Supplementary Table 1. Amino acid contents in leaves of Col-0 wild-type plants 4.5 h after administration of BCAAs.

	Amino acid content [nmol/mg dry weight]			
Amino acid	Col-0 wt / Ile	Col-0 wt / Leu	Col-0 wt / Val	Col-0 wt / control
Total AA	139.18 ± 30.94	133.90 ±12.87	143.86 ± 8.41	135.72 ± 2.79
Ile	3.67 ± 1.06	0.28 ± 0.07	0.30 ± 0.03	0.25 ± 0.01
Leu	0.27 ± 0.05	1.50 ± 0.33	0.36 ± 0.07	0.20 ± 0.03
Thr	8.50 ± 1.90	5.72 ± 0.46	6.32 ± 0.15	6.43 ± 0.11
Val	0.85 ± 0.12	0.61 ± 0.06	2.23 ± 0.30	0.86 ± 0.02

Supplementary Table 2. Amino acid contents in leaves of *bcat3-1* plants 4.5 h after administration of BCAAs.

	Amino acid content [nmol/mg dry weight]			
Amino acid	*bcat3-1* / Ile	*bcat3-1* / Leu	*bcat3-1* / Val	*bcat3-1* / control
Total AA	178.03 ± 10.73	174.45 ± 8.73	169.61 ± 6.63	153.87 ± 9.01
Ile	6.53 ± 1.86	0.34 ± 0.06	0.37 ± 0.07	0.30 ± 0.03
Leu	0.64 ± 0.09	3.28 ± 1.08	0.48 ± 0.15	0.40 ± 0.08
Thr	9.82 ± 0.38	6.47 ± 0.35	6.50 ± 0.29	6.32 ± 0.25
Val	0.69 ± 0.06	0.50 ± 0.11	2.55 ± 0.44	0.70 ± 0.04

Supplementary Table 3. Amino acid contents in leaves of wild-type plants after repeated administrations of BCAAs.

	Amino acid content [nmol/mg]						
Amino acid	Col-0 wt / Ile	Col-0 wt / Leu	Col-0 wt / Val	Col-0 wt / control	t-test Ile	t-test Leu	t-test Val
Total AA	154.01 ± 13.30	170.93 ± 12.30	200.55 ± 12.50	147.80 ± 7.32	0.32529	0.00374	0.00000
Ala	6.80 ± 0.85	7.10 ± 1.27	8.28 ± 1.08	5.92 ± 0.85	0.07259	0.09734	0.00124
Arg	0.92 ± 0.08	0.82 ± 0.10	0.82 ± 0.15	0.74 ± 0.12	0.00429	0.28542	0.28966
Asn	6.12 ± 0.70	6.36 ± 1.06	9.14 ± 0.57	5.26 ± 0.46	0.02069	0.04631	0.00000
Asp	20.48 ± 2.30	18.62 ± 1.09	19.75 ± 0.94	15.36 ± 1.05	0.00022	0.00071	0.00001
Gln	76.80 ± 12.66	90.43 ± 11.63	109.30 ± 10.94	71.68 ± 3.42	0.35632	0.00425	0.00001
Glu	29.87 ± 3.61	32.06 ± 2.21	34.42 ± 1.51	26.40 ± 0.80	0.03939	0.00023	0.00000
Gly	1.36 ± 0.36	1.08 ± 0.25	2.45 ± 0.75	0.62 ± 0.14	0.00038	0.00415	0.00010
His	0.31 ± 0.06	0.24 ± 0.08	0.38 ± 0.05	0.22 ± 0.05	0.01429	0.63548	0.00009
Ile	0.60 ± 0.10	0.38 ± 0.05	0.39 ± 0.06	0.44 ± 0.12	0.01787	0.37490	0.40114
Leu	0.63 ± 0.18	0.58 ± 0.21	0.62 ± 0.13	n.d.*	-	-	-
Lys	0.44 ± 0.08	0.41 ± 0.11	0.43 ± 0.09	0.48 ± 0.20	0.60001	0.49170	0.55615
Met	0.21 ± 0.05	0.19 ± 0.07	0.22 ± 0.05	0.36 ± 0.17	0.02869	0.06808	0.06302
Phe	0.37 ± 0.04	0.31 ± 0.07	0.33 ± 0.06	0.36 ± 0.13	0.77669	0.47900	0.54476
Ser	7.77 ± 0.65	7.46 ± 1.00	8.33 ± 0.65	8.92 ± 0.63	0.00479	0.01631	0.12664
SMM	0.00 ± 0.00	0.00 ± 0.00	0.00 ± 0.00	0.00 ± 0.00	-	-	-
Thr	4.39 ± 0.33	3.70 ± 0.37	4.35 ± 0.38	3.18 ± 0.31	0.00001	0.03356	0.00009
Trp	0.00 ± 0.00	0.00 ± 0.00	0.00 ± 0.00	0.00 ± 0.00	-	-	-
Tyr	0.24 ± 0.00	0.24 ± 0.00	0.26 ± 0.05	0.24 ± 0.00	0.04009	0.00000	0.37737
Val	1.00 ± 0.13	0.94 ± 0.10	1.08 ± 0.10	1.10 ± 0.14	0.18802	0.05703	0.76838

