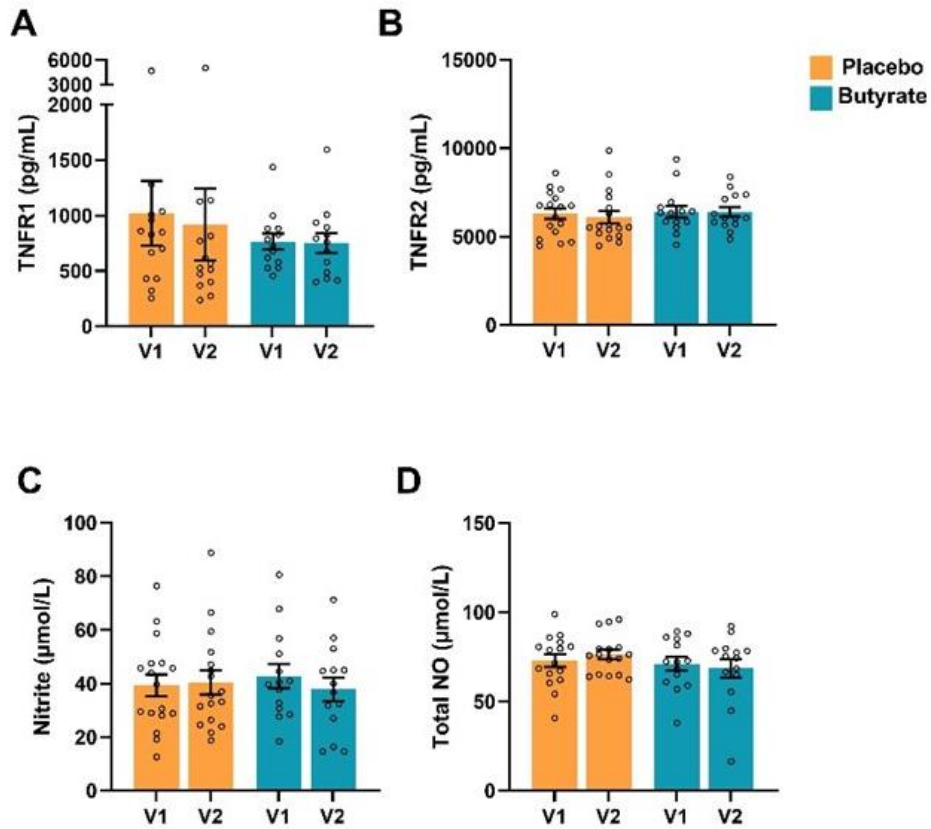
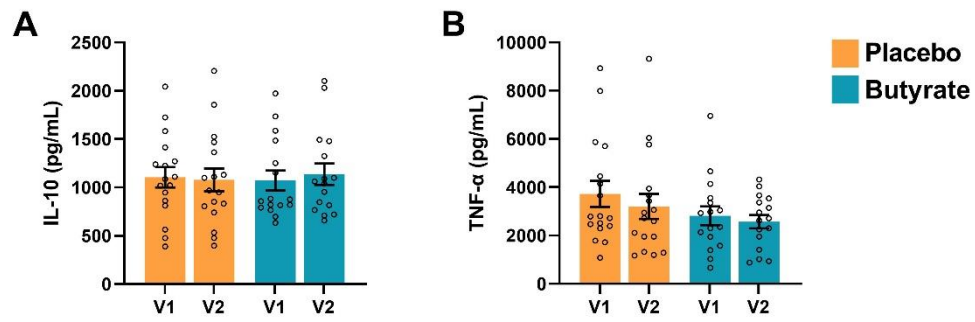


Supplemental Table S1. Overview titrated dilution of FACS antibodies.

