**Supplementary Table 1** Ingredient and determined nutrient compositions of the experimental diets.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  | Diet | | | | | |
|  |  | Adaptation | Fibre-free | | Kiwifruit  (133 g/kg DM) | | Kiwifruit  (266 g/kg DM) | |
| Ingredient, g/kg | |  |  |  | |  | |  |
| Purified cellulose | | 25 |  | - | | - | | - |
| Kiwifruit DM\* | | - |  | - | | 133 | | 266 |
| Casein | | 167 |  | 167 | | 157 | | 148 |
| Soybean oil | | 50 |  | 50 | | 50 | | 50 |
| Sucrose | | 141 |  | 141 | | 70 | | - |
| Wheat starch | | 588 |  | 610 | | 559 | | 506 |
| Sodium chloride | | 3 |  | 3 | | 3 | | 3 |
| Vitamin/mineral premix† | | 5 |  | 5 | | 5 | | 5 |
| Calcium carbonate | | 5 |  | 1 | | 1 | | 1 |
| Dicalcium phosphate | | 20 |  | 20 | | 19 | | 18 |
| Titanium dioxide | | - |  | 3 | | 3 | | 3 |
|  | |  |  |  | |  | |  |
| Determined nutrients, g/kg DM | | |  |  | |  | |  |
| Crude protein | | - |  | 163 | | 170 | | 162 |
| Total lipid | | - |  | 47 | | 55 | | 58 |
| Ash | | - |  | 25 | | 33 | | 40 |
| Soluble fibre | | - |  | - | | 7 | | 13 |
| Insoluble fibre | | - |  | - | | 21 | | 35 |
| Total dietary fibre | | - |  | - | | 28 | | 48 |
| Starch | | - |  | 569 | | 513 | | 468 |
|  | |  |  |  | |  | |  |
| Determined energy | |  |  |  | |  | |  |
| Gross energy, MJ/kg DM | | - |  | 18.6 | | 18.5 | | 18.8 |

DM, dry matter

\* Freshly peeled and crushed kiwifruit was added to the diets just prior to feeding.

† Vitamin and mineral premixes were obtained from Vitec Nutrition Ltd (Auckland, New Zealand) and supplied (per kg of diet as-fed): Mn, 45 mg; Zn, 80 mg; Cu, 25 mg; Co, 0.5 mg; Se, 0.3 mg; Fe, 100 mg; I, 1.0 mg; Choline, 100 mg; all-trans retinylacetate, 3.0 mg; cholecalciferol, 0.05 mg; α-tocopherol, 50 mg; menadione, 2.0 mg; thiamin, 1.0 mg; riboflavin, 3.0 mg; nicotinic acid, 15 mg; pantothenic acid, 20 mg; pyridoxine, 2.0 mg; cyanocobalamin, 0.01 mg; folic acid, 0.5 mg; biotin, 0.1 mg.

**Supplementary Table 2.** Dry matter (DM) content of fresh ileal digesta and faeces, and amount of DM entering (ileal digesta) and exiting (faeces) the hindgut for pigs fed diets containing different levels of kiwifruit (KF) over 44 days. Values are means and pooled SEMs, n=28 for the KF level effect and n=14 for the time effect.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  | KF level (g/kg DM) | | |  | Time (days, faeces/ileal digesta) | | | | |  | P-value | |
|  |  |  | 133 | 266 | SEM |  | 4/5 | 14/15 | 28/29 | 42/43 | SEM |  | KF level | Time |
| DM content, % | | | | | |  |  |  |  |  |  |  |  |  |
| Ileal digesta | |  | 9.71 | 9.41 | 0.33 |  | 9.69 | 9.62 | 9.51 | 9.40 | 0.31 |  | 0.526 | 0.595 |
| Faeces | |  | 59.7 | 53.6 | 1.77 |  | 58.7 | 53.9 | 58.3 | 55.6 | 1.59 |  | 0.029 | 0.002C\* |
|  | |  |  |  |  |  |  |  |  |  |  |  |  |  |
| DM entering or exiting the hindgut, g/kg diet DM intake† | | | | | | | | | | | |  |  |  |
| Ileal digesta | |  | 80.2 | 125 | 5.0 |  | 103 | 103 | 102 | 102 | 3.8 |  | <0.001 | 0.648 |

SEM, standard error of the means.

