

Supplementary Material

Table S1. Multiplex analysis of cytokines in the blood serum of a patient with TSD.

Analyte	Analyte concentration in blood serum. pg/ml									
	Control (n = 10)	Patient								
		Day 0 Before UCBCT	Day 184 After UCBCT	Day 252 500 mg/day	Day 262 1000 mg/day	Day 276 3500 mg/day	Day 290 3500 mg/day	Day 305 3500 mg/day	Day 323 3500 mg/day	Day 339 3500 mg/day
EGF	111.6 ±	345.4 ±	153.4 ±	151.4 ±	263.6 ±	260.4 ±	63.2 ±	180.5 ±	514.6 ±	184.5 ±
	103.4	0.8	16.9	38.21	17.2	4.9	64.3	31.4	56.6	12.4
Eotaxin	64.8 ±	200.6 ±	155.7 ±	192.0 ±	203.8 ±	160.8 ±	4.1 ± 0.9	146.4 ±	107.5 ±	93.1 ±
	28.7	1.9	8.4	13.3	2.4	5.6		20.4	4.3	17.5
FGF-2	86.81 ±	37.02 ±	30.46 ±	22.10 ±	23.64 ±	39.22 ±	18.55 ±	140.9	40.15 ±	34.45 ±
	101.17	4.60	8.51	8.07	10.25	9.72	3.05		5.20	0.97
FLT-3	15.94 ±	3.95 ±	2.12 ±	0.24 ±	3.58 ±	3.38 ±	0.75 ±	17.44 ±	8.14 ±	10.27 ±
	16.27	0.23	1.77	0.24	0.89	1.49	0.75	17.44	1.36	0.75
Fractalkine	87.58 ±	38.49 ±	35.52	13.86	29.01	55.12	35.52	157.31 ±	53.70 ±	57.02 ±
	60.63	0.00						185.96	21.51	6.97
G-CSF	40.35 ±	16.90 ±	13.04 ±	8.92 ±	11.77 ±	19.14 ±	13.17 ±	47.31 ±	18.20 ±	13.96 ±
	24.78	0.37	10.92	2.47	2.36	6.53	0.39	51.02	0.74	2.29
GM-CSF	26.92 ±	14.61 ±	11.71 ±	10.95 ±	11.99 ±	16.49 ±	11.53 ±	38.64 ±	15.88 ±	15.23 ±
	15.24	1.32	4.98	4.74	1.51	4.84	0.44	37.03	5.71	2.19
GRO	1067.05	1851.31	1403.99 ±	1491.48 ±	1385.85	1385.64	702.75 ±	1506.28	988.86 ±	1123.12 ±
	± 730.84	± 148.93	415.19	210.49	± 442.97	± 32.82	85.92	± 152.78	1.28	72.65
IFN-γ	36.94 ±	10.71 ±	7.51 ±	7.21 ±	8.54 ±	12.1 ±	5.41 ±	29.25 ±	10.98 ±	12.69 ±
	51.24	0.40	1.68	1.26	1.03	4.00	0.43	30.74	2.42	1.60
IL-10	4.83 ±	3.10 ±	2.76 ±	2.50 ±	2.88 ±	3.90 ±	3.26 ±	8.76 ±	6.05 ±	5.80 ±
	2.21	0.23	1.03	0.30	0.15	0.52	0.31	7.77	0.86	0.51
IL-12 (p40)	37.48 ±	<1.31	1.31	<1.31	<1.31	4.94	<1.31	97.84	3.19	<1.31
	36.83									
IL-12 (p70)	9.22 ±	3.45 ±	2.53 ±	2.45 ±	2.68 ±	4.00 ±	3.22 ±	15.10 ±	3.34 ±	2.89 ±
	12.30	0.16	1.13	0.30	0.62	1.26	0.16	17.59	0.65	0.32
IL-13	8.87 ±	2.06 ±	2.62	<0.44	1.17 ±	2.37 ±	1.28	23.95	2.97 ±	1.47 ±
	6.14	0.00			0.72	2.12			1.28	0.84
IL-15	5.32 ±	2.18 ±	1.35 ±	1.33 ±	1.61 ±	2.88 ±	2.18 ±	10.96 ±	2.34 ±	2.18 ±
	4.47	0.14	1.04	0.26	0.54	1.12	0.41	13.36	0.90	0.41
IL-17A	9.67	5.41	5.02	4.67	5.33	5.81	5.62	8.66	6.68	5.94
	10.84	0.15	1.31	0.30	0.78	1.01	0.00	5.93	0.90	0.97
IL-1Rα	133.00 ±	24.64 ±	14.30 ±	8.58 ±	14.69 ±	26.42 ±	25.25 ±	149.81 ±	21.07 ±	20.96 ±
	181.83	3.56	11.06	4.33	8.78	16.18	0.90	202.69	8.61	5.17

