

Supplementary Materials: Lactational Stage of Pasteurized Human Donor Milk Contributes to Nutrient Limitations for Infants

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Table S1. Fatty acid levels in individual samples obtained from Regional Milk Banks.

| <i>mg/100 mL</i> | California | | Colorado | | Michigan | | Ohio | | Texas | | <i>r</i> ² <i>(adjusted)</i> | <i>p</i> |
|------------------|------------------|------------|------------------|------------|------------------|------------|------------------|------------|------------------|------------|--|----------|
| | <i>mean ± SD</i> | <i>med</i> | <i>mean ± SD</i> | <i>med</i> | <i>mean ± SD</i> | <i>med</i> | <i>mean ± SD</i> | <i>med</i> | <i>mean ± SD</i> | <i>med</i> | | |
| C10:0 | 19.1 ± 9.8 | 16.8 | 25.1 ± 14.8 | 20.7 | 29.5 ± 11.5 | 24.4 | 23.6 ± 15.0 | 19.3 | 25.5 ± 13.9 | 23.2 | 0.000 | 0.424 |
| C12:0 | 113 ± 52.0 | 96.0 | 113 ± 50.7 | 114 | 166 ± 60.9 | 143 | 158 ± 91.3 | 124 | 148 ± 65.8 | 139 | 0.014 | 0.302 |
| C14:0 | 135 ± 56.0 | 118 | 137 ± 47.3 | 131 | 218 ± 78.6 | 207 | 200 ± 109 | 172 | 169 ± 59.0 | 169 | 0.063 | 0.074 |
| C16:0 | 512 ± 210 | 474 | 548 ± 154 | 564 | 813 ± 181 | 811 | 681 ± 245 | 616 | 685 ± 221 | 616 | 0.134 | 0.006 |
| C16:1□7 | 63.5 ± 26.5 | 62.0 | 69.6 ± 29.6 | 60.7 | 92.8 ± 23.0 | 94.3 | 64.2 ± 23.3 | 65.0 | 75.3 ± 22.9 | 70.6 | 0.135 | 0.006 |
| C18:0 | 171 ± 73.9 | 159 | 190 ± 57.5 | 192 | 256 ± 70.4 | 252 | 220 ± 58.0 | 219 | 234 ± 78.9 | 206 | 0.114 | 0.013 |
| C18:1□9 | 883 ± 323 | 832 | 913 ± 257 | 944 | 1241 ± 283 | 1233 | 1060 ± 277 | 969 | 1122 ± 301 | 1092 | 0.115 | 0.013 |
| C18:1□7 | 67.7 ± 25.2 | 64.5 | 78.3 ± 24.5 | 82.1 | 104 ± 29.1 | 109.7 | 90.9 ± 25.9 | 73.1 | 88.1 ± 27.8 | 94.4 | 0.124 | 0.009 |
| C18:2□6 | 469 ± 179 | 461 | 614 ± 134 | 541 | 753 ± 202 | 761 | 701 ± 189 | 665 | 663 ± 178 | 717 | 0.234 | 0.000 |
| C18:3□6 | 6.56 ± 1.45 | 6.30 | 6.52 ± 1.81 | 6.30 | 8.32 ± 2.60 | 7.71 | 5.15 ± 3.00 | 4.98 | 6.46 ± 2.22 | 5.77 | 0.137 | 0.005 |
| C18:3□3 | 88.8 ± 31.6 | 92.1 | 92.5 ± 14.5 | 96.1 | 123 ± 35.2 | 126 | 116 ± 30.1 | 106 | 106 ± 34.4 | 102 | 0.125 | 0.009 |
| C20:4□6 | 30.1 ± 8.7 | 28.5 | 31.1 ± 8.3 | 31.2 | 37.5 ± 9.9 | 36.6 | 31.6 ± 9.5 | 32.1 | 32.8 ± 6.0 | 30.9 | 0.122 | 0.010 |
| C20:5□3 | 3.76 ± 0.65 | 3.56 | 3.99 ± 1.15 | 3.51 | 3.28 ± 0.92 | 3.04 | 2.23 ± 0.74 | 2.28 | 2.77 ± 0.71 | 2.60 | 0.121 | 0.010 |
| C22:6□3 | 7.22 ± 3.15 | 6.51 | 8.00 ± 5.09 | 5.82 | 7.24 ± 5.95 | 6.39 | 7.22 ± 3.82 | 5.88 | 8.02 ± 4.61 | 6.96 | 0.020 | 0.259 |

Data were analyzed by multivariate regression with Center as the fixed variable and lactational stage as a co-variate. Multivariate tests (Pillai's Trace) revealed statistical differences in Center ($p = 0.000$) and lactational stage ($p = 0.026$) across the model. Between-subject effects are indicated on the table. Data in gray indicates statistical significance at 0.05 (med = median).

