

Table S1 The susceptibility values (ppm) of the deep brain nuclei across groups

	Group	Numbers	Mean	SD	SE	95% CI	Range	
L_putamen	ns-HC	24	0.038	0.013	0.003	0.032-0.043	0.020	0.069
	ns-PD	17	0.038	0.012	0.003	0.032-0.044	0.010	0.059
	s-HC	23	0.037	0.014	0.003	0.031-0.043	0.016	0.070
	s-PD	18	0.032	0.013	0.003	0.025-0.038	0.011	0.069
	Total	82	0.036	0.013	0.001	0.033-0.039	0.010	0.070
L_caudate	ns-HC	24	0.028	0.008	0.002	0.025-0.031	0.016	0.045
	ns-PD	17	0.025	0.008	0.002	0.021-0.029	0.012	0.039
	s-HC	23	0.025	0.008	0.002	0.022-0.028	0.008	0.043
	s-PD	18	0.026	0.008	0.002	0.022-0.03	0.011	0.039
	Total	82	0.026	0.008	0.001	0.024-0.028	0.008	0.045
L_globus	ns-HC	24	0.078	0.031	0.006	0.065-0.091	0.018	0.169
	ns-PD	17	0.071	0.019	0.005	0.062-0.081	0.033	0.106
	s-HC	23	0.062	0.026	0.005	0.051-0.074	0.027	0.147
	s-PD	18	0.058	0.018	0.004	0.049-0.067	0.027	0.083
	Total	82	0.068	0.026	0.003	0.062-0.074	0.018	0.169
L_red nucleus	ns-HC	24	0.065	0.025	0.005	0.054-0.075	0.010	0.133
	ns-PD	17	0.078	0.021	0.005	0.067-0.089	0.058	0.116
	s-HC	23	0.059	0.018	0.004	0.051-0.067	0.031	0.099
	s-PD	18	0.065	0.019	0.005	0.056-0.075	0.030	0.099
	Total	82	0.066	0.022	0.002	0.061-0.071	0.010	0.133
L_SNc	ns-HC	24	0.040	0.022	0.004	0.031-0.049	0.011	0.090
	ns-PD	17	0.047	0.017	0.004	0.038-0.056	0.016	0.070
	s-HC	23	0.030	0.012	0.002	0.025-0.035	0.010	0.056
	s-PD	18	0.033	0.010	0.002	0.028-0.038	0.015	0.050
	Total	82	0.037	0.017	0.002	0.033-0.041	0.010	0.090
L_thalamus	ns-HC	24	0.007	0.005	0.001	0.005-0.010	-0.003	0.019
	ns-PD	17	0.006	0.005	0.001	0.003-0.008	0.000	0.020
	s-HC	23	0.005	0.007	0.001	0.002-0.008	-0.004	0.025
	s-PD	18	0.006	0.006	0.001	0.003-0.009	-0.005	0.018
	Total	82	0.006	0.006	0.001	0.005-0.007	-0.005	0.025
L_SNr	ns-HC	24	0.083	0.029	0.006	0.070-0.095	0.025	0.152
	ns-PD	17	0.088	0.023	0.006	0.076-0.100	0.046	0.123
	s-HC	23	0.076	0.017	0.003	0.069-0.084	0.039	0.111
	s-PD	18	0.080	0.027	0.006	0.067-0.093	0.033	0.146
	Total	82	0.081	0.024	0.003	0.076-0.087	0.025	0.152

Table S1 (continued)

Table S1 (continued)