Analyte	Analyte concentration in blood serum. pg/ml									
	Control (n = 10)	Patient								
		Day 0	Day 184	Day 252	Day 262	Day 276	Day 290	Day 305	Day 323	Day 339
		Before UCBCT	After UCBCT	500 mg/day	1000 mg/day	3500 mg/day	3500 mg/day	3500 mg/day	3500 mg/day	3500 mg/day
IL-1 α	55.24 \pm 60.18	<3.2	<3.2	<3.2	<3.2	20.82	147.67	<3.2	<3.2	<3.2
IL-1 β	90.02 \pm	2.29 \pm	1.84 \pm	1.73 \pm	2.01 \pm	2.61 \pm	1.92 \pm	6.46 \pm	2.32 \pm	2.35 \pm
	195.09	0.00	0.32	0.16	0.40	0.69	0.28	6.53	0.52	0.40
IL-2	5.81 \pm	3.35 \pm	2.81 \pm	2.49 \pm	2.46 \pm	3.52 \pm	2.78 \pm	6.87 \pm	2.92 \pm	3.21 \pm
	6.31	0.12	0.49	0.04	0.16	0.93	0.62	6.41	0.33	0.25
IL-3	3.90 \pm	2.74 \pm	2.48 \pm	2.03 \pm	2.25 \pm	3.35 \pm	2.52 \pm	11.12 \pm	2.97 \pm	2.33 \pm
	2.80	0.20	0.95	0.06	0.25	0.93	0.52	12.17	0.40	0.00
IL-4	26.18 \pm	8.79 \pm	1.84	<0.66	3.01 \pm	5.70 \pm	31.13	58.81	5.33	3.01
	26.97	2.71			0.00	6.00				
IL-5	2.30 \pm	1.29 \pm	1.18 \pm	1.20 \pm	1.23 \pm	1.58 \pm	1.55 \pm	2.91 \pm	1.42 \pm	1.28 \pm
	2.14	0.01	0.30	0.18	0.07	0.30	0.12	2.54	0.16	0.04
IL-6	66.49 \pm 108.84	<0.55	<0.55	<0.55	<0.55	<0.55	<0.55	8.37	<0.55	<0.55
IL-7	7.26 \pm	4.17 \pm	4.46 \pm	4.11 \pm	4.40 \pm	5.19 \pm	3.14 \pm	7.97 \pm	4.50 \pm	4.92 \pm
	3.78	0.15	0.47	0.78	0.18	0.83	1.50	5.72	0.23	0.45
IL-8	7.8 \pm 6.0	21.30 \pm	8.11 \pm	7.18 \pm	8.88 \pm	9.74 \pm	4.84 \pm	11.56 \pm	69.58 \pm	9.33 \pm
		1.26	0.19	1.12	1.68	0.08	0.48	3.91	9.31	0.52
IL-9	2.14 \pm	1.95 \pm	1.42 \pm	1.37 \pm	1.44 \pm	1.95 \pm	1.01 \pm	3.39 \pm	1.84 \pm	1.84 \pm
	1.00	0.19	0.31	0.16	0.25	0.43	0.56	3.09	0.28	0.04
IP-10	73.9 \pm	80.37 \pm	95.22 \pm	35.22 \pm	66.13 \pm	59.49 \pm	71.40 \pm	62.06 \pm	23.35 \pm	28.82 \pm
	26.3	2.69	34.16	2.52	13.82	6.46	6.72	18.66	1.12	2.32
IFN- α 2	71.29 \pm	52.21 \pm	30.33 \pm	28.02 \pm	25.75 \pm	60.83 \pm	38.47 \pm	153.15 \pm	43.21 \pm	41.13 \pm
	52.71	2.99	24.88	11.75	0.00	18.25	10.23	165.22	9.74	0.00
MCP-1	498.76 \pm	495.64 \pm	376.06 \pm	414.49 \pm	350.89 \pm	431.35 \pm	317.76 \pm	418.13 \pm	472.58 \pm	459.27 \pm
	313.57	30.47	70.66	25.09	10.61	14.22	3.05	4.43	12.83	24.08
MCP-3	81.19 \pm 110.50	<2.6	<2.6	<2.6	<2.6	<2.6	<2.6	29.75	<2.6	<2.6
MDC	413.3 \pm	1127.93	874.83 \pm	836.22 \pm	542.88 \pm	753.40 \pm	272.61 \pm	832.64 \pm	756.08 \pm	1052.10 \pm
	175.8	\pm 5.67	264.53	106.58	28.79	60.32	284.41	105.23	95.04	23.14
MIP-1 α	480.81 \pm	3.17 \pm	2.97 \pm	2.77 \pm	2.71 \pm	3.31 \pm	2.95 \pm	5.09 \pm	3.37 \pm	3.02 \pm
	818.68	0.00	0.38	0.15	0.23	0.30	0.11	2.93	0.03	0.21
MIP-1 β	265.97 \pm	17.57 \pm	11.24 \pm	11.24 \pm	15.79 \pm	21.93 \pm	8.78 \pm	46.90 \pm	21.93 \pm	20.39 \pm
	530.85	0.82	4.74	4.74	1.70	5.34	4.64	47.44	5.34	1.56
PDGF-AA	1666.50	2715.05	1506.22 \pm	1228.69 \pm	2014.0 \pm	2106.62	291.79 \pm	1481.40	668.78 \pm	577.02 \pm
	\pm 867.94	\pm 74.53	1296.07	214.92	193.58	\pm 179.44	243.00	\pm 208.94	33.70	30.00

