

Table S1. Sequences of Forward and Reverse Primers used for PCR Reactions to Measure Gene Expression of Iron Transporter Proteins in the Proximal Duodenum.

| Gene | Forward Primer (5'-3') | Reverse Primer (5'-3') | Base Pair Length | GI Identifier |
|-------------|-------------------------------|-------------------------------|-------------------------|----------------------|
| DMT-1 | TTGATTCAGAGCCTCCCATTAG | GCGAGGAGTAGGCTTGTATTT | 101 | 206597489 |
| Ferroportin | CTCAGCAATCACTGGCATCA | ACTGGGCAACTCCAGAAATAAG | 98 | 61098365 |
| DcytB | CATGTGCATTCTCTTCCAAAGTC | CTCCTTGGTGACCGCATTAT | 103 | 20380692 |
| 18S rRNA | GCAAGACGAACTAAAGCGAAAG | TCGGAACTACGACGGTATCT | 100 | 7262899 |

DMT-1, Divalent Metal Transporter-1; DcytB, Duodenal cytochrome B; 18S rRNA, 18S Ribosomal subunit.

Table S2. Phytate Concentrations of Each Dietary Component in Bean Based Diets.¹

| Ingredient | Phytate (mg/g)² | Phytate / Iron molar ratio |
|---------------------------------|---------------------------------------|---------------------------------------|
| Ervilha (<i>Manteca</i>) | 13.7 ± 0.25 ^a | 14.0 ± 0.39 ^{ab} |
| Uyole 98 (<i>Amarillo</i>) | 13.0 ± 0.20 ^{ab} | 13.9 ± 0.08 ^{bc} |
| PI527538 (<i>Njano</i>) | 13.4 ± 0.05 ^a | 13.4 ± 0.16 ^{cd} |
| Snowdon (<i>white kidney</i>) | 13.6 ± 0.25 ^a | 15.3 ± 0.38 ^a |
| Red Hawk (<i>red kidney</i>) | 12.8 ± 0.20 ^b | 13.4 ± 0.18 ^d |
| Potato (<i>white</i>) | 1.31 ± 0.01 ^c | 7.62 ± 0.11 ^f |
| Rice (<i>white/polished</i>) | 0.76 ± 0.05 ^e | 9.95 ± 0.52 ^e |
| Cabbage (<i>white</i>) | 1.08 ± 0.05 ^d | 4.63 ± 0.37 ^g |

¹Values are means ± SEM of five replicates for each ingredient. Means sharing the same letter in each column are not significantly different at $p < 0.05$. ²Total phytate concentrations measured as milligrams per gram of cooked, drained, lyophilized and milled ingredient (dry weight).

Table S3. Cumulative Feed Intake During the 6 Weeks of Consuming Bean Based Diets.¹

| Bean Diet | Feed Intake (g) | | | | | |
|---------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------|------------------------|
| | Day 7 | Day 14 | Day 21 | Day 28 | Day 35 | Day 42 |
| Ervilha (<i>Manteca</i>) | 96.30 ± 5.5 ^b | 300.6 ± 6.3 ^b | 575.5 ± 1.6 ^b | 890.7 ± 3.9 ^b | 1412 ± 9.1 ^b | 2167 ± 49 ^a |
| Uyole 98 (<i>Amarillo</i>) | 141.0 ± 4.8 ^a | 357.3 ± 7.0 ^a | 615.7 ± 7.6 ^a | 950.7 ± 8.4 ^a | 1416 ± 19 ^{ab} | 2231 ± 59 ^a |
| PI527538 (<i>Njano</i>) | 129.7 ± 4.7 ^a | 342.8 ± 7.1 ^a | 614.6 ± 7.1 ^a | 1014 ± 14 ^a | 1504 ± 23 ^a | 2127 ± 49 ^a |
| Snowdon (<i>white kidney</i>) | 104.4 ± 4.3 ^b | 268.8 ± 5.9 ^c | 420.4 ± 4.2 ^c | 639.2 ± 9.5 ^c | 995.6 ± 30 ^c | 1605 ± 84 ^b |
| Red Hawk (<i>red kidney</i>) | 112.5 ± 1.0 ^b | 268.7 ± 1.4 ^c | 384.8 ± 4.9 ^d | 561.5 ± 10 ^d | 843.3 ± 18 ^d | 1239 ± 51 ^c |

¹Values are means ± SEM (n = 10 – 13 animals per treatment group). Means sharing the same letter in each column are not significantly different at $p < 0.05$.

