

Effect of the i.p. administration of XE991 (3mg/kg) on the firing rate of DA neurons in the absence of a GABA_A antagonist

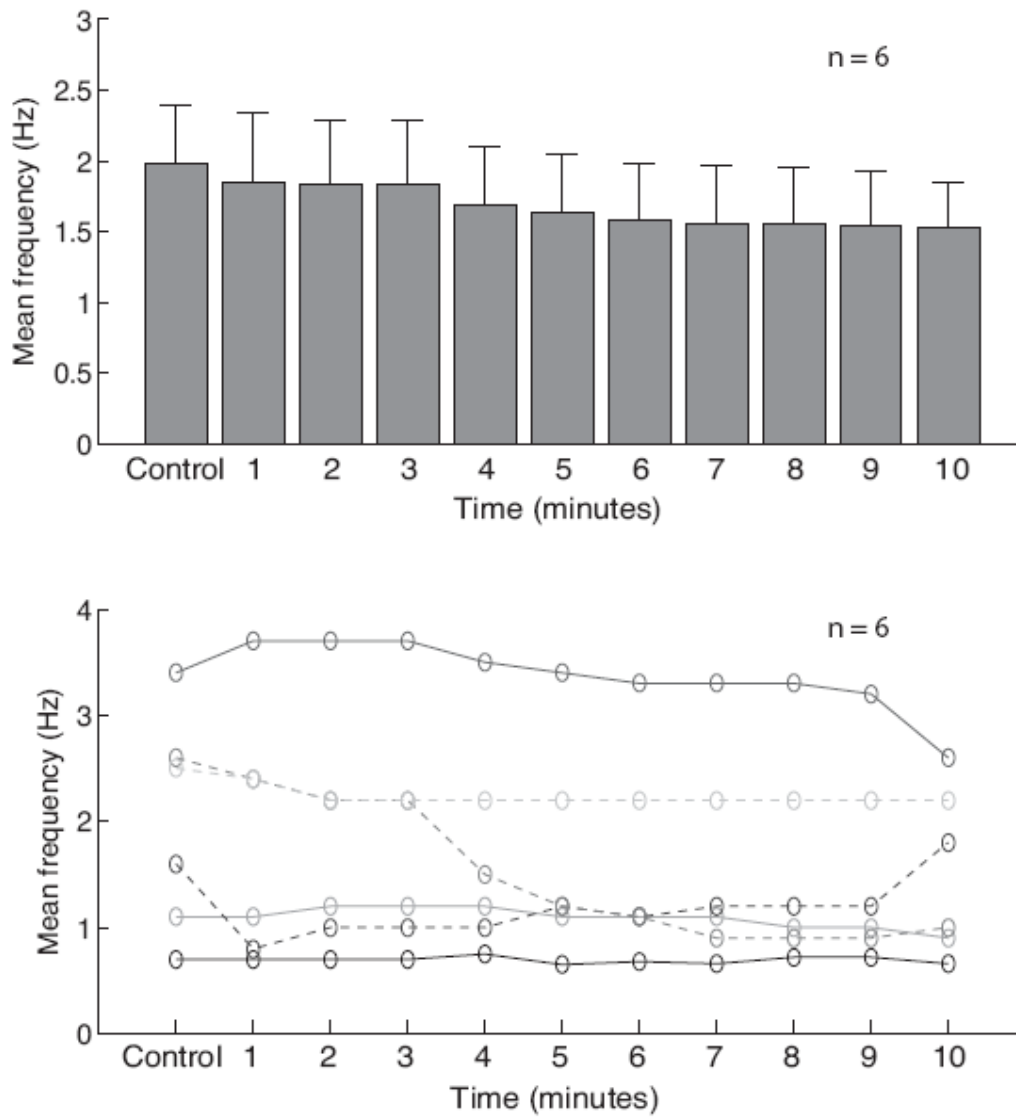


Fig. S1. A variable effect was observed in these experiments, with some cells being inhibited (N=6). (a) Mean frequency over time for the six cells. (b) Single cell frequency over time.