Analyte	Analyte concentration in blood serum. pg/ml									
	Control (n = 10)	Patient								
		Day 0 Before UCBCT	Day 184 After UCBCT	Day 252 500 mg/day	Day 262 1000 mg/day	Day 276 3500 mg/day	Day 290 3500 mg/day	Day 305 3500 mg/day	Day 323 3500 mg/day	Day 339 3500 mg/day
PDGF- AB/BB	13383.03	18810.22	13559.09± 6397.54	13709.74± 3150.71	16717.45	17081.77	7567.23	13494.22	16254.75	17076.81
	±	±			±	±	±	±	±	±
	5559.26	79.35			465.17	221.58	496.18	3767.37	976.86	463.01
RANTES	1527.08	900.40 ± 6.02	721.65 ± 295.42	533.02 ± 207.27	730.69 ± 54.96	837.43 ± 3.40	463.61 ± 77.27	440.44 ± 200.50	828.72 ± 0.32	797.66 ± 76.37
	±									
	1796.76									
TGF-α	6.14 ±	4.88 ±	6.17 ±	5.80 ±	8.58 ±	7.56 ±	6.27 ±	7.61 ±	7.80 ±	6.09 ±
	4.97	0.04	1.07	1.26	0.40	0.04	0.13	2.38	0.54	0.24
TNFα	59.43 ±	15.77 ±	12.92 ±	9.06 ±	12.09 ±	14.41 ±	12.40 ±	15.95 ±	15.03 ±	16.69 ±
	84.87	0.93	1.74	2.50	0.31	0.13	1.00	11.75	3.09	0.37
TNFβ	1.77 ±	<0.14	<0.14	<0.14	<0.14	0.56	13.72	<0.14	<0.14	<0.14
	3.08					0.12				
VEGF	138.21 ±	387.52 ±	346.73 ±	299.56 ±	298.64 ±	335.58 ±	151.65 ±	327.34 ±	296.08 ±	305.02 ±
	133.74	29.81	10.09	60.66	33.30	0.41	82.09	51.23	3.72	15.05
sCD40L	4576.1 ±	10260.30	6275.93 ± 2162.01	6755.18 ± 1381.52	8371.31	8683.64	4436.18	6369.35	8264.04	8345.55 ± 393.17
	±	±			±	±	±	±	±	
	3168.7	793.15			542.94	11.13	702.71	1405.86	110.10	

Table S2. Results of the clinical studies of curcumin.

Study participants	Drug	Dose (mg)	Duration	Blood concentration (ng/mL)	Half-life (hours)	Effect	Reference
Healthy volunteers	γ-cyclodextrin curcumin formulation	10 000	Single dose administration	73.2	6.8 ± 0.8	The γ-cyclodextrin-curcumin composition significantly improves the absorption of curcuminoids	[76]
Healthy volunteers	Curcumin nanoparticles	150	Single dose administration	189	9.7 ± 2.1	No side effects were observed	[77]
Healthy volunteers	Lipid nanoparticles	160	Single dose administration	22.43	7.5 ± 2.4	No side effects were observed	[78]
Patients diagnosed with osteosarcoma	Lipid nanoparticles	2000	Single dose administration	32.51	2.45 ± 0.47	No side effects were observed	[78]
Patients diagnosed with osteosarcoma	Lipid nanoparticles	3000	Single dose administration	31.42	7.50 ± 0.01	No side effects were observed	[78]

Patients diagnosed with osteosarcoma	Lipid nanoparticles	4000	Single dose administration	41.15	7.62± 1.09	No side effects were observed	[78]
Patients diagnosed with cancer	Curcumin (diferuloylmethane) 99.3%	8 000	3 months	652.03		No dose-related toxicity was observed	[79]
Patients diagnosed with pancreatic cancer	Theracurmin®	400	9 months	440		No side effects were observed	[80]
Older people	Longvida®	400	4 weeks	2575	2.8	Cognitive function improvement	[81]
Healthy volunteers	85% curcumin, 12% demethoxycurcumin, and 3% bisdemethoxycurcumin	2 000	Single dose administration	11		No side effects were observed	[82]
Healthy volunteers	C3 Complex™	12 000	Single dose administration	1730	6.77	Curcumin glucuronide and curcumin sulfate were found in plasma after oral administration	[83]
Healthy volunteers	Theracurmin®	90 (twice a day)	18 months			Memory and attention improvement	[84]
Patients diagnosed with knee osteoarthritis	BCM-95®	500 (three times a day)	28 days			Similar efficacy to diclofenac	[85]