

Supplemental Table 1. SPM findings showing the locations of significant changes of gray matter concentration in patients with MS compared to age and sex-matched healthy controls

Cerebral region	Cluster size (mm ³)	MNI co-ordinates			T value	Cohen's d	Height threshold
		x	y	z			
Left cingulate mid portion, BA 23	25110	7	-12	39	19.02	5.69	0.001
Right cingulate anterior portion BA 24		-11	34	18	16.41	2.29	
Right straight gyrus, frontal superior and medial orbital gyrus, olfactory gyrus (BA 11)		-9	25	-19	16.32	2.8	
Left amygdala		19	1	-17	10.57	3.15	
Left parahippocampal gyrus (BA 28)		17	-6	-27	9.56	2.21	
Left straight gyrus, frontal superior and medial orbital gyrus, olfactory gyrus (BA 11)		9	24	-17	9.65	2.88	
Right lingual gyrus (BA 37)		-23	-52	-7	8.91	2.54	
Right thalamus		-5	-20	0	8.49	2.53	
Left lingual gyrus (BA 37)		23	-54	-7	8.04	2.4	
Right Putamen		-32	1	-5	7.81	2.33	
Left Putamen		33	0	8	7.76	2.31	

Left temporal inferior gyrus (BA 20)	2498	52	-28	-23	17.56	5.24
Right parahippocampal gyrus (BA 28)	518	-17	-3	-30	12.23	3.65
Right temporal inferior gyrus (BA 20)	1448	-48	-26	-22	11.39	3.4
Right paracentral lobule	725	-14	-32	64	10.71	3.19
Right precuneus (BA 5)		-14	-45	63	8.35	2.49
Right frontal inferior gyrus (BA 45)	428	-45	36	8	10.35	3.08
Left parietal superior gyrus (BA 5)	1227	15	-45	61	10.31	3.07
Left frontal superior gyrus (BA 10)	266	13	58	20	8.54	2.55
Left precentral gyrus (BA 6)	152	31	-9	53	8.33	2.48
Right frontal inferior orbital gyrus (BA 47)	198	-28	30	-14	8.21	2.45
Right frontal medial gyrus (BA 32)	274	-12	53	21	8.04	2.4
Right frontal inferior operculum (BA 44)	278	-35	14	31	7.56	2.25

BA, Brodmann area; MNI, Montreal Neurological Institute coordinates

family-wise error corrected at the threshold of 0.05 for whole brain analysis

??T-value: higher T-values implicate stronger differences relative to variation.