Antibody	Brand	Dilution
CD4 PerCP-Cyanine5.5	Thermo Fisher Scientific	1:80
CD25 Alexa Fluor 488	Thermo Fisher Scientific	1:40
CD127 PE-Cyanine7	Thermo Fisher Scientific	1:80
FOXP3 eFluor 660	Thermo Fisher Scientific	1:320
ROR γ (t) PE	Thermo Fisher Scientific	1:640
CD69 PE	Thermo Fisher Scientific	1:80
CD196 (CCR6) APC	Thermo Fisher Scientific	1:160
CD183 (CXCR3) Alexa Fluor 488	BD Biosciences	1:40
CD14 APC	Thermo Fisher Scientific	1:160
TLR4 PE	BD Biosciences	1:80
IL-10 Brilliant Violet 421	Biolegend	1:160
TNF- α Brilliant Violet 510	Biolegend	1:50
IL-17A Alexa Fluor 488	BD Biosciences	1:40
IL-9 PE	BD Biosciences	1:320
IFN- γ Alexa Fluor 647	Biolegend	1:120



Supplemental Figure S1. A) TNF receptor 1 (TNFR1), (B) TNF receptor 2 (TNFR2), (C) Nitrite, and (D) total nitric oxide (NO) at baseline (V1) and the end of the study (V2). Orange bars indicate serum levels from patients who received placebo and blue bars indicate patients who received butyrate. Data are presented as mean \pm SEM (N=14- 17 placebo group, N=13-16 butyrate group). .



Supplemental Figure S2. *Ex vivo* LPS stimulation of whole blood samples to induce IL-10 (A) and TNF- α (B) plasma concentrations. Orange bars indicate whole blood samples from patient who received placebo and blue bars indicate patients who received butyrate. Data are presented as mean \pm SEM (N=17 placebo group, N=16 butyrate group). V1: Visit 1 (baseline), V2: Visit 2 (end of study).

Supplemental Table S2. ELISA data of LPS-stimulated whole blood and negative control and FACS data of restimulated PBMCs and negative control. Data are presented as mean \pm SEM. Significant differences are shown as * $p < 0.05$, ** $p < 0.01$. V1: Visit 1 (baseline), V2: Visit 2 (end of study).

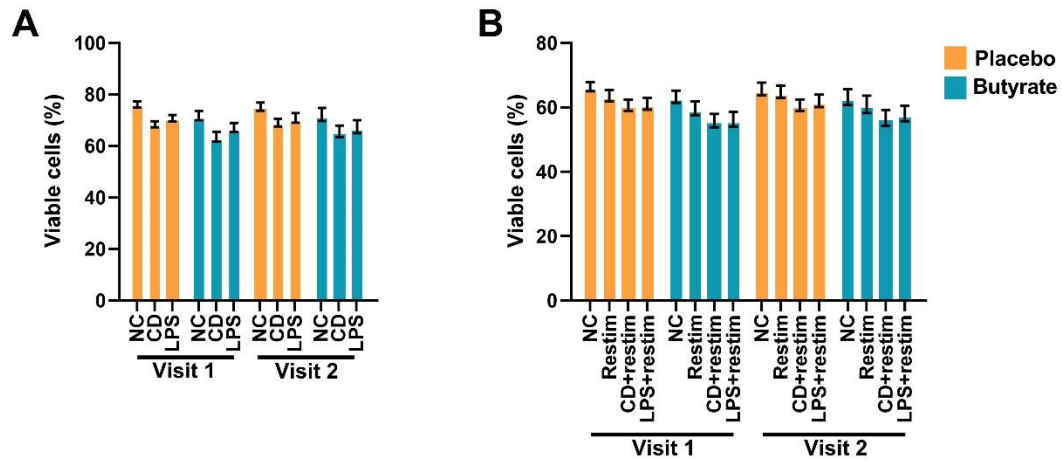
Whole blood										
Negative control					LPS-stimulated				LPS-stimulated	
Placebo		Butyrate			Placebo		Butyrate		Placebo	Butyrate
Visit 1	Visit 2	Visit 1	V2		Visit 1	Visit 2	Visit 1	Visit 2	V2-V1	V2-V1
IL-10 (pg/mL)	6.245 (± 1.321)	4.024** (± 0.913)	8.526 (± 1.891)	3.992* (± 0.741)	1104.4 (± 105.60)	1076.8 (± 117.71)	1071.0 (± 102.91)	1136.4 (± 111.18)	-27.65 (± 64.72)	65.46 (± 102.2)
TNF- α (pg/mL)	21.43 (± 6.708)	19.32** (± 6.771)	24.764 (± 6.951)	21.976* (± 6.796)	3724.9 (± 538.58)	3206.0 (± 518.69)	2814.1 (± 388.74)	2571.5 (± 276.45)	-518.9 (± 258.6)	-242.7 (± 239.6)
PBMC										
Negative control					Restimulated				Restimulated	
Placebo		Butyrate			Placebo		Butyrate		Placebo	Butyrate
Visit 1	Visit 2	Visit 1	Visit 2		Visit 1	Visit 2	Visit 1	Visit 2	V2-V1	V2-V1
IL-10+ out of CD14+ (%)	0.55 (± 0.18)	0.30 (± 0.10)	0.22 (± 0.04)	0.34 (± 0.14)	0.46 (± 0.11)	0.40 (± 0.17)	0.41 (± 0.14)	0.63 (± 0.21)	-0.05 (± 0.10)	0.22 (± 0.26)
TNF- α + out of CD14+ (%)	0.40 (± 0.13)	0.10* (± 0.03)	0.25 (± 0.06)	0.17 (± 0.06)	0.54 (± 0.08)	0.39 (± 0.07)	0.68 (± 0.23)	0.83 (± 0.25)	-0.16 (± 0.09)	0.14 (± 0.15)
TLR4+ out of CD14+ (%)	38.57 (± 3.85)	38.86 (± 4.71)	35.79 (± 2.85)	33.81 (± 3.92)	28.29 (± 2.22)	28.41 (± 3.22)	34.01 (± 3.49)	33.83 (± 3.11)	0.12 (± 2.13)	-0.18 (± 2.63)
TLR4 (MFI)	2509.0 (± 109.5)	2414.6* (± 124.6)	2485.3 (± 136.9)	2449.1 (± 140.3)	2288.4 (± 98.07)	2239.3 (± 107.7)	2402.6 (± 100.9)	2372.9 (± 110.6)	-49.03 (± 23.49)	-26.69 (± 44.45)

