Supplemental Materials

Lactococcus lactis subsp. *cremoris* C60 promotes immunoglobulin A production from B cells through functional modification of dendritic cells in intestinal environment

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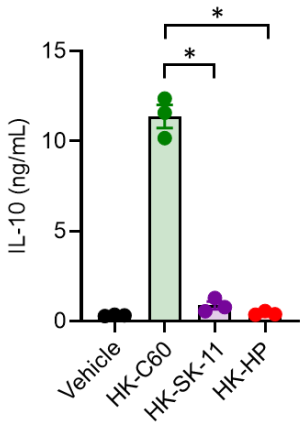
Supplemental Table 1. Primer sequences in real-time PCR analysis

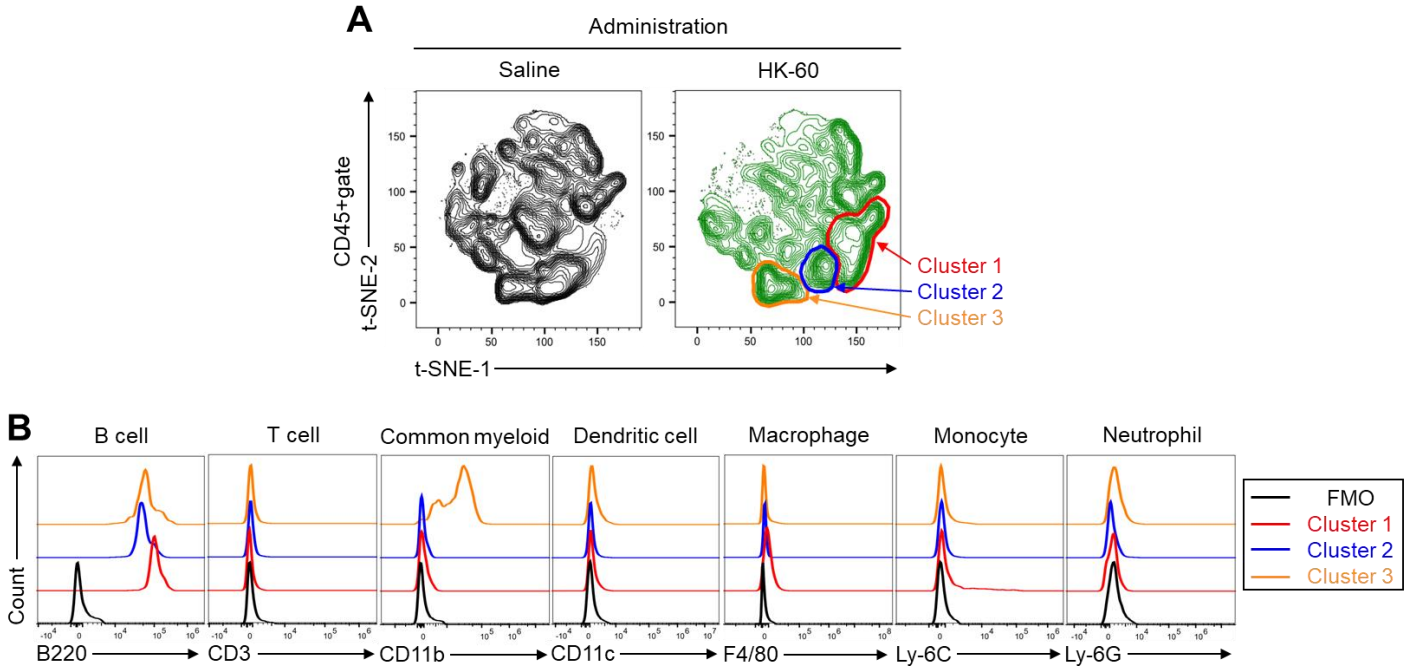
Target	Forward (5'-3')	Reverse (5'-3')
Il1b	GCAACTGTTCCTGAACTCAACT	ATCTTTTGGGGTCCGTCAACT
Il4	GGTCTCAACCCCCAGCTAGT	GCCGATGATCTCTCTCAAGTGAT
Il6	CCAAGAGGTGAGTGCTTCCC	CTGTTGTTCAGACTCTCTCCCT
Il8	CAAGGCTGGTCCATGCTCC	TGCTATCACTTCCTTTCTGTTGC
Il10	GCTCTTACTGACTGGCATGAG	CGCAGCTCTAGGAGCATGTG
Il12a	CTGTGCCTTGGTAGCATCTATG	GCAGAGTCTCGCCATTATGATTC
Il12b	TGGTTTGCCATCGTTTTGCTG	ACAGGTGAGGTTCACTGTTTCT
Il23a	ATGCTGGATTGCAGAGCAGTA	ACGGGGCACATTATTTTTAGTCT
Ifna	GGATGTGACCTTCCTCAGACTC	ACCTTCTCCTGCGGGAATCCAA
Ifnb	CAGCTCCAAGAAAGGACGAAC	GGCAGTGTAACTCTTCTGCAT
Ifng	ATGAACGCTACACACTGCATC	CCATCCTTTTGCCAGTTCCTC
Tnfa	GACGTGGAACTGGCAGAAGAG	TTGGTGGTTTGTGAGTGTGAG
Tgfb	CTCCCGTGGCTTCTAGTGC	GCCTTAGTTTGGACAGGATCTG
Tlr1	TGAGGGTCCTGATAATGTCCTAC	AGAGGTCCAAATGCTTGAGGC
Tlr2	GCAAACGCTGTTCTGCTCAG	AGGCGTCTCCCTCTATTGTATT
Tlr3	GTGAGATACAACGTAGCTGACTG	TCCTGCATCCAAGATAGCAAGT
Tlr4	ATGGCATGGCTTACACCACC	GAGGCCAATTTTGTCTCCACA
Tlr5	GCCCCGTGTTGGTAATATCTC	ATCTGGGTGAGGTTACAGCCT
Tlr6	TGAGCCAAGACAGAAAACCCA	GGGACATGAGTAAGGTTCCTGTT
Tlr7	ATGTGGACACGGAAGAGACAA	GGTAAGGGTAAGATTGGTGGTG
Tlr8	GAAAACATGCCCCCTCAGTCA	CGTCACAAGGATAGCTTCTGGAA
Tlr9	ATGGTTCTCCGTCGAAGGACT	GAGGCTTCAGCTCACAGGG
Gapdh	TGTGTCCGTCGTGGATCTGA	TTGCTGTTGAAGTCGCAGGAG

