**Effect of selected plant species within biodiverse pasture on *in vitro* fatty acid biohydrogenation and the fatty acid composition of lamb**

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**Supplementary Table S1:** Fatty acid profile (mg/100 g tissue) of *musculus* *longissimus thoracis* from lambs grazing control and biodiverse pastures.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Pasture Type | | SEM | *P1* | | |
| Control | Biodiverse | Treatment | Block | Treatment by Block |
| 12:0 | 6.1 | 6.5 | 1.12 | 0.804 | 0.952 | 0.894 |
| 14:0 | 65.0 | 66.5 | 9.37 | 0.913 | 0.792 | 0.656 |
| 14:1 *cis*-9 | 2.2 | 2.1 | 0.38 | 0.887 | 0.819 | 0.783 |
| 15:0 | 8.9 | 9.1 | 1.10 | 0.897 | 0.645 | 0.469 |
| 16:0 | 343 | 355 | 39.9 | 0.829 | 0.631 | 0.188 |
| 16:1 *trans*-9 | 9.7 | 9.7 | 1.07 | 0.994 | 0.558 | 0.276 |
| 16:1 *cis*-9 | 28.2 | 28.7 | 3.64 | 0.938 | 0.632 | 0.358 |
| 17:0 | 18.1 | 19.4 | 1.98 | 0.647 | 0.472 | 0.084 |
| 17:1 *cis*-10 | 8.1 | 8.2 | 0.91 | 0.894 | 0.501 | 0.112 |
| 18:0 | 289 | 299 | 29.3 | 0.808 | 0.638 | 0.152 |
| 18:1 *trans*-6-8 | 3.3 | 3.3 | 0.38 | 0.924 | 0.633 | 0.312 |
| 18:1 *trans*-9 | 3.8 | 3.8 | 0.49 | 0.958 | 0.644 | 0.415 |
| 18:1 *trans*-10 | 3.4 | 4.0 | 0.46 | 0.366 | 0.631 | 0.428 |
| 18:1 *trans*-11 | 45.7 | 39.6 | 5.23 | 0.421 | 0.306 | 0.457 |
| 18:1 *trans*-12 | 3.7 | 4.4 | 0.51 | 0.375 | 0.649 | 0.240 |
| 18:1 *trans*-13-14 | 6.6 | 8.8 | 0.90 | 0.102 | 0.356 | 0.466 |
| 18:1 *cis*-9 | 517 | 540 | 59.6 | 0.791 | 0.582 | 0.156 |
| 18:1 *cis*-11 | 11.7 | 12.6 | 1.07 | 0.570 | 0.611 | 0.301 |
| 19:0 | 3.4 | 4.5 | 0.54 | 0.165 | 0.649 | 0.337 |
| 18:2 *trans*-9, *trans*-12 | 4.7 | 5.3 | 0.62 | 0.504 | 0.455 | 0.279 |
| 18:2 *cis*-9, *cis*-12 | 58.0 | 72.7 | 5.18 | 0.060 | 0.358 | 0.426 |
| 20:0 | 1.8 | 2.2 | 0.20 | 0.187 | 0.575 | 0.285 |
| 20:1 *cis*-11 | 0.90 | 0.93 | 0.138 | 0.858 | 0.451 | 0.307 |
| 18:3 *n*-3 | 21.8 | 27.3 | 2.35 | 0.112 | 0.470 | 0.334 |
| 20:2 *cis*-11, *cis*-14 | 0.37 | 0.33 | 0.094 | 0.754 | 0.240 | 0.660 |
| 22:0 | 0.71 | 0.81 | 0.107 | 0.523 | 0.395 | 0.409 |
| 20:3 *n*-6 | 2.0 | 2.3 | 0.28 | 0.568 | 0.334 | 0.378 |
| 20:4 *n*-6 | 25.7 | 28.5 | 1.38 | 0.171 | 0.556 | 0.518 |
| 22:2 *cis*-13, *cis*-16 | 0.35 | 0.46 | 0.086 | 0.371 | 0.009 | 0.023 |
| 24:0/20:5 *n*-3 | 10.4 | 11.3 | 0.84 | 0.449 | 0.473 | 0.781 |
| 22:4 *n*-6 | 1.2 | 1.4 | 0.10 | 0.249 | 0.457 | 0.575 |
| 22:5 *n*-3 | 12.5 | 13.8 | 0.81 | 0.294 | 0.586 | 0.651 |
| 22:6 *n*-3 | 3.3 | 3.3 | 0.23 | 0.950 | 0.631 | 0.590 |
| Total fatty acids | 1573 | 1648 | 168.1 | 0.758 | 0.600 | 0.189 |
| Total SFA2 | 748 | 776 | 81.9 | 0.808 | 0.650 | 0.197 |
| Total *cis*-MUFA2 | 569 | 592 | 65.5 | 0.799 | 0.585 | 0.166 |
| Total *trans*-MUFA | 76.2 | 73.6 | 8.40 | 0.835 | 0.386 | 0.361 |
| Total PUFA2 | 130 | 156 | 10.2 | 0.094 | 0.398 | 0.389 |
| Total CLA2 | 23.0 | 21.5 | 2.86 | 0.716 | 0.502 | 0.502 |
| *n*-3 PUFA | 37.7 | 44.5 | 3.24 | 0.155 | 0.495 | 0.389 |
| *n*-6 PUFA | 92.5 | 111 | 7.10 | 0.078 | 0.349 | 0.399 |
| *n*-6:*n*-3 | 2.5 | 2.5 | 0.07 | 0.511 | 0.278 | 0.651 |
| Very long chain *n*-3 PUFA | 21.1 | 22.8 | 1.37 | 0.389 | 0.504 | 0.682 |

