Supplementary Material

**Table s1.** Chemical composition of fermented navel orange pulp (as 88% dry matter basis).

|  |  |
| --- | --- |
| Item | FNOP |
| Digestible energy, Mcal/kg 1 | 1.91 |
| Crude protein, % | 11.09 |
| Ether extract, % | 3.03 |
| Carbohydrates, % | 19.07 |
| Ash, % | 5.26 |
| Crude fiber, % | 49.55 |
| Neutral detergent fiber, % | 35.34 |
| Acid detergent fiber, % | 11.83 |

Note: 1 Digestible energy = [949 + (0.789 × GE) − (43 × % ash) − (41 × % NDF)] / 1000[1]. FNOP = fermented navel orange pulp***.***

**Table s2.** Effects of fermented navel orange pulp on the conventional nutrient levels of the longissimus dorsi muscle in finishing Tibetan pigs.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Item** | **CON** | **5% FNOP** | **10% FNOP** | **15% FNOP** | ***P*-value** |
| Moisture, % | 70.72 ± 1.20 | 70.16 ± 0.88 | 70.95 ± 1.76 | 71.60 ± 0.26 | 0.405 |
| CP, % | 23.28 ± 0.93 | 23.65 ± 0.57 | 23.15 ± 0.64 | 23.62 ± 0.36 | 0.647 |
| EE, % | 1.26 ± 0.64 | 1.85 ± 1.23 | 1.52 ± 1.09 | 1.06 ± 0.60 | 0.670 |
| Ash, % | 1.23 ± 0.03 | 1.19 ± 0.05 | 1.31 ± 0.09 | 1.31 ± 0.09 | 0.086 |
| IMP, g/kg | 1.47 ± 0.22A | 3.00 ± 0.07BC | 3.29 ± 0.28C | 2.73 ± 0.14B | 0.004 |
| AMP, mg/kg | 73.05 ± 8.71A | 87.79 ± 3.66B | 86.42 ± 2.78B | 69.99 ± 5.26A | 0.001 |
| Cho, g/kg | 0.77 ± 0.08 | 0.73 ± 0.06 | 0.75 ± 0.02 | 0.79 ± 0.03 | 0.536 |

Note: Data are expressed as means ± standard deviation, n = 4. CON = basal diet; FNOP = fermented navel orange pulp; CP = crude protein; EE = ether extract; IMP = inosine monophosphate; AMP = adenosine monophosphate; Cho = cholesterol. A,B Within a row, values with different superscripts differ significantly at *P* < 0.01.

**Table s3.** Effects of fermented navel orange pulp on the free amino acid profile of the longissimus dorsi muscle in finishing Tibetan pigs (g/100 g, as-fresh basis).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Item** | **CON** | **5% FNOP** | **10% FNOP** | **15% FNOP** | ***P*-value** |
| EAA |  |  |  |  |  |
| Lysine | 2.35 ± 0.25 | 2.50 ± 0.20 | 2.54 ± 0.11 | 2.36 ± 0.14 | 0.387 |
| Methionine | 0.68 ± 0.06 | 0.72 ± 0.04 | 0.73 ± 0.03 | 0.68 ± 0.04 | 0.392 |
| Valine | 1.24 ± 0.12 | 1.32 ± 0.08 | 1.31 ± 0.06 | 1.23 ± 0.10 | 0.421 |
| Isoleucine | 1.07 ± 0.09 | 1.11 ± 0.05 | 1.12 ± 0.05 | 1.04 ± 0.07 | 0.336 |
| Leucine | 2.00 ± 0.19 | 2.11 ± 0.13 | 2.14 ± 0.06 | 1.97 ± 0.11 | 0.250 |
| Phenylalanine | 1.21 ± 0.11 | 1.26 ± 0.07 | 1.30 ± 0.05 | 1.19 ± 0.06 | 0.221 |
| Histidine | 1.14 ± 0.11 | 1.19 ± 0.05 | 1.18 ± 0.06 | 1.10 ± 0.06 | 0.255 |
| Threonine | 1.13 ± 0.11 | 1.20 ± 0.08 | 1.20 ± 0.05 | 1.10 ± 0.06 | 0.285 |
| NEAA |  |  |  |  |  |
| Aspartate | 1.96 ± 0.17 | 2.06 ± 0.12 | 2.07 ± 0.09 | 1.94 ± 0.15 | 0.434 |
| Serine | 0.90 ± 0.08 | 0.93 ± 0.04 | 0.94 ± 0.03 | 0.88 ± 0.07 | 0.357 |
| Glutamate | 3.19 ± 0.29 | 3.31 ± 0.15 | 3.32 ± 0.15 | 3.08 ± 0.19 | 0.351 |
| Glycine | 0.99 ± 0.09 | 1.04 ± 0.05 | 1.03 ± 0.04 | 0.96 ± 0.05 | 0.306 |
| Alanine | 0.40 ± 0.54 | 0.43 ± 0.59 | 0.14 ± 0.01 | 0.12 ± 0.01 | 0.574 |
| Cysteine | 0.27 ± 0.02 | 0.28 ± 0.02 | 0.28 ± 0.01 | 0.26 ± 0.02 | 0.463 |
| Tyrosine | 1.07 ± 0.10 | 1.11 ± 0.04 | 1.11 ± 0.04 | 1.03 ± 0.07 | 0.268 |
| Arginine | 1.54 ± 0.13 | 1.59 ± 0.06 | 1.63 ± 0.06 | 1.52 ± 0.09 | 0.385 |
| Proline | 0.66 ± 0.06 | 0.68 ± 0.03 | 0.70 ± 0.03 | 0.64 ± 0.03 | 0.205 |
| Total EAA | 10.83 ± 1.04 | 11.40 ± 0.70 | 11.54 ± 0.46 | 10.67 ± 0.64 | 0.314 |
| Total NEAA | 10.99 ± 0.67 | 11.43 ± 0.38 | 11.21 ± 0.46 | 10.42 ± 0.66 | 0.118 |
| Total AA | 21.82 ± 1.61 | 22.83 ± 0.76 | 22.75 ± 0.92 | 21.09 ± 1.30 | 0.181 |
| Umami amino acids1 | 8.09 ± 0.47 | 8.42 ± 0.38 | 8.18 ± 0.35 | 7.62 ± 0.48 | 0.107 |

Note: Data are expressed as means ± standard deviation, n = 4. 1 Umami amino acids = Aspartate + Glutamate + Glycine + Alanine + Arginine. CON = basal diet; FNOP = fermented navel orange pulp; EAA = essential amino acid; NEAA = non-essential amino acid; AA = amino acid.

References

1. Noblet J.;Perez J.M. Prediction of digestibility of nutrients and energy values of pig diets from chemical analysis. *J Anim Sci* 1993, 71, 3389-3398.