Supplemental Figures



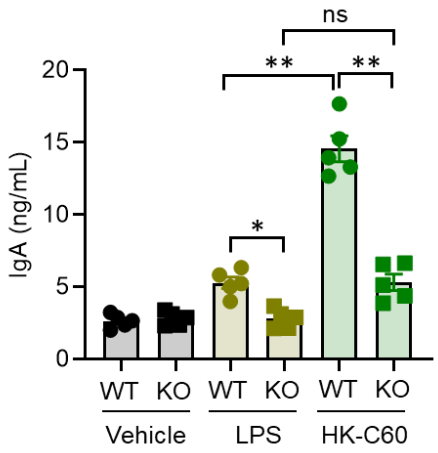
Supplemental Figure 1. *In vitro* IL-10 production assay in BMDCs

BMDCs ($1.0x10^6$/mL) were cultured with vehicle (PBS), HK-C60 ($5.0x10^8$ CFU/mL), HK-SK-11 ($5.0x10^8$ CFU/mL) or HK-HP ($5.0x10^8$ CFU/mL) at 37°C for 24 h. The IL-10 concentration in cultured medium was measured by ELISA. The data were shown as mean ± SEM of three samples from independent experiments. One-way ANOVA was used to analyze data for significant differences. Values of $*p < 0.001$ were regarded as significant.



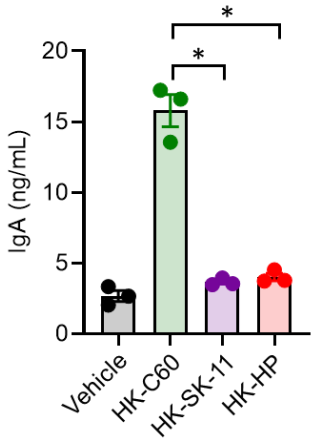
Supplemental Figure 2. Global immunophenotyping in small intestinal PP

The mice received i.g. administration of saline or HK-C60 for 2 weeks (n=3 in each group). The small intestinal PP-derived cells were subjected to flow cytometry analysis. A) A t-SNE plot generated by PP-derived cell staining multi markers targeting immune cells. Total three clusters were identified as unique populations in HK-C60 administered group. B) Independent identification of cell type following specific marker expression in three unique clusters.



Supplemental Figure 3. *In vitro* IgA production assay in PP-derived cells originated from MyD88-KO mice

Small intestinal PP-derived cells were prepared from naïve WT mice or MyD88-KO mice (KO) (n=5 in each group), and the cells ($1.0x10^7$/mL) were subjected to *in vitro* culture with vehicle (PBS), LPS (1 μg/mL) or HK-C60 ($5.0x10^8$ CFU/mL) at 37°C for 72 h. The IgA concentration in cultured medium was measured by ELISA. The data were shown as mean ± SEM of five samples from independent experiments. One-way ANOVA was used to analyze data for significant differences. Values of $*p < 0.01$ and $p**< 0.001$ were regarded as significant. ns: not significant.



Supplemental Figure 4. *In vitro* IgA production assay in PP-derived cells

Small intestinal PP-derived cells were prepared from naïve WT mice (n=3), and the cells ($1.0x10^7$/mL) were subjected to *in vitro* culture with vehicle (PBS), HK-C60 ($5.0x10^8$ CFU/mL), HK-SK-11 ($5.0x10^8$ CFU/mL) or HK-HP ($5.0x10^8$ CFU/mL) at 37°C for 72 h. The IgA concentration in cultured medium was measured by ELISA. The data were shown as mean ± SEM of three samples from independent experiments. One-way ANOVA was used to analyze data for significant differences. Values of $*p < 0.001$ were regarded as significant.