Burst interspike interval

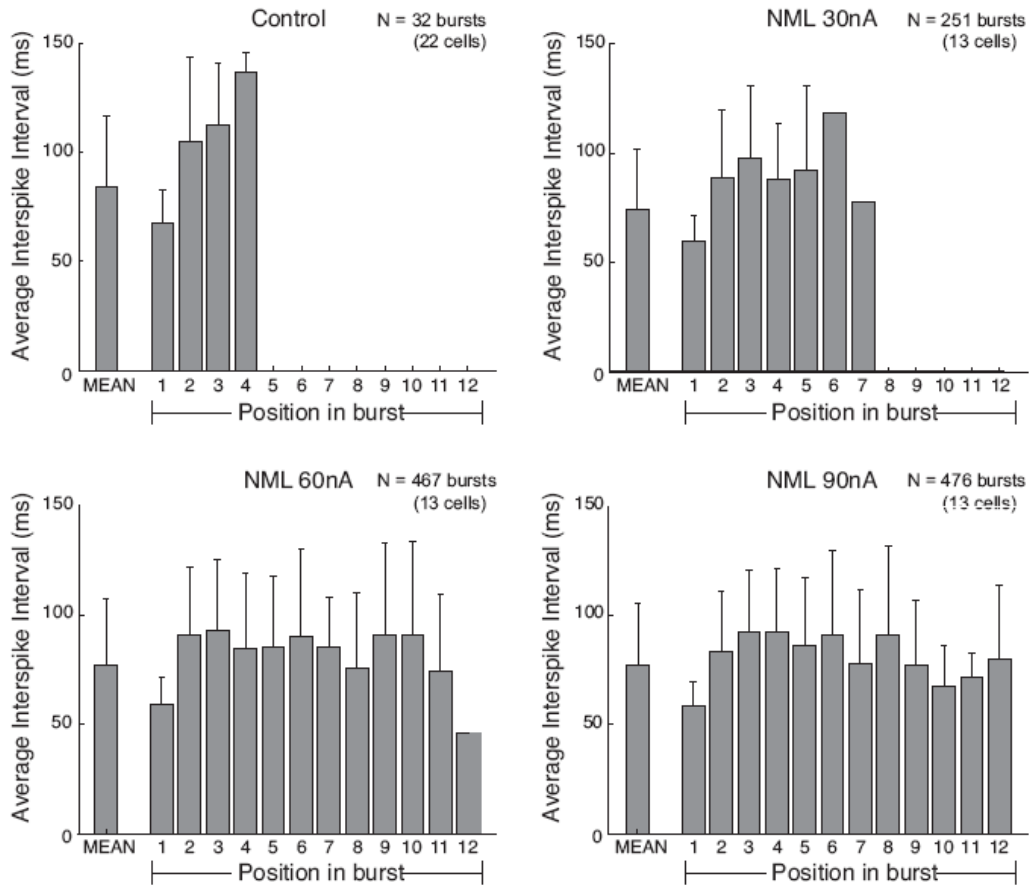


Fig. S2. Comparison of the interspike intervals. Both spontaneous bursts (control) and NML-induced bursts are represented. Note the similarity of all parameters in all cases. Means and SD's are shown in order to facilitate the comparison with data of Grace and Bunney.

