Table S1: MRS composition used for preparation of probiotic powder of *B. thermophilum* RBL67.

|  |  |  |
| --- | --- | --- |
| **Ingredient** | **Concentration**  **(g/L or mL/L)** | **Supplier** |
| Soy peptone | 10 | Biokar diagnostics, Beauvais, France |
| D-Glucose monohydrate | 10 | Cargill, Mechelen, Belgium |
| Yeast extract | 5 | Ohly, Hamburg, Germany |
| KH2PO4 | 2 | VWR International, Dietikon, Switzerland |
| MgSO4 | 0·2 | Sigma-Aldrich Chemie GmbH, Buchs, Switzerland |
| MnSO4 | 0·05 | Sigma-Aldrich Chemie GmbH, Buchs, Switzerland |
| Tween 80 | 1 | Sigma-Aldrich Chemie GmbH, Buchs, Switzerland |

Table S2: Primers and probes used for detection of bacterial groups by qPCR.

|  |  |  |  |
| --- | --- | --- | --- |
| **target** | **primer/**  **probe** | **sequence 5’-3’** | **reference** |
| *Bifidobacterium* spp. | xfp-fw  xfp-rv | ATC TTC GGA CCB GAY GAG AC  CGA TVA CGT GVA CGA AGG AC | [(49)](#_ENREF_49) |
| *Lactobacillus/*  *Pediococcus/*  *Leuconostoc* spp. | F\_Lacto 05  R\_Lacto 04 | AGC AGT AGG GAA TCT TCC A  CGC CAC TGG TGT TCY TCC ATA TA | [(50)](#_ENREF_50) |
| *Bacteroides-Prevotella* | Bac303F  Bfr-Femrev | GAA GGT CCC CCA CAT TG  CGC KAC TTG GCT GGT TCA G | [(51)](#_ENREF_51" \o "Ramirez-Farias, 2009 #19) |
| *Enterobacteriaceae* | Eco1457F | CAT TGA CGT TAC CCG CAG AAG AAGC | [(52)](#_ENREF_52) |
| Eco1652R | CTC TAC GAG ACT CAA GCT TGC |
| *Roseburia* spp./ *Eubacterium rectale* | RrecF  Rrec630mR | GCG GTR CGG CAA GTC TGA  CCT CCG ACA CTC TAG TMC GAC | [(51)](#_ENREF_51) |
| *Faecalibacterium prausnitzii* | Fprau223F  Fprau420R | GAT GGC CTC GCG TCC GAT TAG  CCG AAG ACC TTC TTC CTCC | [(52)](#_ENREF_52) |
| *Eubacterium hallii* | EhalF  EhalR | GCG TAG GTG GCA GTG CAA  GCA CCG RAG CCT ATA CGG | [(51)](#_ENREF_51" \o "Ramirez-Farias, 2009 #19) |
| *Streptococcus* spp. | Tuf-Strep-1  Tuf-Strep-R | GAA GAA TTG CTT GAA TTG GTT GAA  GGA CGG TAG TTG TTG AAG AAT GG | [(53)](#_ENREF_53) |
| *Bifidobacterium thermophilum* | btherm RTF  btherm RTR  bthermTqm | TTG CTT GCG GGT GAG AGT  CGC CAA CAA GCT GAT AGG AC  FAM-ATG TGC CGG GCT CCT GCA T-TAMRA | [(6)](#_ENREF_6) |

Table S3: Ratios of minor metabolites (%) and concentrations of sugars (mM) detected with HPLC in caecum and colon (proximal, middle, distal) after feeding PRO or SYN experimental diets.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Metabolite\*** | **Caecum** | | **Proximal** | | **Middle** | | **Distal** | |
|  | PRO  Mean SD | SYN  Mean SD | PRO  Mean SD | SYN  Mean SD | PRO  Mean SD | SYN  Mean SD | PRO  Mean SD | SYN  Mean SD |
| Isobutyrate | 4·4 1·9 | 3·3 2·4 | 3·1 2·1 | 4·2 0·6 | 5·4 0·5 | 5·2 0·7 | 4·9 0·3 | 5·0 0·6 |
| Isovalerate | 3·2 2·2 | 1·4 1·4 | 4·4 0·5 | 4·4 0·5 | 4·5 0·5 | 4·1 0·5 | 4·6 0·6 | 4·3 0·5 |
| Valerate | 2·0 1·1 | 3·2 1·6 | 1·9 0·7 | 2·1 0·6 | 1·9 0·8 | 1·8 0·3 | 2·1 0·6 | 1·9 0·6 |
| Lactate | nd | 2·9**a** | 1·7 0·4**b** | 1·4 0·1**c** | 2·2 0·9**c** | 2·5 1·6 | 2·0 1·8**c** | 1·8 1·0 |
| Succinate | 0·7**a** | nd | nd | nd | nd | 1·7**a** | nd | nd |
| Formate | 1·9**a** | 1·0**a** | nd | nd. | nd | nd | nd | nd |
| **Sugar‡** |  |  |  |  |  |  |  |  |
| Glucose | 5·4 7·9 | 9·0 7·2**c** | 1·5 0·2**b** | nd | nd | 1·6 0·8**b** | 2·0 0·5**b** | 1·2 0·2 |
| Lactose | nd | nd | 0·1 0·0**b** | nd | nd | nd | nd | nd |

\* data are given as % of total metabolites and means with standard deviations for PRO (n=4) and SYN (n=4); ‡ concentrations are given in mM and as means with standard deviations for group A and B; a n=1; b n=2; c n=3, nd not detected..