	Group	Numbers	Mean	SD	SE	95% CI	Range	
R_caudate	ns-HC	24	0.029	0.009	0.002	0.026-0.033	0.016	0.048
	ns-PD	17	0.025	0.009	0.002	0.021-0.030	0.009	0.043
	s-HC	23	0.028	0.008	0.002	0.025-0.031	0.012	0.043
	s-PD	18	0.025	0.009	0.002	0.021-0.030	0.013	0.051
	Total	82	0.027	0.009	0.001	0.025-0.029	0.009	0.051
R_putamen	ns-HC	24	0.038	0.014	0.003	0.032-0.043	0.016	0.064
	ns-PD	17	0.035	0.012	0.003	0.029-0.041	0.012	0.053
	s-HC	23	0.040	0.018	0.004	0.032-0.048	0.017	0.092
	s-PD	18	0.031	0.009	0.002	0.026-0.035	0.016	0.048
	Total	82	0.036	0.014	0.002	0.033-0.039	0.012	0.092
R_globus	ns-HC	24	0.079	0.029	0.006	0.067-0.091	0.017	0.170
	ns-PD	17	0.073	0.021	0.005	0.062-0.084	0.044	0.134
	s-HC	23	0.064	0.023	0.005	0.054-0.074	0.031	0.124
	s-PD	18	0.056	0.017	0.004	0.048-0.064	0.026	0.092
	Total	82	0.069	0.025	0.003	0.063-0.074	0.017	0.170
R_red nucleus	ns-HC	24	0.068	0.026	0.005	0.058-0.079	0.016	0.148
	ns-PD	17	0.078	0.019	0.005	0.068-0.088	0.054	0.125
	s-HC	23	0.063	0.021	0.004	0.054-0.072	0.014	0.103
	s-PD	18	0.067	0.018	0.004	0.058-0.076	0.028	0.096
	Total	82	0.069	0.022	0.002	0.064-0.074	0.014	0.148
R_SNc	ns-HC	24	0.040	0.022	0.004	0.03-0.049	0.015	0.105
	ns-PD	17	0.042	0.016	0.004	0.034-0.05	0.025	0.081
	s-HC	23	0.035	0.015	0.003	0.028-0.041	0.005	0.062
	s-PD	18	0.032	0.012	0.003	0.026-0.038	0.009	0.054
	Total	82	0.037	0.017	0.002	0.033-0.041	0.005	0.105
R_thalamus	ns-HC	24	0.008	0.005	0.001	0.006-0.01	-0.001	0.019
	ns-PD	17	0.006	0.005	0.001	0.004-0.008	-0.001	0.017
	s-HC	23	0.005	0.007	0.001	0.002-0.008	-0.005	0.030
	s-PD	18	0.007	0.005	0.001	0.004-0.009	0.000	0.017
	Total	82	0.006	0.006	0.001	0.005-0.008	-0.005	0.030
R_SNr	ns-HC	24	0.091	0.028	0.006	0.08-0.103	0.037	0.146
	ns-PD	17	0.090	0.025	0.006	0.077-0.103	0.044	0.133
	s-HC	23	0.080	0.017	0.004	0.072-0.087	0.049	0.115
	s-PD	18	0.073	0.022	0.005	0.062-0.084	0.038	0.122
	Total	82	0.084	0.024	0.003	0.078-0.089	0.037	0.146

SNc, substantia nigra pars compacta; SNr, substantia nigra pars reticulata.

Table S2 The regions of interest (ROIs) with significant differences in QSM values (ppm) across groups (controlling for disease duration, age and TIV)

	Main effect		Pairwise comparison					
	Group		Group I-J	Mean Diff (I-J)	SE	P' (*)	95% CI	
	F	P (*)					Lower	Upper
R_GP	3.973	0.011*	ns-HC – ns-PD	0.013	0.01	1.000	-0.015	0.04
			ns-HC – s-HC	0.015	0.007	0.217	-0.004	0.033
			ns-HC – s-PD	0.028	0.009	0.016*	0.004	0.052
			ns-PD – s-HC	0.002	0.01	1.000	-0.026	0.03
			ns-PD – s-PD	0.015	0.008	0.437	-0.007	0.037
			s-HC – s-PD	0.013	0.009	0.92	-0.011	0.037

Multiple pairwise comparisons were corrected by Bonferroni method, with a pre-adjusted significance (*) level at $P' < 0.05$. GP, globus pallidum; I-J means the two groups for comparison; SE, standard error; CI, confidence interval.

