**Supplementary File 1.** Comparison of body weight, milk yield and milk composition of Gansu Alpine Merino ewes with those of Small-Tailed Han ewes 1

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| Trait | Small tail Han Sheep | Gansu Alpine Merino sheep |
| Body weight (kg) | 64.4±8.43 A | 40.0±6.25 B |
| Milk yield (g/d) | 1357±65.42 A | 853±55.38 B |
| Lactoprotein (%) | 5.37±0.11 A | 4.67±0.11 B |
| Casein (%) | 4.53±0.13 A | 3.92±0.06 B |
| Milk fat (%) | 7.42±1.51 A | 5.66±0.35 B |
| Lactose (%) | 4.74±0.21 | 4.85±0.11 |
| Milk solids (%) | 18.76±2.42 | 16.15±0.34 |
| Non-fat milk solids (%) | 11.24±0.30 | 10.64±0.14 |

1 Means within rows that do not share a superscript uppercase (A or B) are different at *p* < 0.01.