Supplementary Material

Saccharomyces cerevisiae boulardii accelerates intestinal microbiota maturation and is correlated with increased secretory IgA production in neonatal dairy calves

L.R. Cangiano\*, C. Villot, R. Amorin-Hegedus, N. Malmuthuge, R.J. Gruninger, L. L. Guan, and M. A. Steele

**\* Correspondence:** Corresponding Author: masteele@uoguelph.ca

# Supplementary Data

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| **Table 1:** Intestinal digesta alpha diversity metrics  |
|  | Treatments1 |  |  |
|  | CON | SCB | SEM2 | *P*-Value |
|  **Proximal Jejunum** |  |  |  |  |
| Shannon | 3.93 | 3.83 | 1.02 | 0.55 |
| Chao1 | 92 | 92.18 | 31.76 | 0.82 |
| Simpson | 0.8 | 0.79 | 0.17 | 0.60 |
| Faith | 14.19 | 13.2 | 2.50 | 0.45 |
|  **Ileum** |  |  |  |  |
| Shannon | 3.63 | 4.07 | 0.66 | 0.23 |
| Chao1 | 75.2 | 118.23 | 33.02 | 0.01 |
| Simpson | 0.82 | 0.85 | 0.09 | 0.60 |
| Faith | 11.2 | 14.57 | 2.54 |  < 0.01 |
|  **Colon** |  |  |  |  |
| Shannon | 3.33 | 3.68 | 0.61 | 0.36 |
| Chao1 | 89.04 | 104.84 | 17.60 | 0.08 |
| Simpson | 0.77 | 0.8 | 0.10 | 0.65 |
| Faith | 10.13 | 11.1 | 1.36 | 0.15 |

1CON = no supplemented calves; SCB = calves supplemented with Saccharomyces cerevisiae boulardii CNCM I-1079 from birth until 1 week of age. 2Standard error of the mean. 3Significance declared when P ≤ 0.05.

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| **Table 2:** Intestinal tissue alpha diversity metrics |
|   | Treatments1 |  |  |
|   | CON | SCB | SEM2 | *P*-Value |
|  **Proximal Jejunum** |  |  |  |  |
| Shannon | 3.93 | 2.91 | 1.12 | 0.21 |
| Chao1 | 34.5 | 20.4 | 19.75 | 0.09 |
| Simpson | 0.9 | 0.75 | 0.13 | 0.16 |
| Faith | 5.33 | 3.7 | 2.17 | 0.25 |
|  **Ileum** |  |  |  |  |
| Shannon | 3.56 | 3.86 | 0.77 | 0.22 |
| Chao1 | 28.1 | 42.5 | 24.03 | 0.34 |
| Simpson | 0.86 | 0.87 | 0.067 | 0.76 |
| Faith | 3.66 | 5.02 | 1.81 | 0.17 |
|  **Colon** |  |  |  |  |
| Shannon | 3.05 | 2.82 | 1.11 | 0.74 |
| Chao1 | 30.31 | 36 | 19.48 | 0.52 |
| Simpson | 0.75 | 0.68 | 0.22 | 0.94 |
| Faith | 3.26 | 4.02 | 1.50 | 0.33 |

1CON = no supplemented calves; SCB = calves supplemented with Saccharomyces cerevisiae boulardii CNCM I-1079 from birth until 1 week of age. 2Standard error of the mean. 3Significance declared when P ≤ 0.05.

Table 3: Short chain fatty acid (SCFA) profile of intestinal digesta from control and calves supplemented with SCB

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|   | Treatment1 |   |  |  | *P*-Value |
| Measurement | CON | SCB |  | SEM2 |   | Treatment | Location | Treatment × Location | CON vs. SCB3 |
| Acetic acid, μmol/mL |   |   |   |  |  | 0.988 | < 0.01 | 0.933 |  |
| Proximal Jejunum | 4.218 | 4.438 |   | 1.044 |  |  |  |  | 0.883 |
| Ileum | 6.460 | 6.023 |   | 1.108 |  |  |  |  | 0.768 |
| Colon | 11.276 | 11.533 |   | 1.044 |  |  |  |  | 0.863 |
| Propionic acid, μmol/mL |  |  |   |  |  | 0.397 | 0.627 | 0.502 |  |
| Proximal Jejunum | 0.382 | 0.341 |   | 0.133 |  |  |  |  | 0.865 |
| Ileum | 0.382 | 0.113 |   | 0.141 |  |  |  |  | 0.827 |
| Colon | 0.341 | 0.373 |   | 0.133 |  |  |  |  | 0.158 |
| Ace/Prop4 |   |   |   |   |   | 0.809 | < 0.01 | 0.835 |   |
| Proximal Jejunum | 10.864 | 15.1103 |   | 10.248 |   |   |   |   | 0.641 |
| Ileum | 66.963 | 62.0235 |   | 10.869 |   |   |   |   | 0.772 |
| Colon | 50.844 | 57.6525 |   | 10.248 |   |   |   |   | 0.735 |
| Caproic acid, μmol/mL |  |  |   |  |  | 0.250 | 0.077 | 0.175 |  |
| Proximal Jejunum | 0.407 | 0.098 |   | 0.098 |  |  |  |  | 0.882 |
| Ileum | 0.036 | 0.045 |   | 0.104 |  |  |  |  | 0.031 |
| Colon | 0.061 | 0.082 |   | 0.098 |  |  |  |  | 0.950 |
| Total SCFAs, μmol/mL |  |  |   |  |  | 0.419 | < 0.01 | 0.707 |  |
| Proximal Jejunum | 6.691 | 4.877 |   | 1.190 |  |  |  |  | 0.916 |
| Ileum | 6.926 | 6.181 |   | 1.263 |  |  |  |  | 0.289 |
| Colon | 11.811 | 11.990 |   | 1.190 |  |  |  |  | 0.660 |

1CON = no supplemented calves; SCB = calves supplemented with Saccharomyces cerevisiae boulardii CNCM I-1079 from birth until 1 week of age. 2Standard error of the mean. 3Significance declared when P ≤ 0.05. 4Acetate to propionate ratio.