Electronic Supplementary Material (ESI) for Organic & Biomolecular Chemistry.

Synthetic analogs of stryphnusin isolated from the marine sponge *Stryphnus fortis* inhibit acetylcholinesterase with no effect on muscle function or neuromuscular transmission

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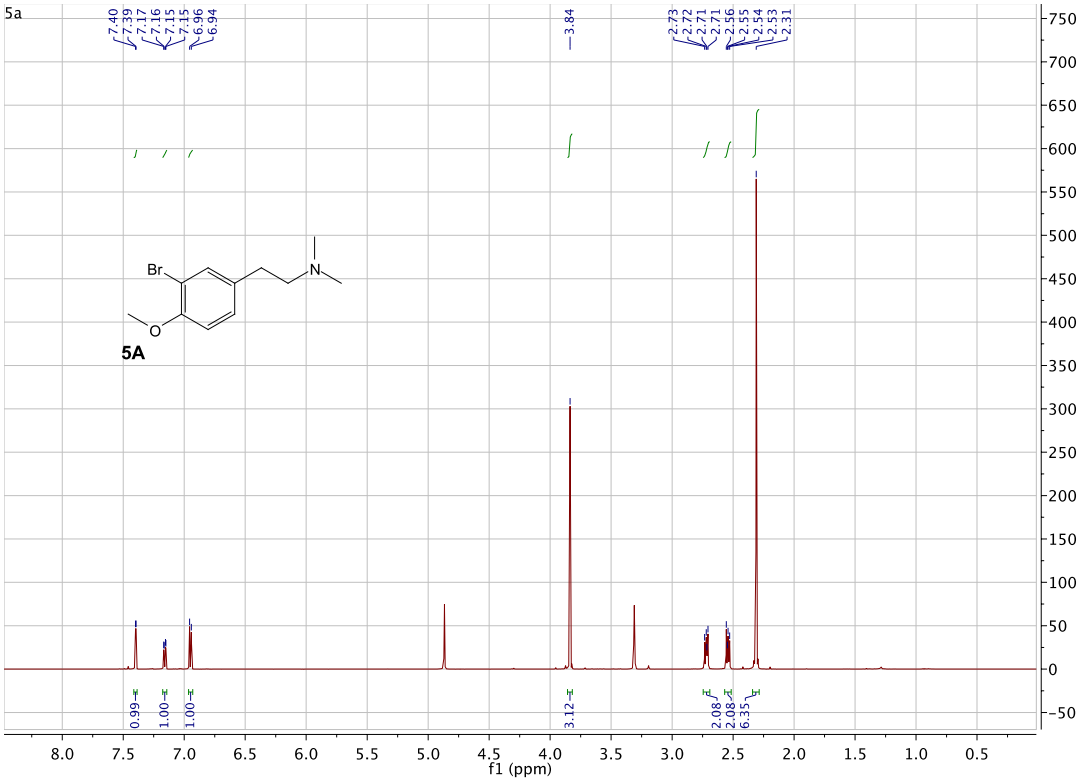
Content