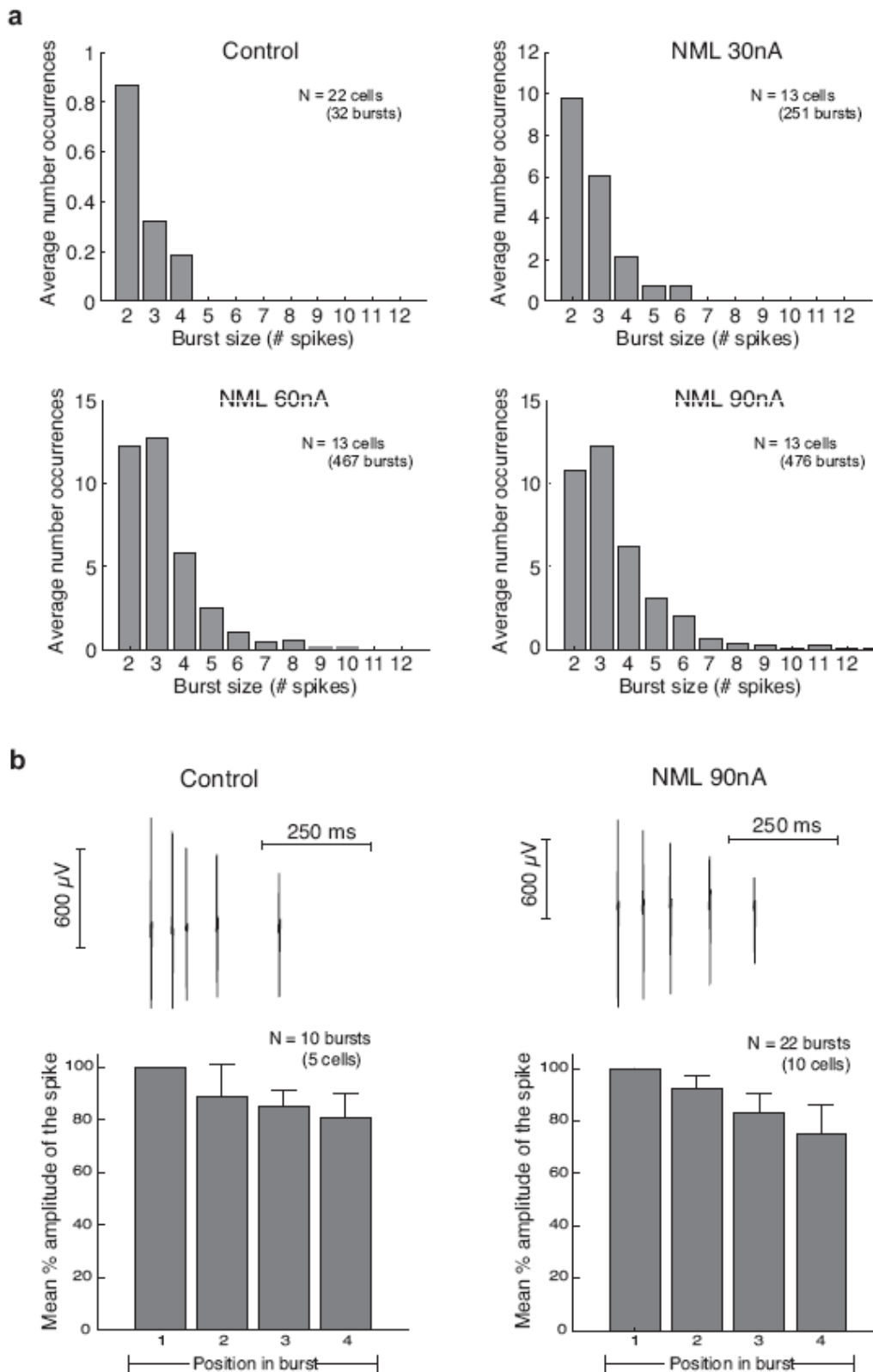


Fig. S3. (a) Relative frequency of the bursts as a function of their number of spikes. Doublets are indicated as well. **(b)** Changes in spike amplitude within bursts. One burst from our experiments (both spontaneous and NML-induced) is shown. Summary histograms for the four first ISI's are displayed. Means and SD's are shown in order to facilitate the comparison with data of Grace and Bunney, as in Fig. S2.