Supplemental Table S3. FACS and ELISA data of LPS-stimulated, α CD3/CD28-stimulated, α CD3/CD28-stimulated+restimulated PBMCs and negative control. Data are presented as mean \pm SEM. Significant differences are shown as * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. V1: Visit 1 (baseline), V2: Visit 2 (end of study).

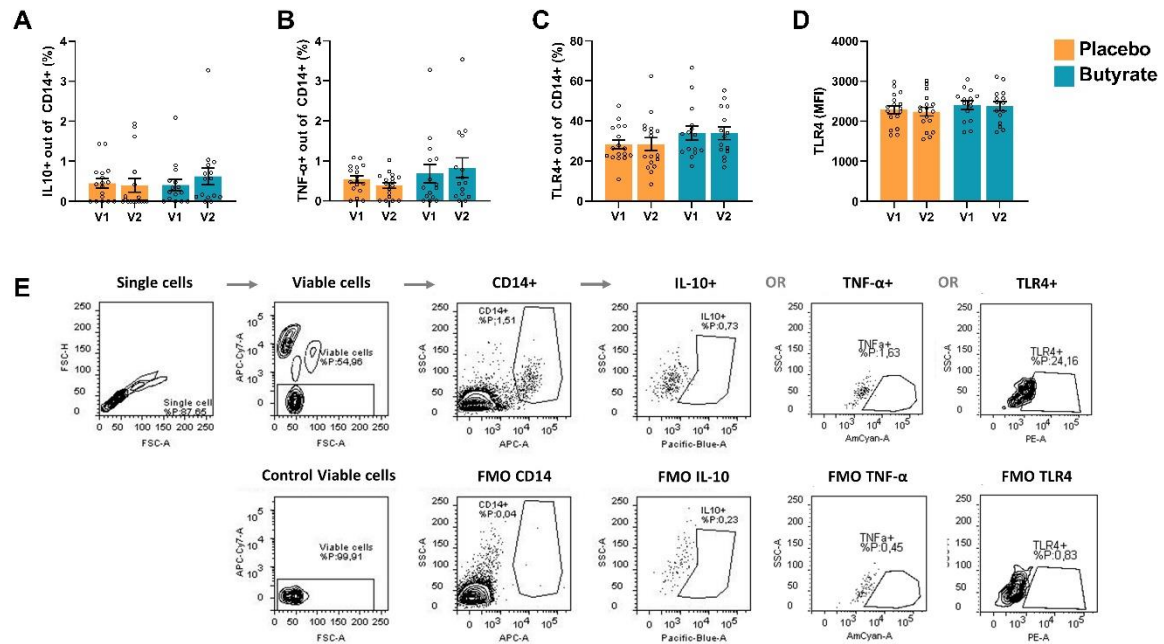
PBMC (FACS)														
	Negative control				LPS-stimulated				α CD3/CD28-stimulated				α CD3/CD28-stimulated	
	Placebo		Butyrate		Placebo		Butyrate		Placebo		Butyrate		Placebo	Butyrate
	Visit 1	Visit 2	Visit 1	Visit 2	Visit 1	Visit 2	Visit 1	Visit 2	Visit 1	Visit 2	Visit 1	Visit 2	V2-V1	V2-V1
CD25+FoxP3+ out of CD4+ (%)	0.78 (± 0.11)	0.64 (± 0.09)	1.14 (± 0.20)	1.03 (± 0.23)	1.45 (± 0.16)	1.22* (± 0.11)	1.63 (± 0.23)	1.59 (± 0.22)	6.99 (± 0.56)	6.04* (± 0.43)	8.36 (± 0.85)	7.53* (± 0.75)	-0.95 (± 0.41)	-0.83 (± 0.26)
CD25+FoxP3- out of CD4+ (%)	1.23 (± 0.27)	1.05 (± 0.15)	1.43 (± 0.33)	1.17** (± 0.26)	2.65 (± 0.44)	2.42 (± 0.37)	2.76 (± 0.48)	2.81 (± 0.53)	50.06 (± 3.41)	46.64 (± 3.98)	51.64 (± 3.70)	44.36* (± 3.92)	-3.42 (± 2.07)	-7.28 (± 2.97)
CD25+ out of CD4+ (%)	1.63 (± 0.23)	1.37 (± 0.15)	2.29 (± 0.48)	1.91* (± 0.44)	2.93 (± 0.18)	2.65 (± 0.19)	3.50 (± 0.50)	3.59 (± 0.50)	56.20 (± 3.40)	51.65 (± 3.89)	59.34 (± 3.85)	51.04* (± 4.03)	-4.55 (± 2.27)	-8.30 (± 3.11)