Table S4. Cumulative Iron Intake During the 6 Weeks of Consuming Bean Based Diets.¹

| Bean Diet | Iron Intake (mg) | | | | | |
|---------------------------------|----------------------------|---------------------------|---------------------------|---------------------------|---------------------------|--------------------------|
| | Day 7 | Day 14 | Day 21 | Day 28 | Day 35 | Day 42 |
| Ervilha (<i>Manteca</i>) | 5.200 ± 0.30 ^{bc} | 16.23 ± 0.34 ^b | 31.07 ± 0.09 ^b | 48.10 ± 0.21 ^b | 76.23 ± 0.49 ^b | 117.0 ± 2.4 ^a |
| Uyole 98 (<i>Amarillo</i>) | 6.628 ± 0.20 ^a | 16.79 ± 0.38 ^b | 28.94 ± 0.36 ^b | 44.68 ± 0.41 ^b | 66.56 ± 0.93 ^c | 104.8 ± 2.8 ^b |
| PI527538 (<i>Njano</i>) | 7.131 ± 0.26 ^a | 18.86 ± 0.39 ^a | 33.80 ± 0.94 ^a | 55.82 ± 0.80 ^a | 82.37 ± 1.2 ^a | 117.0 ± 2.7 ^a |
| Snowdon (<i>white kidney</i>) | 4.907 ± 0.20 ^c | 12.63 ± 0.28 ^c | 19.76 ± 0.20 ^c | 30.04 ± 0.45 ^c | 46.79 ± 1.4 ^d | 75.43 ± 3.9 ^c |
| Red Hawk (<i>red kidney</i>) | 5.850 ± 0.05 ^b | 13.98 ± 0.07 ^c | 20.01 ± 0.26 ^c | 29.20 ± 0.53 ^c | 43.85 ± 0.96 ^d | 64.43 ± 2.7 ^c |

¹Values are means ± SEM (n = 10 – 13 animals per treatment group). Means sharing the same letter in each column are not significantly different at $p < 0.05$.

Table S5. Body Weights During the 6 Weeks of Consuming Bean Based Diets.¹

| Bean Diet | Weight (g) | | | | | |
|---------------------------------|----------------------------|---------------------------|--------------------------|--------------------------|--------------------------|-------------------------|
| | Day 7 | Day 14 | Day 21 | Day 28 | Day 35 | Day 42 |
| Ervilha (<i>Manteca</i>) | 89.89 ± 0.51 ^{ab} | 179.1 ± 0.33 ^a | 319.6 ± 4.9 ^a | 556.2 ± 12 ^a | 784.5 ± 17 ^a | 952.4 ± 23 ^a |
| Uyole 98 (<i>Amarillo</i>) | 86.43 ± 1.3 ^{ab} | 161.1 ± 2.4 ^a | 257.8 ± 7.1 ^a | 466.9 ± 13 ^b | 642.9 ± 18 ^b | 726.6 ± 44 ^b |
| PI527538 (<i>Njano</i>) | 95.45 ± 2.4 ^a | 183.8 ± 4.9 ^a | 308.4 ± 7.0 ^a | 561.4 ± 13 ^a | 782.7 ± 17 ^a | 949.4 ± 21 ^a |
| Snowdon (<i>white kidney</i>) | 80.82 ± 1.6 ^b | 128.3 ± 3.2 ^b | 193.0 ± 9.0 ^b | 307.6 ± 14 ^c | 417.8 ± 21 ^c | 489.1 ± 24 ^c |
| Red Hawk (<i>red kidney</i>) | 70.11 ± 1.1 ^c | 98.35 ± 1.4 ^c | 132.2 ± 5.4 ^c | 198.5 ± 6.1 ^d | 265.6 ± 8.8 ^d | 312.5 ± 12 ^d |

¹Values are means ± SEM (n = 10 – 13 animals per treatment group). Means sharing the same letter in each column are not significantly different at $p < 0.05$. Body weights averaged 43 grams at the start of the experiment.

Table S6. Total Body Hemoglobin Iron (Hb-Fe) During the 6 Weeks of Consuming Bean Based Diets.¹

| Bean Diet | Hb-Fe (mg) | | | | | |
|---------------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| | Day 7 | Day 14 | Day 21 | Day 28 | Day 35 | Day 42 |
| Ervilha (<i>Manteca</i>) | 2.546 ± 0.02 ^a | 4.996 ± 0.05 ^a | 9.367 ± 0.12 ^a | 16.64 ± 0.34 ^a | 25.16 ± 0.77 ^a | 30.72 ± 1.1 ^a |
| Uyole 98 (<i>Amarillo</i>) | 2.411 ± 0.02 ^a | 4.285 ± 0.05 ^b | 6.841 ± 0.31 ^c | 12.62 ± 0.27 ^b | 20.23 ± 0.75 ^b | 23.92 ± 1.4 ^b |
| PI527538 (<i>Njano</i>) | 2.436 ± 0.06 ^a | 4.999 ± 0.12 ^a | 7.986 ± 0.12 ^b | 14.80 ± 0.25 ^b | 23.11 ± 0.11 ^b | 26.93 ± 0.24 ^b |
| Snowdon (<i>white kidney</i>) | 2.248 ± 0.04 ^b | 3.710 ± 0.10 ^c | 5.004 ± 0.19 ^d | 8.690 ± 0.38 ^c | 12.87 ± 0.61 ^c | 15.17 ± 0.75 ^c |
| Red Hawk (<i>red kidney</i>) | 1.694 ± 0.04 ^c | 2.265 ± 0.02 ^d | 2.754 ± 0.11 ^e | 4.999 ± 0.17 ^d | 7.720 ± 0.32 ^d | 9.516 ± 0.31 ^d |