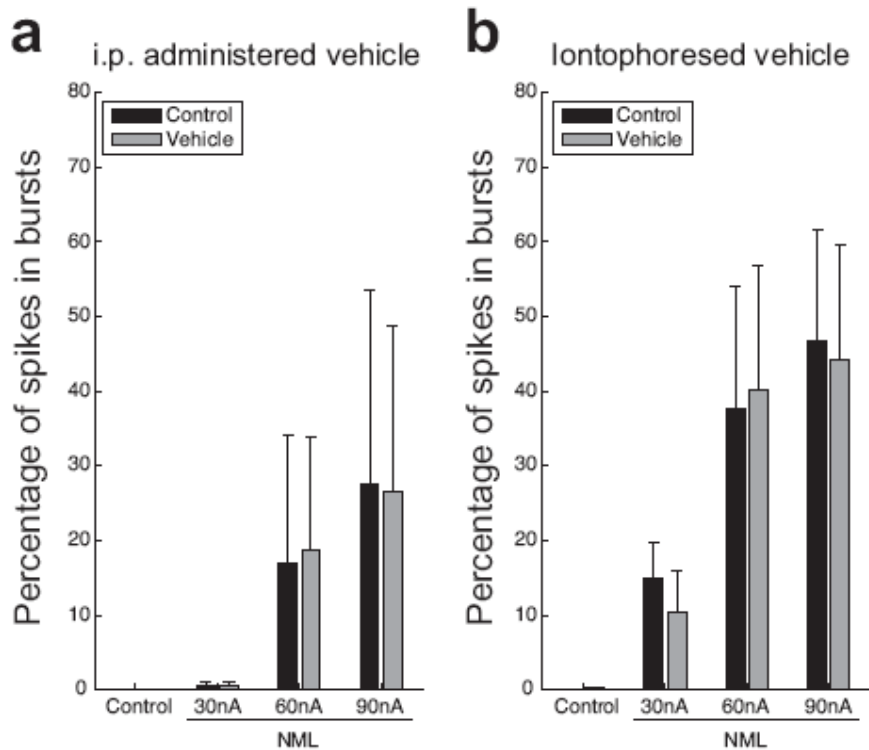


Fig. S4. (a) i.p. experiments (N=3). (b) Iontophoresis experiments (100nA) (N=5). The vehicle had no effect on the percentage of spikes in bursts in either condition.