ROR γ + out of CD4+ (%)	0.46 (± 0.10)	0.73 (± 0.45)	0.43 (± 0.07)	0.32* (± 0.05)	0.49 (± 0.10)	0.33* (± 0.06)	0.43 (± 0.07)	0.36 (± 0.07)	6.37 (± 1.31)	4.94* (± 1.01)	7.34 (± 1.60)	4.75* (± 0.94)	-1.43 (± 0.52)	-2.59 (± 1.05)
Th17/Tr eg	2.22 (± 1.50)	1.68 (± 1.11)	0.62 (± 0.19)	0.46 (± 0.10)	0.41 (± 0.12)	0.29 (± 0.05)	0.35 (± 0.08)	0.26 (± 0.06)	0.92 (± 0.16)	0.82 (± 0.15)	0.86 (± 0.16)	0.62 (± 0.11)	-0.10 (± 0.07)	-0.24 (± 0.09)
PBMC (FACS)														
	Negative control				LPS-stimulated				α CD3/CD28-stimulated				α CD3/CD28-stimulated	
	Placebo		Butyrate		Placebo		Butyrate		Placebo		Butyrate		Placebo	Butyrate
	Visit 1	Visit 2	Visit 1	Visit 2	Visit 1	Visit 2	Visit 1	Visit 2	Visit 1	Visit 2	Visit 1	Visit 2	V2-V1	V2-V1
CD69+ out of CD4+ (%)	0.41 (± 0.05)	0.36 (± 0.05)	0.65 (± 0.17)	0.41 (± 0.06)	3.91 (± 0.63)	3.54 (± 0.66)	3.63 (± 0.44)	2.99 (± 0.30)	71.60 (± 3.55)	67.45 (± 4.09)	76.10 (± 2.60)	66.35* (± 3.83)	-4.16 (± 2.42)	-9.76 (± 3.41)
CD69+CXCR3+ out of	0.19 (± 0.02)	0.18 (± 0.02)	0.32 (± 0.11)	0.17 (± 0.02)	0.65 (± 0.09)	0.63 (± 0.11)	0.56 (± 0.05)	0.58 (± 0.07)	20.11 (± 1.35)	17.00** (± 1.17)	20.51 (± 1.88)	16.01** (± 1.24)	-3.11 (± 0.88)	-4.50 (± 1.35)

