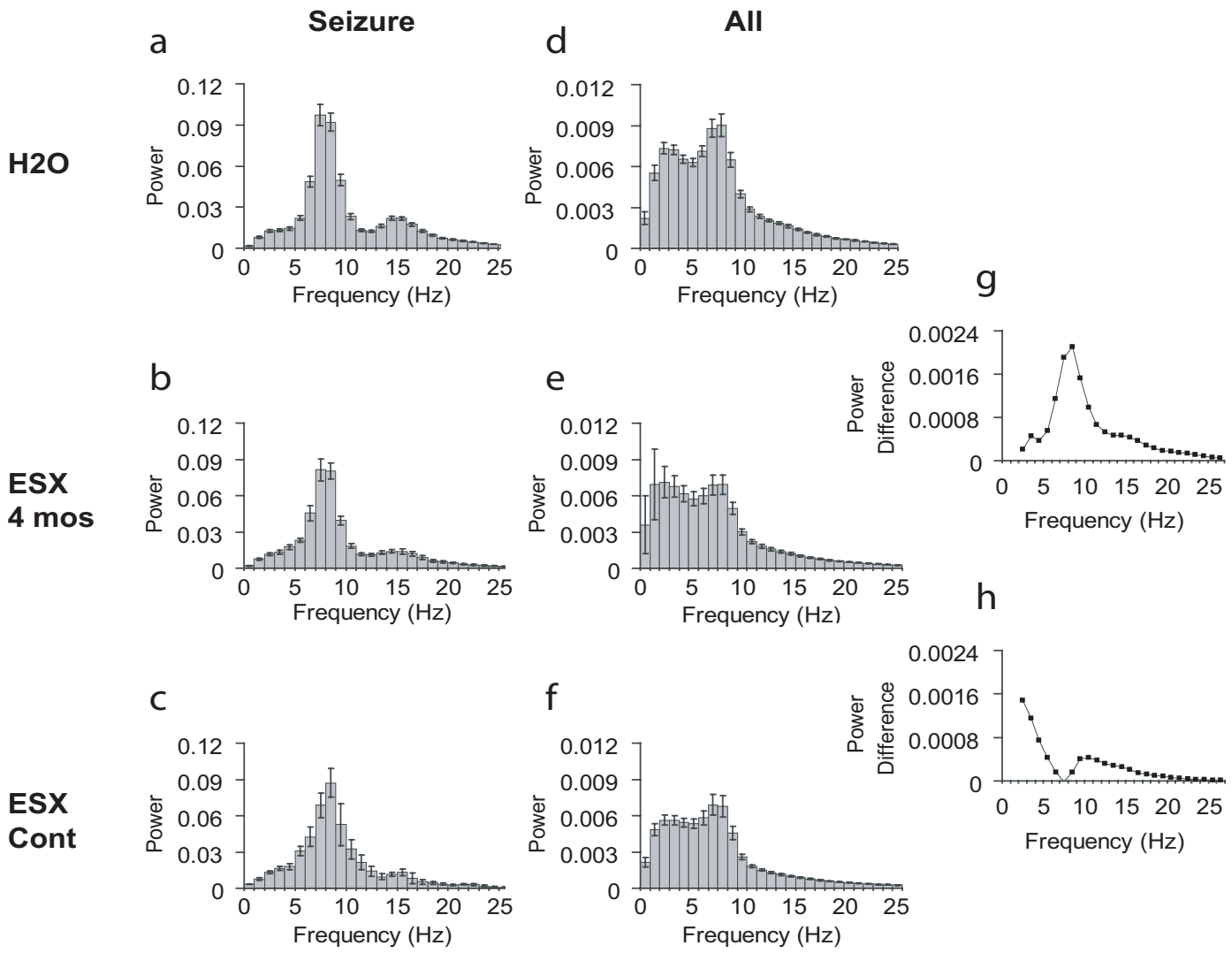
Supplementary Figure 1



Supplementary Figure 1. Power spectral analysis confirms that SWD frequencies are suppressed in animals treated with early ethosuximide. **A-C.** Power spectra of marked SWD episodes in WAG/Rij rats on normal drinking water (H2O) (**A**), on ethosuximide 300 mg/kg/d from p21 through age 5 months (ESX 4 months) (**B**), or on ethosuximide 300 mg/kg/d from p21 onward (ESX continuous group) (**C**). A major peak is seen at 7-9 Hz, with minor peaks at 3-4 Hz and 14-16 Hz as described previously (Drinkenburg et al, 1993). Data were similar at all time points, and were therefore pooled across time points (1d through 90d, excluding -1d) for each animal in all power spectral analyses. **D-F.** Power spectra of all EEG data including SWD episodes (excluding artifact and slow wave sleep) in WAG/Rij rats from the same groups as in A-C. **G.** Calculating the difference between H2O (**D**) and ESX 4 months (**E**) groups demonstrates peaks at ~3, 8 and 15Hz due to SWD present in the H2O group but not in the early treatment group (ESX 4 months). **H.** Calculating the difference between ESX 4 months (**E**) and ESX continuous (**F**) groups does not reveal peaks at the characteristic SWD frequencies.

Presence of SWD activity was further quantified by correlation analyses with the SWD power spectrum (**A**). Thus the difference between the H2O and ESX 4 month groups (**G**) was highly correlated with the SWD spectrum (**A**), suggesting the H2O group has much more SWD than the ESX 4 month group (Pearson correlation $r = 0.955$, $P < 0.000001$, two-tailed t-test). In contrast, the difference between the ESX 4 month and ESX continuous groups (**H**) was not significantly correlated with the SWD spectrum (**A**), suggesting the ESX 4 month group does not have more SWD than the ESX continuous group ($r = -0.259$, $P = 0.3$). As expected, the difference between the H2O (**D**) and ESX continuous (**F**) groups (difference not shown) was also highly correlated with the SWD spectrum (**A**), suggesting the H2O group has much more SWD than the ESX continuous group ($r = 0.795$, $P = 0.00008$, two-tailed t-test).

References: Drinkenburg, W.H. et al. Aberrant transients in the EEG of epileptic rats: a spectral analytical approach. Physiology & Behavior 54, 779-783 (1993).