Effect of M-channel blockade on the distribution of short interspike intervals

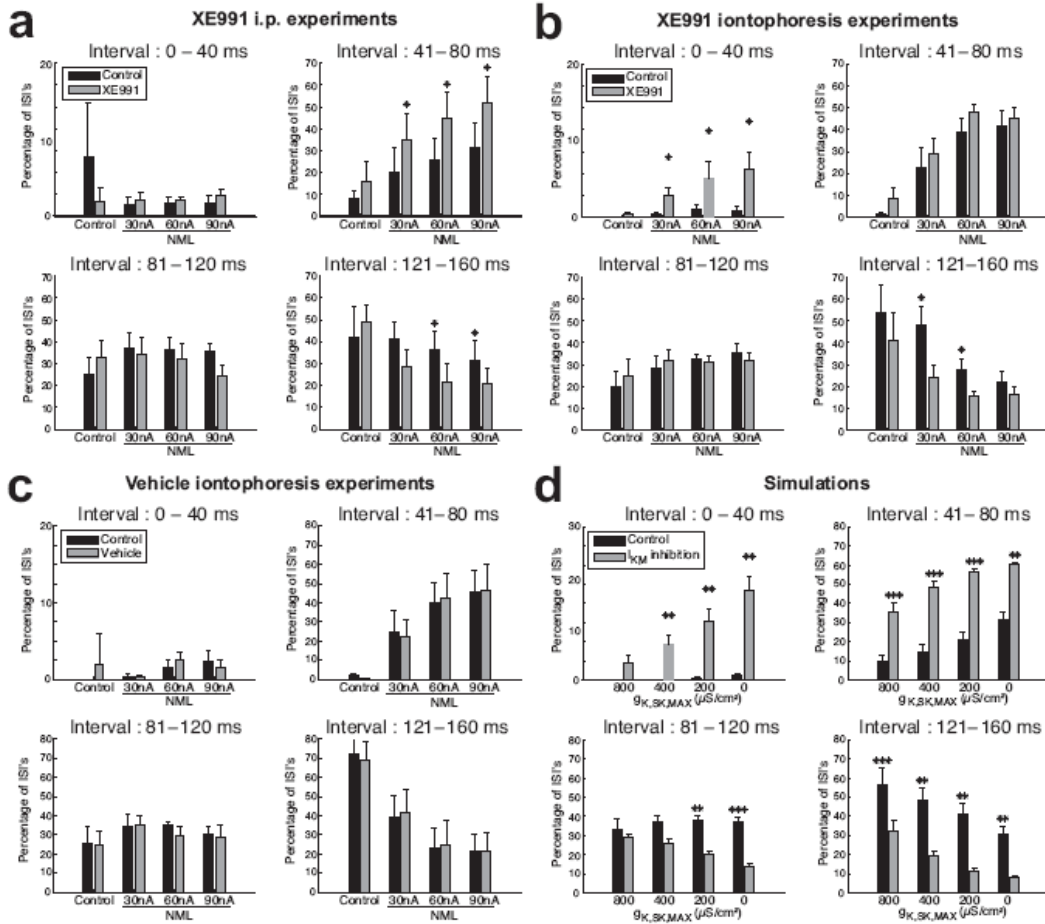


Fig. S5. ISI's were classified into four categories (0-40, 41-80, 81-120 and 121-160 ms, respectively). Application of XE991 significantly increased the percentage of ISI's in the shorter intervals (**a**, intraperitoneal experiments; and **b**, iontophoresis experiments), whereas application of vehicle had no effect on this distribution (**c**). (**d**) Simulations showed a qualitatively similar, but more robust effect. (* $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$). Note that the ordinate scale is expanded in the upper left side of each panel.

Simulations ($I_{K,M}$ conductance five times lower)

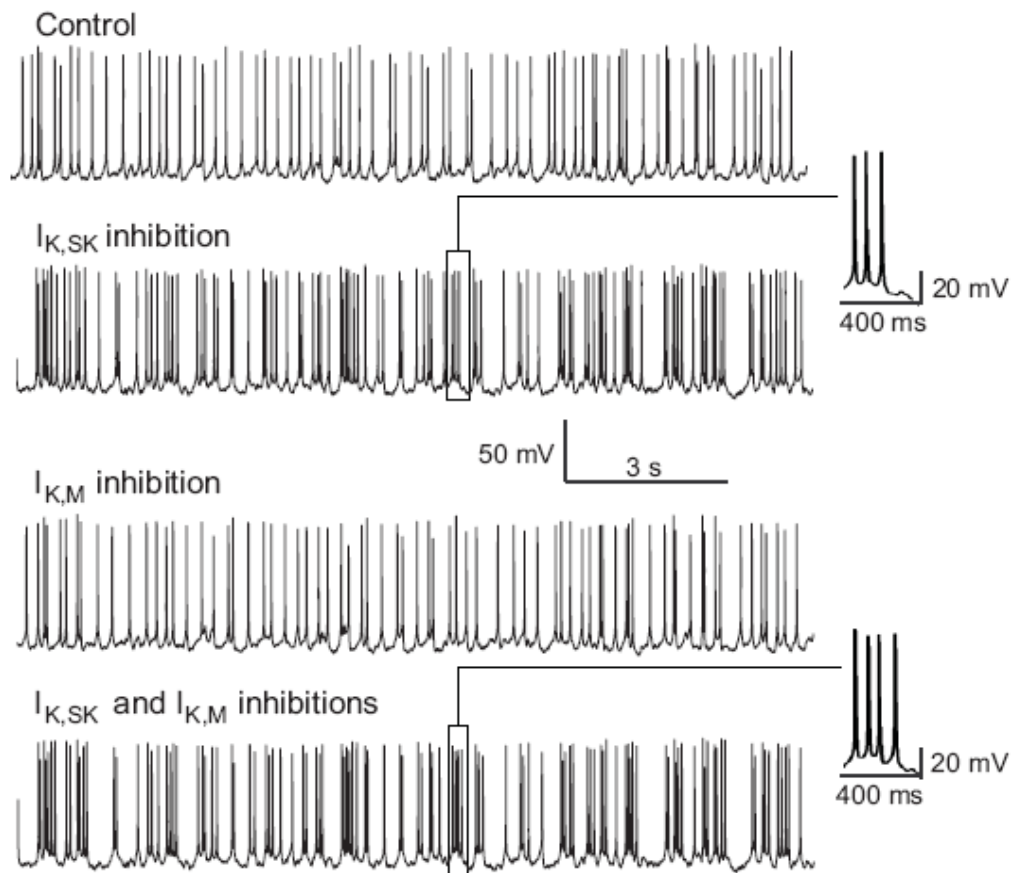


Fig. S6. Effect of M-current blockade on a DA neuron model when the M-current conductance was identical to the one reported experimentally (Koyama and Appel, 2006).

Table S1. SR95531 blocks the inhibitory effect of GABA on the firing of DA neurons

Blockade by SR95531 of the decrease in firing frequency induced by GABA

N=6; *, p<0.05	Control	GABA	SR95531	SR95531 + GABA
Firing frequency (Hz)	2.23 ± 0.40	0.92 ± 0.18	2.69 ± 0.32	2.44 ± 0.23

