Table S1. Statistical Details

One-way ANOVA

	F(DFn, DFd)	P value
Firing rate	$F_{(2, 51)} = 3.738$	$p < 0.05$
Coefficient of Variation	$F_{(2, 51)} = 4.111$	$p < 0.05$
ECoG Power spectrum (AUC values)	$F_{(2, 51)} = 1.86$	n.s.
LFP Power spectrum (AUC values)	$F_{(2, 51)} = 1.86$	$p < 0.05$
Coherence EcoG-SNr spikes (AUC values)	$F_{(2, 51)} = 9.351$	$p < 0.05$
Coherence LFP-SNr spikes (AUC values)	$F_{(2, 51)} = 12.52$	$p < 0.05$
Coherence ECoG-LFP (AUC values)	$F_{(2, 51)} = 1.469$	n.s.
Nigral GABA basal levels	$F_{(2, 27)} = 0.123$	n.s.
Nigral GLU basal levels	$F_{(2, 27)} = 1.95$	n.s.
SERT expression	$F_{(2, 12)} = 10.14$	$p < 0.05$
5-HT$_{1A}$ expression	$F_{(2, 12)} = 32.77$	$p < 0.05$

RM two-way ANOVA
F(DFn, DFd), p value

	Group	Drug
Local administration of buspirone		
Firing Rate	$F_{(2, 13)} = 3.38$	$F_{(4, 52)} = 48.74$*
Sistemic administration of buspirone		
Firing Rate	$F_{(2, 20)} = 1.158$	$F_{(4, 80)} = 2.043$
Coefficient of Variation	$F_{(2, 20)} = 1.209$	$F_{(4, 80)} = 0.852$
% effect on ECoG	$F_{(2, 20)} = 0.339$	$F_{(4, 80)} = 9.816$*
% effect on LFP	$F_{(2, 20)} = 0.027$	$F_{(4, 80)} = 4.034$*
% effect on coherence EcoG/SNr spikes	$F_{(2, 20)} = 1.785$	$F_{(4, 80)} = 0.197$
% effect on coherence LFP/SNr spikes	$F_{(2, 20)} = 0.178$	$F_{(4, 80)} = 2.633$*

% effect on coherence ECoG/LFP	$F_{(2, 20)} = 0.038$	$F_{(4, 80)} = 5.718^*$
AUC (Net area) of GABA	$F_{(2, 24)} = 6.408^*$	$F_{(15, 360)} = 2.611^*$
AUC (Net area) of GLU	$F_{(2, 23)} = 5.654^*$	$F_{(15, 345)} = 3.009^*$
Sistemic administration of 8-OHDPAT		
Firing Rate	$F_{(2, 12)} = 5.917^*$	$F_{(4, 48)} = 5.467^*$
Coefficient of Variation	$F_{(2, 12)} = 1.22$	$F_{(4, 48)} = 1.127$
% effect on ECoG	$F_{(2, 12)} = 1.231$	$F_{(4, 48)} = 1.04$
% effect on LFP	$F_{(2, 12)} = 0.228$	$F_{(4, 48)} = 2.37$
% effect on coherence EcoG/SNr spikes	$F_{(2, 12)} = 0.027$	$F_{(4, 48)} = 2.977^*$
% effect on coherence LFP/SNr spikes	$F_{(2, 12)} = 0.454$	$F_{(4, 48)} = 1.1$
% effect on coherence ECoG/LFP	$F_{(2, 12)} = 2.609^*$	$F_{(4, 48)} = 2.796^*$