¹Values are means ± SEM (n = 10 – 13 animals per treatment group). Means sharing the same letter in each column are not significantly different at $p < 0.05$. Total body hemoglobin iron averaged 0.97 milligrams at the start of the experiment.

Table S7. Hemoglobin (Hb) Concentrations.¹

| Bean Diet | Hb (g/L) | | | | | |
|---------------------------------|---------------------------|---------------------------|---------------------------|----------------------------|---------------------------|----------------------------|
| | Day 7 | Day 14 | Day 21 | Day 28 | Day 35 | Day 42 |
| Ervilha (<i>Manteca</i>) | 99.53 ± 0.34 ^a | 97.83 ± 0.45 ^a | 100.4 ± 0.37 ^a | 105.2 ± 0.10 ^a | 109.5 ± 0.47 ^a | 112.1 ± 0.51 ^{ab} |
| Uyole 98 (<i>Amarillo</i>) | 98.16 ± 0.35 ^a | 93.46 ± 0.68 ^a | 92.65 ± 0.54 ^a | 95.22 ± 0.29 ^{bc} | 110.7 ± 0.58 ^a | 116.0 ± 0.49 ^a |
| PI527538 (<i>Njano</i>) | 89.67 ± 0.26 ^a | 95.59 ± 0.51 ^a | 91.20 ± 0.45 ^a | 92.83 ± 0.24 ^{bc} | 103.9 ± 0.43 ^a | 100.1 ± 0.43 ^b |
| Snowdon (<i>white kidney</i>) | 97.79 ± 0.48 ^a | 101.4 ± 0.31 ^a | 91.70 ± 0.52 ^a | 99.26 ± 0.16 ^{ab} | 104.6 ± 1.2 ^a | 109.2 ± 0.62 ^{ab} |
| Red Hawk (<i>red kidney</i>) | 84.90 ± 0.35 ^a | 80.25 ± 0.41 ^b | 74.58 ± 0.29 ^b | 88.85 ± 0.25 ^c | 102.5 ± 0.51 ^a | 106.9 ± 0.54 ^{ab} |

¹Values are means ± SEM (n = 10 – 13 animals per treatment group). Means sharing the same letter in each column are not significantly different at $p < 0.05$. Concentrations of hemoglobin averaged 79.74 grams per liter at the start of the experiment.

Table S8. Hemoglobin Maintenance Efficacy (HME) During the 6 Weeks of Consuming Bean Based Diets.¹

| Bean Diet | HME (%) | | | | | |
|---------------------------------|----------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| | Day 7 | Day 14 | Day 21 | Day 28 | Day 35 | Day 42 |
| Ervilha (<i>Manteca</i>) | 31.36 ± 0.46 ^a | 24.88 ± 0.23 ^a | 27.05 ± 0.45 ^a | 32.60 ± 0.65 ^a | 31.69 ± 0.87 ^a | 25.72 ± 0.50 ^a |
| Uyole 98 (<i>Amarillo</i>) | 22.02 ± 0.66 ^b | 19.96 ± 0.73 ^b | 20.42 ± 0.66 ^b | 26.09 ± 0.60 ^b | 27.84 ± 0.78 ^b | 21.74 ± 0.91 ^b |
| PI527538 (<i>Njano</i>) | 20.68 ± 0.56 ^b | 21.38 ± 0.40 ^b | 20.85 ± 0.29 ^b | 24.75 ± 0.29 ^b | 26.80 ± 0.22 ^b | 22.30 ± 0.43 ^b |
| Snowdon (<i>white kidney</i>) | 26.98 ± 0.86 ^{ab} | 22.04 ± 0.31 ^b | 20.42 ± 0.91 ^b | 25.64 ± 0.83 ^b | 25.18 ± 0.92 ^b | 19.04 ± 0.73 ^b |
| Red Hawk (<i>red kidney</i>) | 12.44 ± 0.56 ^c | 9.304 ± 0.21 ^c | 8.986 ± 0.55 ^c | 13.76 ± 0.35 ^c | 15.34 ± 0.44 ^c | 13.29 ± 0.10 ^c |

¹Values are means ± SEM (n = 10 – 13 animals per treatment group). Means sharing the same letter in each column are not significantly different at $p < 0.05$.