Table S2. Amino acid levels in individual samples obtained from Regional Milk Banks.

| <i>mg/100 mL</i> | California | | Colorado | | Michigan | | Ohio | | Texas | | <i>r</i> ² (adjusted) | <i>p</i> |
|----------------------|------------------|------------|------------------|------------|------------------|------------|------------------|------------|------------------|------------|-------------------------------------|----------|
| | <i>mean ± SD</i> | <i>med</i> | <i>mean ± SD</i> | <i>med</i> | <i>mean ± SD</i> | <i>med</i> | <i>mean ± SD</i> | <i>med</i> | <i>mean ± SD</i> | <i>med</i> | | |
| Phosphoserine | 91.2 ± 32.2 | 78.8 | 95.9 ± 34.5 | 82.7 | 82.5 ± 20.8 | 80.5 | 70.2 ± 16.2 | 65.90 | 92.1 ± 36.1 | 79.2 | 0.247 | 0.000 |
| Taurine | 6.14 ± 3.12 | 5.78 | 7.60 ± 4.79 | 7.51 | 5.29 ± 3.50 | 3.60 | 4.83 ± 3.27 | 5.09 | 8.29 ± 5.86 | 7.21 | 0.061 | 0.079 |
| Aspartic Acid | 97.1 ± 21.3 | 95.4 | 93.6 ± 26.7 | 83.9 | 86.0 ± 15.9 | 87.3 | 75.2 ± 13.2 | 71.8 | 97.1 ± 39.3 | 78.5 | 0.194 | 0.001 |
| Threonine | 41.3 ± 10.5 | 39.6 | 36.0 ± 13.0 | 30.7 | 36.1 ± 5.38 | 35.8 | 31.8 ± 6.17 | 30.0 | 40.9 ± 14.6 | 35.5 | 0.180 | 0.001 |
| Serine | 52.5 ± 11.4 | 52.0 | 48.5 ± 15.4 | 43.0 | 45.4 ± 8.75 | 47.1 | 40.2 ± 7.40 | 38.7 | 53.8 ± 23.74 | 42.52 | 0.181 | 0.001 |
| Glutamic Acid | 198 ± 37.0 | 190 | 183 ± 43.6 | 171 | 172 ± 20.7 | 169.3 | 162 ± 21.2 | 158 | 180 ± 45.9 | 162.7 | 0.185 | 0.001 |
| Proline | 95.0 ± 23.7 | 89.9 | 83.3 ± 28.3 | 71.2 | 82.9 ± 12.6 | 82.6 | 73.3 ± 11.8 | 71.7 | 76.2 ± 20.1 | 70.1 | 0.139 | 0.005 |
| Glycine | 24.4 ± 5.8 | 24.2 | 24.1 ± 6.36 | 22.2 | 21.98 ± 3.48 | 21.3 | 18.6 ± 3.42 | 17.4 | 25.7 ± 11.2 | 20.0 | 0.198 | 0.006 |
| Alanine | 43.7 ± 9.00 | 44.7 | 41.8 ± 13.5 | 37.4 | 38.66 ± 7.96 | 40.1 | 33.3 ± 6.03 | 33.3 | 44.6 ± 20.9 | 34.5 | 0.157 | 0.003 |
| Valine | 36.9 ± 8.62 | 36.3 | 31.1 ± 13.9 | 27.4 | 31.6 ± 4.57 | 30.7 | 30.6 ± 9.00 | 26.3 | 40.8 ± 20.2 | 32.9 | 0.128 | 0.008 |
| Methionine | 17.0 ± 4.03 | 16.5 | 15.9 ± 6.20 | 14.1 | 14.6 ± 4.12 | 14.9 | 13.2 ± 2.93 | 13.2 | 16.8 ± 6.98 | 13.8 | 0.187 | 0.001 |
| Isoleucine | 34.0 ± 9.57 | 30.8 | 28.6 ± 12.5 | 23.9 | 28.6 ± 5.01 | 27.7 | 26.0 ± 5.96 | 24.5 | 28.6 ± 7.40 | 28.1 | 0.161 | 0.002 |
| Leucine | 93.3 ± 22.0 | 90.1 | 73.9 ± 26.0 | 68.0 | 81.6 ± 17.1 | 77.6 | 72.2 ± 13.9 | 68.0 | 83.9 ± 24.6 | 76.2 | 0.182 | 0.001 |
| Tyrosine | 48.4 ± 13.0 | 48.7 | 45.2 ± 16.3 | 41.2 | 41.9 ± 12.5 | 39.6 | 36.1 ± 8.73 | 35.2 | 47.0 ± 24.1 | 33.3 | 0.119 | 0.011 |
| Phenylalanine | 35.2 ± 8.40 | 35.0 | 30.0 ± 13.5 | 26.0 | 31.8 ± 8.64 | 31.3 | 26.6 ± 4.99 | 24.9 | 34.9 ± 14.1 | 28.8 | 0.139 | 0.005 |
| Tryptophan | 182 ± 39.9 | 171 | 172 ± 40.7 | 167 | 172 ± 22.0 | 167.1 | 169 ± 26.9 | 165 | 179 ± 35.3 | 184.3 | 0.051 | 0.108 |
| Lysine | 64.1 ± 14.3 | 61.5 | 58.2 ± 19.3 | 50.5 | 54.8 ± 9.99 | 55.0 | 48.3 ± 10.0 | 45.6 | 59.7 ± 20.1 | 52.3 | 0.198 | 0.000 |
| Histidine | 21.1 ± 5.52 | 19.6 | 19.0 ± 6.44 | 16.1 | 18.8 ± 3.02 | 18.8 | 17.0 ± 3.30 | 16.2 | 20.1 ± 6.34 | 18.4 | 0.156 | 0.003 |
| Arginine | 35.0 ± 9.10 | 35.4 | 32.7 ± 12.1 | 28.9 | 32.6 ± 8.95 | 34.0 | 29.0 ± 6.93 | 27.1 | 41.3 ± 20.8 | 31.0 | 0.147 | 0.004 |

Data were analyzed by multivariate regression with Center as the fixed variable and lactational stage as a co-variate. Multivariate tests (Pillai's Trace) revealed statistical differences between Centers ($p = 0.000$) and lactational stage ($p = 0.000$) across the model. Between-subject effects are indicated on the table. Data in gray indicates statistical significance at 0.05 (med = median).