\* C, cubic effect for the time factor.

† For the DM exiting the hindgut there was a significant (*P*=0.007) interaction between KF level and time. The DM exiting the hindgut was 46.7, 44.7, 41.8, and 38.9 g/kg diet DM intake for the diet 133 g KF/kg diet at 5, 15, 29, and 43 days respectively, while it was 64.9, 66.9, 69.8, and 72.7 g/kg diet DM intake for the diet 266 g KF/kg diet (SEM±2.16, n=7).

**Supplementary Table 3.** Response variables for pigs fed a fibre-free diet (7 days) prior to being assigned to diets containing two levels of kiwifruit (KF).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Time, days (faeces/ileal digesta collection): | –3/–2 | –3/–2 |  |  |
| KF level assigned, g/kg DM: | 133 | 266 | SEM | P-value |
| Total bacteria, 1011 16S rRNA gene copy number/kg diet DM intake | | | |  |
| Ileal digesta | 22.1 | 20.5 | 6.75 | 0.330 |
| Faeces | 3.43 | 4.21 | 0.78 | 0.497 |
|  |  |  |  |  |
| DM entering and exiting the hindgut, g/kg diet DM intake | | |  |  |
| Ileal digesta | 80.4 | 86.9 | 4.68 | 0.805 |
| Faeces | 60.8 | 57.6 | 3.14 | 0.762 |
|  |  |  |  |  |
| Hindgut OM fermentability |  |  |  |  |
| Ileal digesta\*, % | 31.0 | 34.9 | 2.21 | 0.400 |
| Fibre substrate† | 14.6 | 15.6 | 4.19 | 0.152 |

SEM, standard error of the means; DM, dry matter.

\* The ileal digesta collected from the pigs during the fibre-free period were *in vitro* fermented with a pooled human faecal inoculum.

† % per 16S rRNA gene copy number of total faecal bacteria/kg diet DM intake/1011. The fibre substrate was *in vitro* fermented with an inoculum prepared from fresh faeces collected from pigs fed a fibre-free diet.

**Supplementary Table 4.** Correlation coefficients and statistical probability values (in brackets) between nutrient contents of ileal digesta and hindgut organic matter fermentability (HOMF), and *in vitro* hindgut production of short-chain fatty acids.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | HOMF ileal digesta, %\* | *In vitro* hindgut production, mmol/kg DM ileal digesta | | | |
|  | Acetic | Propionic | Butyric | Valeric |
| Nutrients, g/kg DM ileal digesta | | | |  |  |
| Organic matter | 0.095 | 0.055 | –0.016 | 0.004 | –0.004 |
| (0.487) | (0.688) | (0.908) | (0.758) | (0.974) |
| Crude protein | –0.095 | –0.262 | 0.479 | –0.229 | –0.182 |
| (0.502) | (0.051) | (0.001) | (0.089) | (0.180) |
| Starch | 0.401 | 0.105 | 0.114 | 0.418 | 0.177 |
| (0.002) | (0.443) | (0.404) | (0.001) | (0.191) |
| Insoluble dietary fibre | –0.146 | –0.326 | –0.334 | –0.213 | –0.086 |
| (0.285) | (0.014) | (0.012) | (0.115) | (0.527) |
| Soluble dietary fibre | 0.031 | –0.081 | 0.179 | 0.010 | –0.1672 |
| (0.821) | (0.555) | (0.188) | (0.943) | (0.218) |

\* *In vitro* HOMF of ileal digesta was not normalised per kg DM ileal digesta. HOMF and hindgut production of SCFAs were obtained after *in vitro* fermentation (human inoculum) of ileal digesta of pigs given diets containing two levels of kiwifruit (KF) over 44 days.

**Supplementary Table 5.** Correlation coefficients and statistical probability values (in brackets) between amount of nutrient and ileal bacteria entering the hindgut with hindgut organic matter fermentability (HOMF), predicted hindgut production of short-chain fatty acids, and total bacterial (ileal digesta and faeces).