Table S3 Two-way MANCOVA and pairwise comparisons in QSM values (ppm) across groups (controlling for disease duration, age and TIV)

Source		Mean square	F	Partial eta square	Pairwise comparison					
					Group I>J	Mean Diff (I-J)	SE	P' (*)	95% CI	
									Lower	Upper
Smoking status	R_GP	0.004	7.631	0.092	Non-smokers > smokers	0.015	0.005	0.007*	0.004	0.025
	L_GP	0.004	6.746	0.083		0.015	0.006	0.011*	0.003	0.026
	R_SNc	0.001	4.649	0.058		0.008	0.004	0.034*	0.001	0.016
	L_SNc	0.003	10.046	0.118		0.012	0.004	0.002*	0.004	0.019
	R_SNr	0.005	10.046	0.118		0.015	0.005	0.002*	0.006	0.025

The threshold of pre-adjusted significance (*) was regarded as $P' < 0.05$ corrected by Bonferroni method. GP, globus pallidum; RN, red nucleus; SNc, substantia nigra compacta; SNr, substantia nigra pars reticulata.

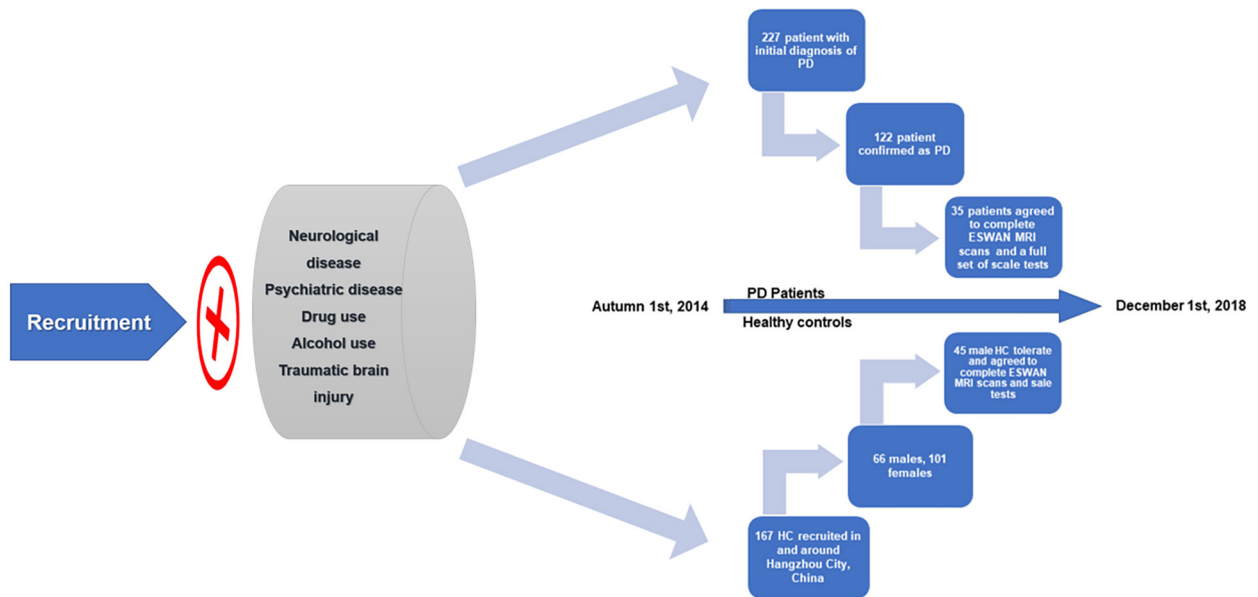


Figure S1 The flow chart of the recruitment of Parkinson's disease (PD) patients.