CD4+ (%)+														
CD69+ CR6+ out of CD4+C XCR3- (%)	0.0 4 (±0. 00)	0.0 3 (±0. 00)	0.05 (±0. 01)	0.04 (±0. 01)	0.47 (±0.0 9)	0.43 (±0.0 8)	0.36 (±0.0 6)	0.34 (±0.0 5)	3.46 (±0.3 5)	2.83* * (±0.3 1)	4.62 (±0.7 9)	3.26* * (±0.4 6)	-0.63 (±0.2 0)	-1.37 (±0.55)
CCR6+ out of CD4+C XCR3- (%)	4.4 5 (±0. 45)	3.6 9** * (±0. 38)	4.19 (±0. 55)	3.56 (±0. 46)	5.69 (±0.6 4)	5.23 (±0.7 2)	4.69 (±0.6 0)	4.18 (±0.6 0)	4.57 (±0.3 8)	3.83* * (±0.3 6)	5.59 (±0.8 0)	4.23* (±0.5 4)	-0.73 (±0.2 1)	-1.36 (±0.56)
PBMC (FACS)														
	Negative control				Restimulated				αCD3/CD28- stimulated restimulated +				αCD3/CD2 8- stimulated + restimulat ed	
	Placebo		Butyrate		Placebo		Butyrate		Placebo		Butyrate		Plac ebo	Buty rate
	Vi sit 1	Vi sit 2	Vis it 1	Vis it 2	Visi t 1	Visi t 2	Visi t 1	Visi t 2	Visi t 1	Visi t 2	Visi t 1	Visi t 2	V2- V1	V2- V1
IL-17a+ out of CD4+ (%)	0.1 3 (±0. 03)	0.2 3 (±0. 08)	0.15 (±0. 04)	0.31 ** (±0. 11)	0.32 (±0.0 5)	0.34 (±0.0 7)	0.48 (±0.1 1)	0.44 (±0.0 9)	0.39 (±0.0 8)	0.39 (±0.0 8)	0.67 (±0.1 3)	0.59 (±0.1 3)	0.002 (±0.0 3)	-0.08 (±0.08)
IFN-γ+ out of CD4+ (%)	0.1 2 (±0. 03)	0.1 7 (±0. 05)	0.11 (±0. 03)	0.18 (±0. 07)	5.28 (±1.3 8)	4.31* (±1.1 0)	5.10 (±1.4 9)	4.26 (±1.5 8)	9.02 (±1.3 4)	7.74* * (±1.2 6)	10.3 8 (±1.7 3)	7.98* (±1.4 6)	-2.40 (±1.2 9)	-1.28 (±0.42)
IL-9+ out of CD4+ (%)	0.1 1 (±0. 04)	0.2 0 (±0. 08)	0.12 (±0. 04)	0.26 * (±0. 11)	0.13 (±0.0 5)	0.19 (±0.0 8)	0.19 (±0.0 9)	0.24 (±0.0 8)	0.62 (±0.1 1)	0.53 (±0.1 0)	0.90 (±0.2 1)	0.67* (±0.1 6)	-0.23 (±0.1 1)	-0.09 (±0.05)
IL-10+ out of CD4+ (%)	0.1 7 (±0. 04)	0.3 2** (0.0 8)	0.21 (±0. 04)	0.39 *** (±0. 11)	0.24 (±0.0 6)	0.29 (±0.0 8)	0.29 (±0.0 9)	0.42 (±0.1 3)	0.70 (±0.1 1)	0.62 (±0.1 0)	1.18 (±0.1 9)	0.90 (±0.2 3)	-0.28 (±0.2 8)	-0.08* (±0.06)
TNF-α+ out of CD4+ (%)	0.2 4 (±0. 05)	0.3 8** (±0. 09)	0.31 (±0. 06)	0.45 (±0. 12)	3.37 (±0.9 6)	2.86 (±0.8 6)	3.86 (±1.3 1)	3.38 (±1.2 4)	7.92 (±1.1 8)	6.98* ** (±1.1 2)	8.82 (±1.3 1)	6.98* (±1.2 3)	-1.84 (±0.7 5)	-0.93 (±0.23)
PBMC (ELISA)														
	Negative control				LPS-stimulated				αCD3/CD28- stimulated				αCD3/CD2 8- stimulated	
	Placebo		Butyrate		Placebo		Butyrate		Placebo		Butyrate		Plac ebo	Buty rate