*n.d.: not determined in this series. Comparison of Leu levels to other wt controls showed similar levels of this amino acid after feeding of the different BCAAs.

Supplementary Table 4. Amino acid contents in leaves of *bcat3-1* plants after repeated administrations of BCAAs.

	Amino acid content [nmol/mg]						
Amino acid	*bcat3-1* / Ile	*bcat3-1* / Leu	*bcat3- 1* / Val	*bcat3-1* / control	t-test Ile	t-test Leu	t-test Val
Total AA	165.90 ± 19.14	186.19 ± 7.02	197.26 ± 23.42	165.11 ± 17.58	0.93701	0.02819	0.01226
Ala	7.36 ± 0.62	10.01 ± 0.52	9.80 ± 0.29	7.01 ± 0.66	0.32591	0.00000	0.00000
Arg	1.00 ± 0.16	0.94 ± 0.16	0.92 ± 0.12	0.86 ± 0.08	0.04659	0.23288	0.24858
Asn	6.18 ± 0.92	8.81 ± 0.73	7.72 ± 1.36	6.42 ± 0.72	0.59423	0.00013	0.03897
Asp	20.64 ± 1.46	16.51 ± 1.25	17.92 ± 0.99	19.92 ± 2.22	0.50500	0.01005	0.06379
Gln	79.68 ± 9.43	100.22 ± 4.97	107.68 ± 19.22	82.44 ± 12.43	0.65841	0.01182	0.01124
Glu	32.32 ± 2.89	30.91 ± 2.08	33.12 ± 3.02	31.44 ± 3.19	0.60543	0.75049	0.33888
Gly	1.36 ± 0.35	1.92 ± 0.35	2.24 ± 0.70	1.32 ± 0.48	0.86665	0.03477	0.01280
His	0.40 ± 0.10	0.36 ± 0.00	0.38 ± 0.09	0.33 ± 0.06	0.11451	0.26002	0.22342
Ile	0.65 ± 0.18	0.43 ± 0.11	0.44 ± 0.15	0.42 ± 0.06	0.01120	0.80333	0.73246
Leu	0.80 ± 0.33	0.82 ± 0.10	0.70 ± 0.05	0.66 ± 0.16	0.30765	0.63525	0.24084
Lys	0.54 ± 0.20	0.46 ± 0.30	0.52 ± 0.21	0.53 ± 0.13	0.86521	0.57021	0.95667
Met	0.24 ± 0.08	0.24 ± 0.00	0.24 ± 0.08	0.21 ± 0.06	0.40816	0.26002	0.40816
Phe	0.42 ± 0.10	0.46 ± 0.10	0.44 ± 0.16	0.41 ± 0.06	0.73545	0.27709	0.58657
Ser	7.24 ± 0.90	8.06 ± 0.32	8.38 ± 1.25	8.01 ± 0.61	0.07874	0.85936	0.47714
SMM	0.00 ± 0.00	0.00 ± 0.00	0.00 ± 0.00	0.00 ± 0.00	-	-	-
Thr	5.18 ± 1.71	4.78 ± 0.29	4.82 ± 0.43	4.02 ± 0.29	0.08070	0.00083	0.00138
Trp	0.00 ± 0.00	0.00 ± 0.00	0.00 ± 0.00	0.00 ± 0.00	-	-	-
Tyr	0.26 ± 0.05	0.29 ± 0.07	0.28 ± 0.06	0.24 ± 0.00	0.26430	0.05714	0.08883
Val	0.92 ± 0.15	0.98 ± 0.20	1.10 ± 0.23	0.89 ± 0.11	0.61607	0.26466	0.03934

Supplementary Table 5. Glucosinolate contents in leaves of wild-type plants after repeated administrations of BCAAs.