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | HOMF ileal digesta, %\* | Predicted hindgut production, mmol/kg diet DM intake | | | |  | Total bacteria†,  16S rRNA gene copy number/kg diet DM intake | |
|  | Acetic | Propionic | Butyric | Valeric |  | Ileal | Faecal‡ |
| Normalised concentrations of nutrients (g/kg diet DM intake) and total bacteria | | | | | | | | |
| Organic matter | 0.041 | 0.842 | 0.833 | 0.534 | 0.561 |  | - | 0.216 |
| (0.762) | (<.0001) | (<.0001) | (<.0001) | (<.0001) |  |  | (0.113) |
| Crude protein | –0.027 | 0.722 | 0.837 | 0.334 | 0.499 |  | 0.33 | 0.019 |
| (0.844) | (<.0001) | (<.0001) | (0.012) | (<.0001) |  | (0.018) | (0.885) |
| Starch | 0.367 | 0.299 | 0.055 | 0.411 | 0.317 |  | –0.07 | –0.131 |
| (0.007) | (0.028) | (0.694) | (0.002) | (0.019) |  | (0.624) | (0.350) |
| Insoluble dietary fibre | –0.071 | 0.613 | 0.651 | 0.337 | 0.398 |  | 0.20 | 0.208 |
| (0.602) | (<.0001) | (<.0001) | (0.011) | (0.002) |  | (0.144) | (0.128) |
| Soluble dietary fibre | 0.024 | 0.661 | 0.780 | 0.420 | 0.400 |  | 0.30 | 0.109 |
| (0.859) | (<.0001) | (<.0001) | (0.001) | (0.002) |  | (0.025) | (0.428) |
| Total ileal bacteria | –0.211 | 0.218 | 0.456 | 0.006 | 0.072 |  | 1 | 0.027 |
|  | (0.119) | (0.107) | (0.000) | (0.966) | (0.598) |  |  | (0.843) |
|  |  |  |  |  |  |  |  |  |
| HOMF of ileal digesta, % | 1 | 0.338 | –0.113 | 0.636 | 0.539 |  | –0.211 | 0.261 |
|  | (0.011) | (0.409) | (<.0001) | (<.0001) |  | (0.119) | (0.054) |

\* *In vitro* HOMF of ileal digesta was not normalised per kg diet DM intake. HOMF and hindgut production of SCFAs were obtained after *in vitro* fermentation (human inoculum) of ileal digesta of pigs given diets containing two levels of kiwifruit (KF) over 44 days.

† The normalised concentration of acetic acid in the ileal digesta was (or tended) to be correlated with the normalised ileal (r=0.24; *P*=0.092) and faecal (r=0.31; *P*=0.027) bacteria.

‡ Correlations between amount of short-chain fatty acids entering and predicted to be produced in the hindgut were also correlated with the total faecal bacteria. The normalized faecal bacteria was significantly correlated with the predicted hindgut production of acetic (r=0.27; *P*=0.046), butyric (r=0.27; *P*=0.043), and valeric (r=0.30; *P*=0.026) acids, but it was not correlated with the normalized concentration of propionic acid (r=0.09; *P*=0.503).

**Supplementary Table 6.** Correlation coefficients and statistical probability values (in brackets) between short-chain fatty acids after *in vitro* hindgut fermentation or their predicted hindgut production.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Acetic | Propionic | Butyric | Valeric |
| *In vitro* hindgut production, mmol/kg DM ileal digesta | | | |  |
| Acetic | 1 | –0.265 | 0.675 | 0.690 |
|  | (0.048) | (<0.001) | (<0.001) |
| Propionic |  | 1 | –0.382 | –0.457 |
|  |  | (0.004) | (0.001) |
| Butyric |  |  | 1 | 0.621 |
|  |  |  | (<0.001) |
| Valeric |  |  |  | 1 |
|  |  |  |  |
|  |  |  |  |  |
| Predicted hindgut production, mmol/kg diet DM intake | | | |  |
| Acetic | 1 | 0.639 | 0.808 | 0.806 |
|  |  | (<0.001) | (<0.001) | (<0.001) |
| Propionic |  | 1 | 0.263 | 0.307 |
|  |  |  | (0.051) | (0.022) |
| Butyric |  |  | 1 | 0.779 |
|  |  |  |  | (<0.001) |
| Valeric |  |  |  | 1 |
|  |  |  |  |  |