1 T - treatment; B - block; T\*B - treatment\*block interaction

2 SFA - saturated fatty acids; MUFA - monounsaturated fatty acids; PUFA - polyunsaturated fatty acids; CLA - conjugated linoleic acid.

**Supplementary Table S2:** Fatty acid profile (mg/100 g tissue) of *musculus* *semimembranosus* from lambs grazing control and biodiverse pastures.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Pasture Type | | SEM | *P*1 | | |
| Control | Biodiverse | Treatment | Block | Treatment by Block |
| 12:0 | 14.8 | 13.6 | 1.47 | 0.545 | 0.842 | 0.150 |
| 14:0 | 128 | 117 | 10.1 | 0.452 | 0.835 | 0.086 |
| 14:1 *cis*-9 | 4.9 | 4.0 | 0.52 | 0.269 | 0.739 | 0.120 |
| 15:0 | 18.0 | 16.7 | 1.18 | 0.434 | 0.591 | 0.032 |
| 16:0 | 539 | 511 | 36.6 | 0.594 | 0.719 | 0.077 |
| 16:1 *trans*-9 | 15.7 | 14.2 | 1.11 | 0.347 | 0.657 | 0.152 |
| 16:1 *cis*-9 | 48.6 | 45.3 | 3.65 | 0.530 | 0.640 | 0.100 |
| 17:0 | 28.3 | 28.9 | 1.94 | 0.807 | 0.471 | 0.073 |
| 17:1 *cis*-10 | 12.9 | 11.8 | 0.78 | 0.322 | 0.348 | 0.010 |
| 18:0 | 418 | 405 | 29.9 | 0.763 | 0.811 | 0.145 |
| 18:1 *trans*-6-8 | 5.4 | 4.7 | 0.46 | 0.304 | 0.801 | 0.173 |
| 18:1 *trans*-9 | 6.4 | 5.8 | 0.44 | 0.333 | 0.589 | 0.053 |
| 18:1 *trans*-10 | 6.2 | 5.7 | 0.54 | 0.556 | 0.284 | 0.411 |
| 18:1 *trans*-11 | 75.4 | 61.5 | 4.40 | 0.037 | 0.187 | 0.018 |
| 18:1 *trans*-12 | 6.6 | 7.2 | 0.56 | 0.504 | 0.647 | 0.061 |
| 18:1 *trans*-13-14 | 18.6 | 16.2 | 2.93 | 0.579 | 0.462 | 0.846 |
| 18:1 *cis*-9 | 782 | 740 | 50.0 | 0.568 | 0.654 | 0.049 |
| 18:1 *cis*-11 | 15.7 | 15.3 | 0.84 | 0.716 | 0.619 | 0.074 |
| 19:0 | 5.5 | 6.5 | 0.52 | 0.196 | 0.458 | 0.087 |
| 18:2 *trans*-9, *trans*-12 | 7.7 | 7.7 | 0.76 | 0.975 | 0.570 | 0.183 |