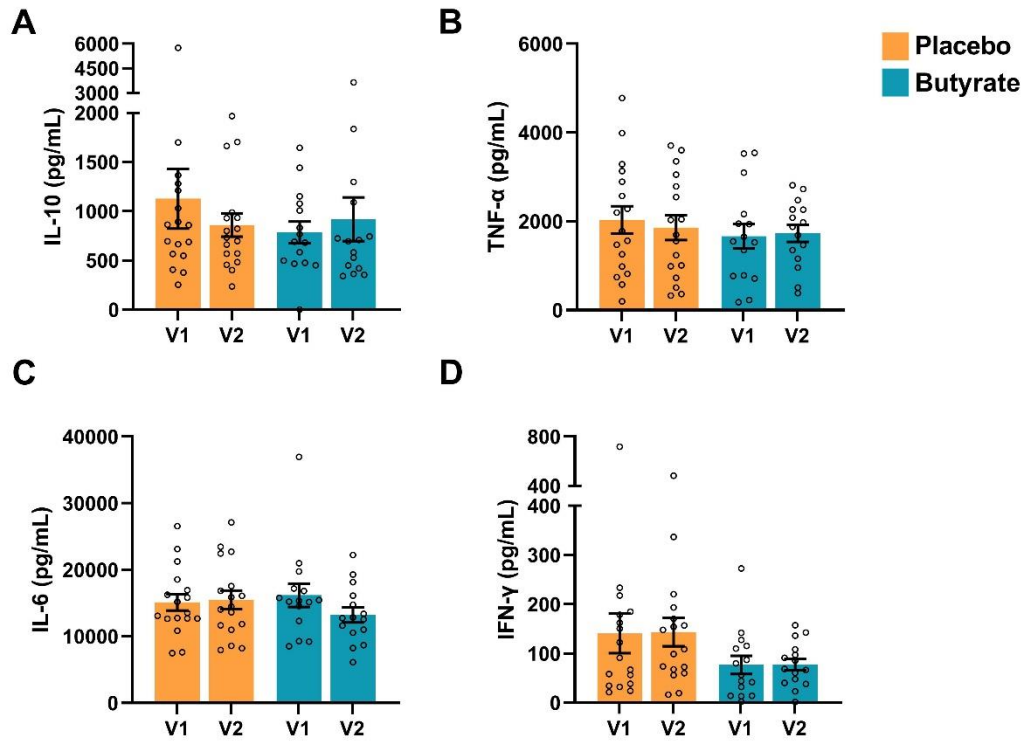
	Vi sit 1	Vi sit 2	Vis it 1	Vis it 2	Visi t 1	Visi t 2	Visi t 1	Visi t 2	Visi t 1	Visi t 2	Visi t 1	Visi t 2	V2- V1	V2- V1
IL-17a (pg/mL)	1.8 0 (±0. 15)	1.9 8 (±0. 26)	2.19 (±0. 15)	1.89 (±0. 22)	32.3 4 (±5.8 8)	29.11 (±5.2 2)	40.1 9 (±7.5 0)	32.4 5 (±6.5 6)	1.78 (±0.1 0)	2.08 (±0.4 2)	1.60 (±0.1 7)	3.55 (±1.0 4)	- 3.230 (±4.0 61)	-7.745 (±6.19 9)
IFN- γ (pg/mL)	2.7 4 (±0. 51)	2.5 9 (±0. 41)	3.17 (±0. 73)	2.63 (±0. 51)	638. 55 (±86. 95)	572.3 2 (±73. 10)	470. 00 (±60. 35)	573. 93 (±14 7.44)	140. 72 (±40. 02)	143. 38 (±28. 86)	76.8 3 (±18. 29)	77.6 6 (±11. 68)	- 66.23 (±55. 14)	-103.9 (±108. 1)
IL-9 (pg/mL)	0.3 9 (±0. 00)	0.3 9 (±0. 00)	0.50 (±0. 11)	0.39 (±0. 00)	27.0 5 (±6.6 3)	23.60 (±5.2 5)	22.4 2 (±4.5 6)	20.7 3 (±5.0 7)	0.39 (±0.0 0)	0.39 (±0.0 0)	0.41 (±0.0 2)	0.50 (±0.0 8)	- 3.443 (±3.1 76)	-1.684 (±3.47 3)
IL-10 (pg/mL)	1.1 7 (±0. 00)	1.2 8 (±0. 11)	1.17 (±0. 00)	1.17 (±0. 00)	665. 61 (±17 8.03)	513.5 9 (±107 .31)	492. 42 (±90. 63)	414. 99 (±71. 79)	1126 .8 (±30 3.70)	859. 77 (±11 7.79)	784. 93 (±10 9.29)	918. 68 (±22 1.55)	- 152.0 (±93. 16)	-77.44 (±90.5 8)
TNF- α (pg/mL)	3.4 0 (±1. 41)	3.9 6 (±2. 10)	2.96 (±0. 70)	1.95 (±0. 00)	1104 .4 (± 152. 18)	844.5 9 (±151 .62)*	1058 .6 (±16 3.36)	966. 73 (±15 9.06)	2031 .14 (±31 0.28)	1855 .66 (±27 9.22)	1664 .44 (±27 8.88)	1732 .84 (±19 4.78)	- 259.8 (±113 .6)	-91.85 (±190. 2)
IL-6 (pg/mL)	26. 89 (±8. 67)	22. 67 (±9. 71)	62.7 0 (±20 .95)	36.7 6 (±11 .22)	344. 05 (±11 1.92)	277.1 6 (±73. 36)	252. 04 (±65. 15)	280. 25 (±13 0.42)	1511 8.2 (±12 30.5)	1549 7.2 (±13 79.5)	1616 7.1 (±17 50.4)	1321 8.1 (±11 21.2)	- 66.88 (±77. 83)	28.20 (±110. 2)



