036) | 6.68(6.63-6.73) | 0.57 |
| P3-B3-D8-T3 | 8 | 7813 | 6269 | 3453  | 3487(3210-3815) | 7.04(7-7.07) | 0.72 |
| P3-B3-D8-T4 | 8 | 7200 | 5933 | 3366  | 3741(3409-4136) | 6.99(6.96-7.03) | 0.7 |
| P3-B3-D8-T5 | 8 | 6678 | 5236 | 3264  | 3774(3423-4192) | 7.03(6.99-7.07) | 0.64 |
| Total |  | 296,606 |  |  |  |  |  |

**Fig. S1.** The distribution of phyla for each sample. Control: P1-B3-D0-T1, P1-B3-D0-T2, P1-B3-D0-T3, P1-B3-D0-T4, P1-B3-D0-T5, P2-B1-D0-T1, P2-B1-D0-T2, P2-B1-D0-T3, P2-B1-D0-T4, P2-B1-D0-T5, P3-B2-D0-T1, P3-B2-D0-T2, P3-B2-D0-T3, P3-B2-D0-T4, P3-B2-D0-T5; 0.4 μg/kg.BW LPS group: P1-B2-D4-T1, P1-B2-D4-T2, P1-B2-D4-T3, P1-B2-D4-T4, P1-B2-D4-T5, P2-B3-D4-T1, P2-B3-D4-T2, P2-B3-D4-T3, P2-B3-D4-T4, P2-B3-D4-T5, P3-B1-D4-T1, P3-B1-D4-T2, P3-B1-D4-T3, P3-B1-D4-T4, P3-B1-D4-T5; 0.8 μg/kg.BW LPS group: P1-B1-D8-T1, P1-B1-D8-T2, P1-B1-D8-T3, P1-B1-D8-T4, P1-B1-D8-T5, P2-B2-D8-T1, P2-B2-D8-T2, P2-B2-D8-T3, P2-B2-D8-T4, P2-B2-D8-T5, P3-B3-D8-T1, P3-B3-D8-T2, P3-B3-D8-T3, P3-B3-D8-T4, P3-B3-D8-T5.

0 μg/kg.BW LPSLPS

 0.4 μg /kg.BW

0.8 μg /kg.BW

**Fig. S2**. Summary of rarefaction results based on operational taxonomic unit (OTUs) (3% divergence) for each sample. Legend as for Figure S1

0 μg/kg.BW LPS treatment

8EU/kg.BW LPS

0.4 μg/kg.BW LPS treatment

0.8μg/kg.BW LPS treatment

**Fig. S3**. Influence of lipopolysaccharide treatment on the top 50 most abundant genera (representing ≥ 98% of the observed community). Legend as for Figure S1