| 18:2 *cis*-9, *cis*-12 | 70.1 | 84.9 | 2.90 | 0.002 | 0.201 | 0.099 |
| 20:0 | 2.8 | 3.3 | 0.24 | 0.171 | 0.837 | 0.097 |
| 20:1 *cis*-11 | 1.5 | 1.5 | 0.10 | 0.986 | 0.675 | 0.099 |
| 18:3 *n*-3 | 28.4 | 35.6 | 2.01 | 0.020 | 0.286 | 0.250 |
| 20:2 *cis*-11, *cis*-14 | 0.57 | 0.73 | 0.101 | 0.257 | 0.384 | 0.300 |
| 22:0 | 1.0 | 1.0 | 0.07 | 0.902 | 0.220 | 0.033 |
| 20:3 *n*-6 | 2.5 | 2.6 | 0.07 | 0.113 | 0.122 | 0.307 |
| 20:4 *n*-6 | 27.7 | 29.1 | 0.83 | 0.236 | 0.191 | 0.207 |
| 22:2 *cis*-13, *cis*-16 | 0.68 | 0.51 | 0.070 | 0.094 | 0.601 | 0.122 |
| 24:0/20:5 *n*-3 | 11.1 | 11.9 | 0.34 | 0.092 | 0.105 | 0.388 |
| 22:4 *n*-6 | 1.4 | 1.5 | 0.09 | 0.693 | 0.222 | 0.107 |
| 22:5 *n*-3 | 14.6 | 15.2 | 0.35 | 0.214 | 0.113 | 0.310 |
| 22:6 *n*-3 | 4.0 | 3.9 | 0.27 | 0.816 | 0.945 | 0.299 |
| Total fatty acids | 2416 | 2315 | 147.5 | 0.634 | 0.695 | 0.058 |
| Total SFA2 | 1171 | 1119 | 76.4 | 0.636 | 0.798 | 0.079 |
| Total *cis*-MUFA2 | 865 | 819 | 55.3 | 0.558 | 0.649 | 0.048 |
| Total *trans*-MUFA | 134 | 115 | 9.4 | 0.170 | 0.311 | 0.100 |
| Total PUFA2 | 158 | 183 | 6.2 | 0.012 | 0.302 | 0.110 |
| Total CLA2 | 39.0 | 32.9 | 2.88 | 0.150 | 0.375 | 0.111 |
| *n*-3 PUFA | 47.2 | 55.2 | 2.42 | 0.032 | 0.252 | 0.206 |
| *n*-6 PUFA | 111 | 128 | 4.2 | 0.011 | 0.220 | 0.105 |
| *n*-6:*n*-3 | 2.4 | 2.3 | 0.08 | 0.748 | 0.078 | 0.954 |
| Very long chain *n*-3 PUFA | 24.4 | 25.6 | 0.68 | 0.254 | 0.204 | 0.204 |

1 T - treatment; B - block; T\*B - treatment\*block interaction

2 SFA - saturated fatty acids; MUFA - monounsaturated fatty acids; PUFA - polyunsaturated fatty acids; CLA - conjugated linoleic acid.

