Supplementary Table S1. Single reaction monitoring (SRM) conditions for lactulose and mannitol quantification in urine samples.

Compound	Precursor (m/z)	Product (m/z)	Collision Energy (V)
Mannitol	181.07	58.97	24.50
Mannitol	181.07	89.04	18.06
Mannitol	181.07	101.04	17.47
Lactulose	341.21	101.04	20.42
Lactulose	341.21	161.11	7.95
Lactulose	341.21	179.04	8.07

Supplementary Table S2. Primer sequences used for mRNA analyses.

Primer	Sequence 5'-3'
REG-4	Reverse: GCATTGGCCCCAGTAGTGGCTT Forward: CACTCGCCCAACCTTGCTCA
IL-22	Reverse: TTTCAAAGGTACATGCTGAGTCAAC Forward: ACCCCTAAATAGCTTCATGTTTCC
18S	Reverse: GGACATCTAAGGGCATCACAG Forward: ACACGGACAGGATTGACAGA

Supplementary Table S3. Relative abundance of bacteria whose abundances were different between cherry and placebo at D1

Bacterial Taxa	Treatment		Difference (Cherry- Placebo)	
	Cherry (n=19)	Placebo (n=21)	Mean (95% CI)	p value
Δ g_*Anaerostipes*	-2.26 (-2.69, -1.82)	-1.10 (-1.51, -0.69)	-1.15 (-1.78, -0.52)	**< 0.001**
Δ s_*A. hadrus*	-2.87 (-3.62, -2.11)	-1.55 (-2.27, -0.83)	-1.31 (-2.44, -0.17)	**0.02**
Δ g_*Blautia*	-3.28 (-5.34, -1.23)	-0.33 (-2.28, 1.60)	-2.95 (-5.89, -0.01)	**0.04**
Δ g_*Roseburia*	1.23 (-0.07, 2.53) n = 13	-0.29 (-1.82, 1.24) n = 10	1.52 (-0.68, 3.73)	0.16

Data are estimated marginal means (95% CI) obtained after adjustment for significant D1 values. Statistical differences between marginal means were determined using unpaired t test with Welch correction. A p-value < 0.05 was considered statistically significant. The taxonomic lineage of each taxon is g: genus, s: species.

Supplementary Table S4: Alpha diversity index

Alpha diversity index	Cherry (n=19)		Placebo (n=21)		Sliced by treatment and/or day
	D1	D30	D1	D30	
Shannon	4.78 (4.58, 4.97)	4.78 (4.50, 5.06)	4.97 (4.82, 5.13)	4.97 (4.81, 5.13)	n.s
Chao 1	142.79 (134.00, 151.57)	149.70 (138.90, 160.50)	144.70 (137.04, 152.35)	153.47 (142.25, 164.68)	n.s
OTUS	142.04 (135.76, 148.31)	137.97 (127.25, 148.70)	147.10 (136.62, 157.58)	139.69 (131.40, 147.97)	n.s
Simpson	0.91 (0.90, 0.93)	0.90 (0.88, 0.93)	0.93 (0.92, 0.95)	0.93 (0.93, 0.94)	n.s

Data are mean (95% CI). Alpha diversity measures in each group at different time points were analyzed by Kruskal Wallis test. A p-value < 0.05 was considered statistically significant. n.s: non-significant.

Supplementary Table S5: Beta diversity index

Group 1	Group 2	Sample size	Permutations	p values			
				Jaccard	Bray-Curtis	Weighted Unifrac	Unweight Unifrac
Cherry D1	Cherry D30	38	999	1.00	0.97	0.72	1.00
Placebo D1	Placebo D30	40	999	1.00	0.97	0.14	1.00
Cherry D1	Placebo D1	40	999	0.08	0.006	0.04	0.06
Cherry D30	Placebo D30	40	999	0.16	0.003	0.02	0.14

Supplementary Table S6. Intestinal permeability markers in cherry and placebo

Variable	Treatment				p value
	Cherry (n=19)		Placebo (n=21)		
	D1	D30	D1	D30	
LBP	12.76 (10.94, 14.57)	14.45 (12.87, 16.07)	14.4 (12.8, 16.0)	13.44 (11.44, 15.45)	n.s
Lactulose (L) (% recovery/ ingested dose)	0.01 (0.01, 0.02)[A] n = 13	0.06 (0.02, 0.11)[B] n = 13	0.09 (-0.03, 0.22) n = 15	0.03 (0.01, 0.05) n = 15	Cherry ↑D30 (p = 0.0081)
Mannitol (M) (% recovery/ ingested dose)	4.63 (3.25, 6.00) n = 13	5.78 (4.27, 7.29) n = 13	4.61 (3.51, 5.70) n = 15	5.27 (3.43, 7.10) n = 15	n.s
L/M	0.005 (0.002, 0.007) n = 13	0.01 (0.003, 0.01) n = 13	0.11 (-0.07, 0.30) n = 15	0.008 (0.003, 0.014) n = 15	n.s
REG-4*	8.43 (1.80, 15.06) n = 15		1.98 (-0.33, 4.31) n = 18		n.s
IL-22*	2.89 (0.84, 4.93) n = 15		4.55 (-0.06, 9.17) n = 18		n.s

Values are mean (95% CI). Wilcoxon matched-pairs rank test was used to assess differences within treatments. Mann-Whitney test was used to evaluate differences between treatments. A p-value < 0.05 was considered statistically significant. (*) Data are presented as a D30 fold change of D1. n.s: non-significant.