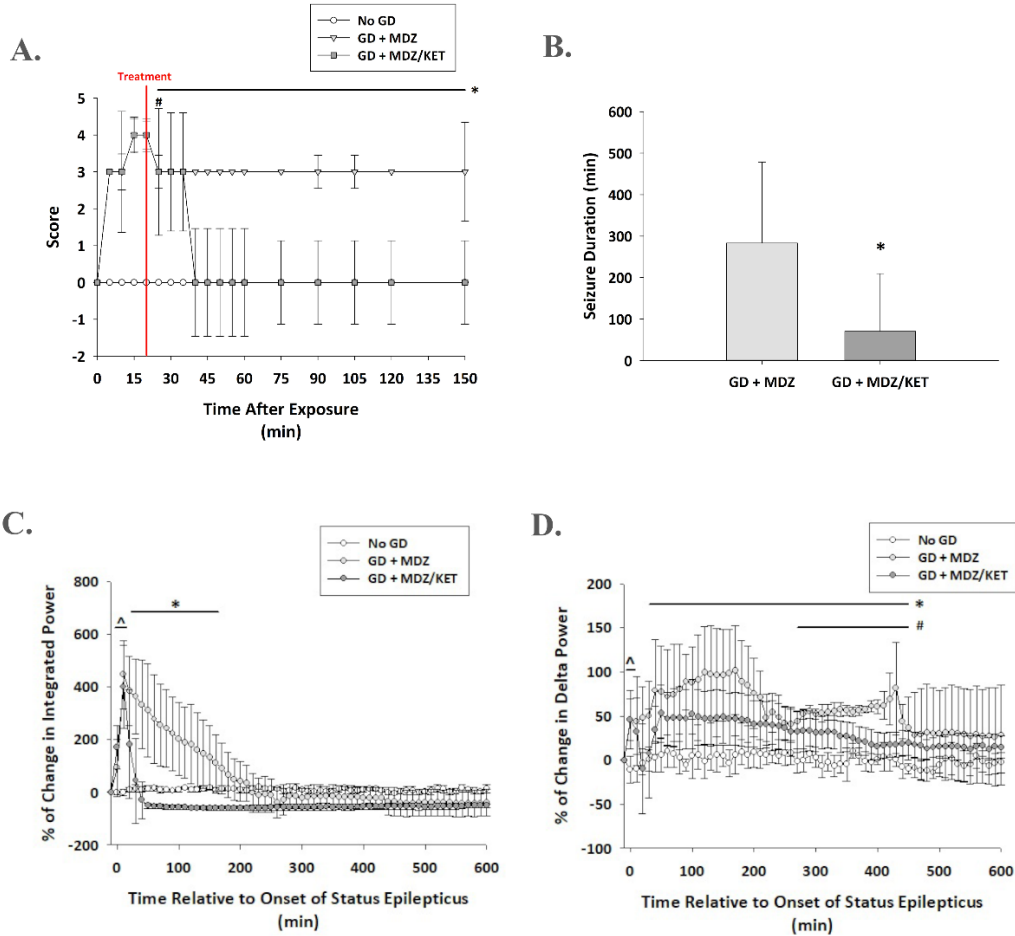


**Figure S1.** Effect of delayed midazolam treatment combined with ketamine on survival following GD-induced status epilepticus in *Es1<sup>-/-</sup>* mice. Mice exposed to GD and treated with midazolam monotherapy (GD + MDZ) at 15 min after seizure onset had a significantly lower percentage of survival compared to that of the saline control (No GD) group. In contrast, soman-exposed mice that were treated with a combination of midazolam and ketamine (GD + MDZ/KET) had a higher percentage of survival that was not significantly different from the percentage of survival of the No GD group. \*  $p < 0.05$ , compared to No GD group.



**Figure S2.** Effect of ketamine as an adjunct to delayed midazolam treatment on seizure activity and severity in soman-exposed *Es1<sup>-/-</sup>* mice. **(A)** SC exposure to 80 µg/kg of GD resulted in the appearance of behavioral seizure signs within 5 min of exposure. The severity of toxic signs was scored following a modified Racine scale: 0, no abnormality; 1, mastication, tongue fasciculations, oral tonus; 2, head nodding and/or tremors; 3, forelimb clonus or tonus, body tremors; 4, rearing with convulsions; and 5, rearing and falling with convulsions. Toxic signs for the midazolam/ketamine group (GD + MDZ/KET;  $n = 8$ ) were transiently reduced in severity within 10 min of treatment (indicated by a red line; 15 min after EEG seizure onset). In contrast, toxic signs in the midazolam monotherapy group (GD + MDZ;  $n = 6$ ) did not subside. \*  $p < 0.05$ , GD + MDZ compared to no agent control (No GD;  $n = 6$ ); #  $p < 0.05$ , GD + MDZ/KET compared to No GD. **(B)** Soman exposure elicited seizure that had an average duration of ( $\pm$  SD)  $283.2 \pm 195.8$  min in the GD + MDZ group, while an average of  $70.5 \pm 139.2$  min was observed in the GD + MDZ/KET group. Tracings of average percentages of relative change in **(C)** integrated power (freq. range) and **(D)** delta (0.1–4 Hz) EEG frequency are shown over a period of 600 min (10 h). In *Es1<sup>-/-</sup>* mice, the midazolam/ketamine combination therapy was able to reduce over time the increase in integral power and delta power immediately following administration of treatment at 15 min following onset of status epilepticus. \*  $p < 0.05$ , GD + MDZ ( $n = 6$ ) compared to No GD ( $n = 5$ ) group; ^  $p < 0.05$ , GD + MDZ/KET ( $n = 8$ ) compared to No GD group.