Supplemental Figure S3. Viability of PBMCs after stimulation with either LPS or α CD3/CD28 with and without restimulation (PMA and Ionomycin in presence of golgiplug) and the negative control. Data are presented as mean \pm SEM (N=17 placebo group, N=15 butyrate group). CD: α CD3/CD28, NC: Negative control, Restim: restimulation.



Supplemental Figure S4. FACS analysis of monocytes within restimulated PBMCs. (A) percentage of IL-10+ cells out of CD14+ cells, (B) percentage of TNF- α + cells out of CD14+ cells, (C) percentage of TLR4+ cells out of CD14+ cells, (D) Mean fluorescence intensity (MFI) of TLR4 and (E) the used gating strategy with corresponding fluorescence minus one (FMO) controls for a representative sample. Orange bars indicate whole blood samples from patient who received placebo and blue bars indicate patients who received butyrate. Data are presented as mean \pm SEM (N=17 placebo group, N=15 butyrate group). V1: Visit 1 (baseline), V2: Visit 2 (end of study).



Supplemental Figure S5 IL-10 (A), TNF- α (B), IL-6 (C) and IFN- γ (D) release of LPS-stimulated PBMCs measured with ELISA. Orange bars indicate whole blood samples from patient who received placebo and blue bars indicate patients who received butyrate. Data are presented as mean \pm SEM (N=17 placebo group, N=15 butyrate group). V1: Visit 1 (baseline), V2: Visit 2 (end of study).