Glucosinolate content [µmol/g dry weight]

GS	Col-0 wt / Ile	Col-0 wt / Leu	Col-0 wt / Val	Col-0 wt / control	t-test Ile	t-test Leu	t-test Val
Total Met GS	20,38 ± 3,43	19,07 ± 1,34	19,28 ± 1,59	18,29 ± 1,51	0,16593	0,37314	0,25350
Total GS	23,07 ± 3,83	21,87 ± 1,49	22,01 ± 1,67	20,92 ± 1,61	0,19782	0,32419	0,23821
3MSOP	1,83 ± 0,35	1,70 ± 0,15	1,77 ± 0,17	1,71 ± 0,12	0,38811	0,85328	0,46672
4MSOB	15,41 ± 2,75	14,59 ± 1,10	14,98 ± 1,24	14,36 ± 1,28	0,37575	0,74690	0,37549
5MSOP	0,83 ± 0,22	0,84 ± 0,05	0,61 ± 0,23	0,73 ± 0,14	0,31126	0,12908	0,26445
7MSOH	0,34 ± 0,04	0,29 ± 0,02	0,33 ± 0,02	0,24 ± 0,02	0,00029	0,00232	0,00001
8MSOO	1,96 ± 0,21	1,66 ± 0,09	1,59 ± 0,10	1,25 ± 0,20	0,00003	0,00183	0,00162
4MP	0,00 ± 0,00	0,25 ± 0,05	0,00 ± 0,00	0,00 ± 0,00	-	0,00000	-
5MH	0,00 ± 0,00	0,20 ± 0,03	0,00 ± 0,00	0,00 ± 0,00	-	0,00000	-
I3M	1,69 ± 0,32	1,77 ± 0,12	1,83 ± 0,11	1,87 ± 0,11	0,19607	0,15007	0,56657
1MOI3M	0,55 ± 0,14	0,38 ± 0,09	0,50 ± 0,06	0,40 ± 0,08	0,03175	0,60617	0,03129
4MOI3M	0,23 ± 0,03	0,20 ± 0,02	0,19 ± 0,03	0,20 ± 0,02	0,01229	0,56312	0,59417

Supplementary Table 6. Glucosinolate contents in leaves of *bcat3-1* plants after repeated administrations of BCAAs.

Glucosinolate content [µmol/g dry weight]

GS	*bcat3-1/* Ile	*bcat3-1* / Leu	*bcat3-1* / Val	*bcat3-1* / control	t-test Ile	t-test Leu	t-test Val
Total Met GS	19,76 ± 1,03	19,08 ± 1,18	17,13 ± 1,71	18,15 ± 1,52	0,06791	0,27844	0,30172
Total GS	24,23 ± 1,16	23,43 ± 1,40	21,09 ± 2,44	21,97 ± 1,81	0,03559	0,16506	0,48925
3MSOP	1,17 ± 0,07	1,07 ± 0,08	1,00 ± 0,10	1,05 ± 0,08	0,02253	0,64950	0,35824
4MSOB	12,42 ± 0,64	12,52 ± 0,86	11,48 ± 1,08	12,20 ± 1,02	0,67913	0,58506	0,26334
5MSOP	3,33 ± 0,23	3,25 ± 0,21	2,87 ± 0,32	3,03 ± 0,25	0,05793	0,13522	0,36275
7MSOH	0,64 ± 0,07	0,55 ± 0,05	0,47 ± 0,08	0,54 ± 0,14	0,16517	0,87662	0,32841
8MSOO	2,20 ± 0,18	1,69 ± 0,09	1,31 ± 0,21	1,33 ± 0,13	0,00000	0,00036	0,87222
4MP	1,11 ± 0,19	1,24 ± 0,08	0,83 ± 0,21	0,78 ± 0,09	0,00235	0,00000	0,55405
5MH	0,49 ± 0,04	0,57 ± 0,05	0,42 ± 0,08	0,41 ± 0,05	0,01285	0,00024	0,96781
I3M	2,07 ± 0,16	2,03 ± 0,16	2,15 ± 0,37	2,09 ± 0,24	0,89838	0,62648	0,72243
1MOI3M	0,51 ± 0,16	0,33 ± 0,12	0,36 ± 0,15	0,36 ± 0,10	0,07994	0,56736	0,99480
4MOI3M	0,29 ± 0,02	0,19 ± 0,01	0,20 ± 0,08	0,18 ± 0,02	0,00000	0,48595	0,49998