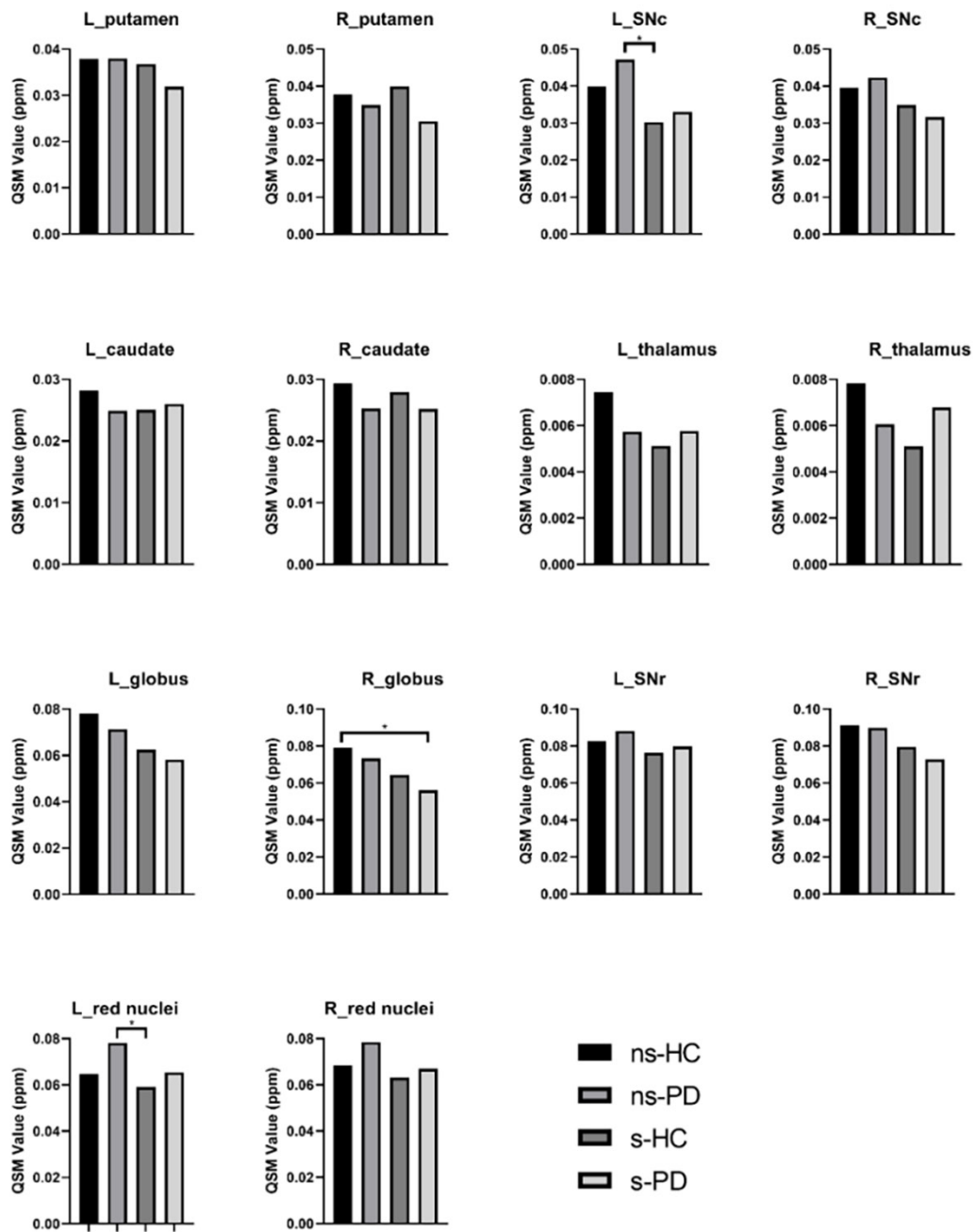


Figure S2 The ROIs with significant differences in QSM values (ppm) across groups. *, the significance level was at $P < 0.05$. SNC, substantia nigra pars compacta; SNr, substantia nigra pars reticulata.