**Supplementary Table S3:** Fatty acid profile (mg/100 g tissue) of subcutaneous fat from lambs grazing conventional and biodiverse pastures.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Item | Pasture Type | | SEM | *P*1 | | |
| Control | Biodiverse | Treatment | Block | Treatment by Block |
| 12:0 | 418 | 377 | 31.0 | 0.367 | 0.487 | 0.534 |
| 14:0 | 3418 | 3140 | 172.0 | 0.267 | 0.399 | 0.359 |
| 14:1 *cis*-9 | 169 | 138 | 23.5 | 0.361 | 0.390 | 0.330 |
| 15:0 | 436 | 441 | 14.7 | 0.820 | 0.528 | 0.389 |
| 16:0 | 10473 | 10334 | 330.5 | 0.770 | 0.188 | 0.070 |
| 16:1 *trans*-9 | 309 | 304 | 9.8 | 0.724 | 0.160 | 0.037 |
| 16:1 *cis*-9 | 1329 | 1232 | 127.6 | 0.601 | 0.255 | 0.271 |
| 17:0 | 585 | 647 | 30.5 | 0.162 | 0.334 | 0.099 |
| 17:1 *cis*-10 | 295 | 281 | 26.3 | 0.718 | 0.301 | 0.441 |
| 18:0 | 7599 | 8068 | 628.0 | 0.604 | 0.793 | 0.368 |
| 18:1 *trans*-6-8 | 111 | 116 | 3.6 | 0.382 | 0.093 | 0.078 |
| 18:1 *trans*-9 | 148 | 140 | 4.8 | 0.227 | 0.009 | 0.035 |
| 18:1 *trans*-10 | 136 | 163 | 6.3 | 0.007 | 0.053 | 0.986 |
| 18:1 *trans*-11 | 1638 | 1494 | 81.7 | 0.228 | 0.077 | 0.615 |
| 18:1 *trans*-12 | 148 | 173 | 5.8 | 0.007 | 0.137 | 0.257 |
| 18:1 *trans*-13-14 | 460 | 534 | 34.9 | 0.153 | 0.007 | 0.475 |
| 18:1 *cis*-9 | 15615 | 14820 | 715.7 | 0.442 | 0.196 | 0.051 |
| 18:1 *cis*-11 | 227 | 226 | 11.9 | 0.943 | 0.062 | 0.243 |
| 19:0 | 122 | 165 | 9.2 | 0.004 | 0.512 | 0.329 |
| 18:2 *trans*-9, *trans*-12 | 170 | 184 | 13.7 | 0.474 | 0.112 | 0.487 |
| 18:2 *cis*-9, *cis*-12 | 707 | 865 | 37.1 | 0.007 | 0.059 | 0.532 |
| 20:0 | 60.9 | 51.3 | 4.79 | 0.175 | 0.290 | 0.129 |
| 20:1 *cis*-11 | 31.7 | 30.1 | 1.47 | 0.440 | 0.077 | 0.089 |
| 18:3 *n*-3 | 344 | 510 | 30.6 | 0.002 | 0.169 | 0.777 |
| 20:2 *cis*-11, *cis*-14 | 8.8 | 12.2 | 1.22 | 0.060 | 0.440 | 0.994 |
| 22:0 | 13.2 | 15.6 | 1.16 | 0.164 | 0.881 | 0.986 |
| 20:3 *n*-6 | 2.2 | 4.9 | 0.87 | 0.044 | 0.263 | 0.275 |
| 20:4 *n*-6 | 36.1 | 43.9 | 2.79 | 0.061 | 0.594 | 0.634 |
| 22:2 *cis*-13, *cis*-16 | 13.8 | 10.2 | 2.35 | 0.300 | 0.486 | 0.379 |
| 24:0/20:5 *n*-3 | 20.9 | 28.2 | 1.42 | 0.002 | 0.166 | 0.227 |
| 22:4 *n*-6 | 1.4 | 3.3 | 0.77 | 0.096 | 0.759 | 0.272 |
| 22:5 *n*-3 | 82.0 | 97.1 | 3.91 | 0.013 | 0.978 | 0.802 |
| 22:6 *n*-3 | 17.9 | 20.8 | 2.24 | 0.372 | 0.995 | 0.800 |
| Total fatty acids | 47261 | 46723 | 1368.6 | 0.784 | 0.165 | 0.036 |
| Total SFA2 | 23260 | 23378 | 808.0 | 0.919 | 0.894 | 0.138 |
| Total *cis*-MUFA2 | 17681 | 16744 | 866.5 | 0.454 | 0.177 | 0.065 |
| Total *trans*-MUFA | 2950 | 2923 | 87.7 | 0.826 | 0.006 | 0.367 |
| Total PUFA2 | 1384 | 1757 | 72.9 | 0.002 | 0.096 | 0.762 |
| Total CLA2 | 969 | 840 | 64.0 | 0.170 | 0.073 | 0.103 |
| *n*-3 PUFA | 445 | 631 | 32.8 | 0.001 | 0.208 | 0.835 |
| *n*-6 PUFA | 939 | 1126 | 51.6 | 0.019 | 0.071 | 0.598 |
| *n*-6:*n*-3 | 2.1 | 1.8 | 0.10 | 0.086 | 0.186 | 0.672 |
| Very long chain *n*-3 PUFA | 111 | 135 | 6.1 | 0.011 | 0.985 | 0.913 |

1 T - treatment; B - block; T\*B - treatment\*block interaction

2 SFA - saturated fatty acids; MUFA - monounsaturated fatty acids; PUFA - polyunsaturated fatty acids; CLA - conjugated linoleic acid.