Figure S1. ^{1}H-NMR and ^{13}C-NMR spectrum of **5a** in methanol-*d4.*



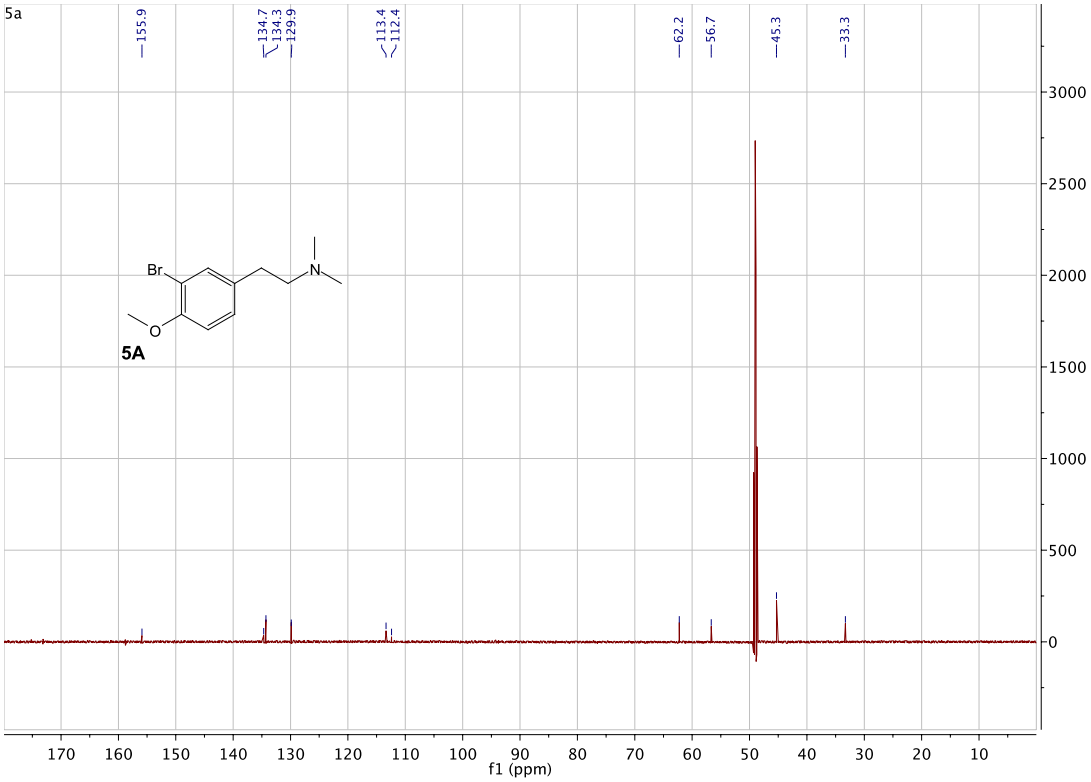
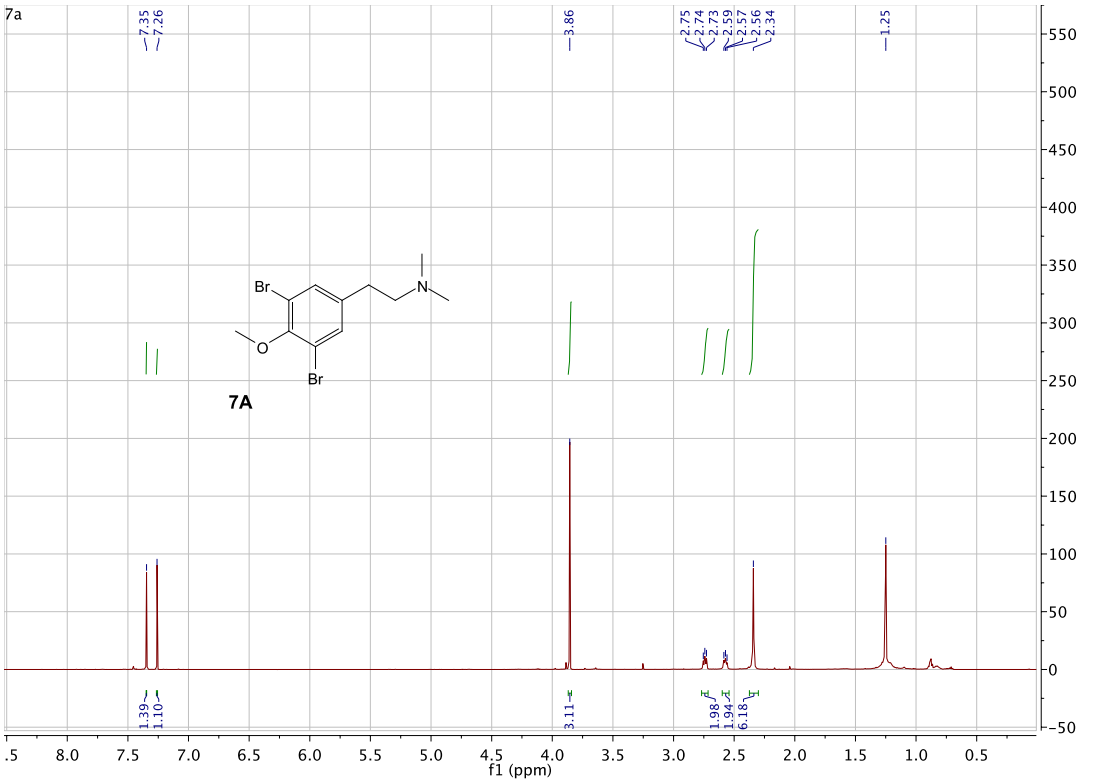


Figure S2. ^{1}H-NMR and ^{13}C-NMR spectrum of **7a** in $CDCl_3$.



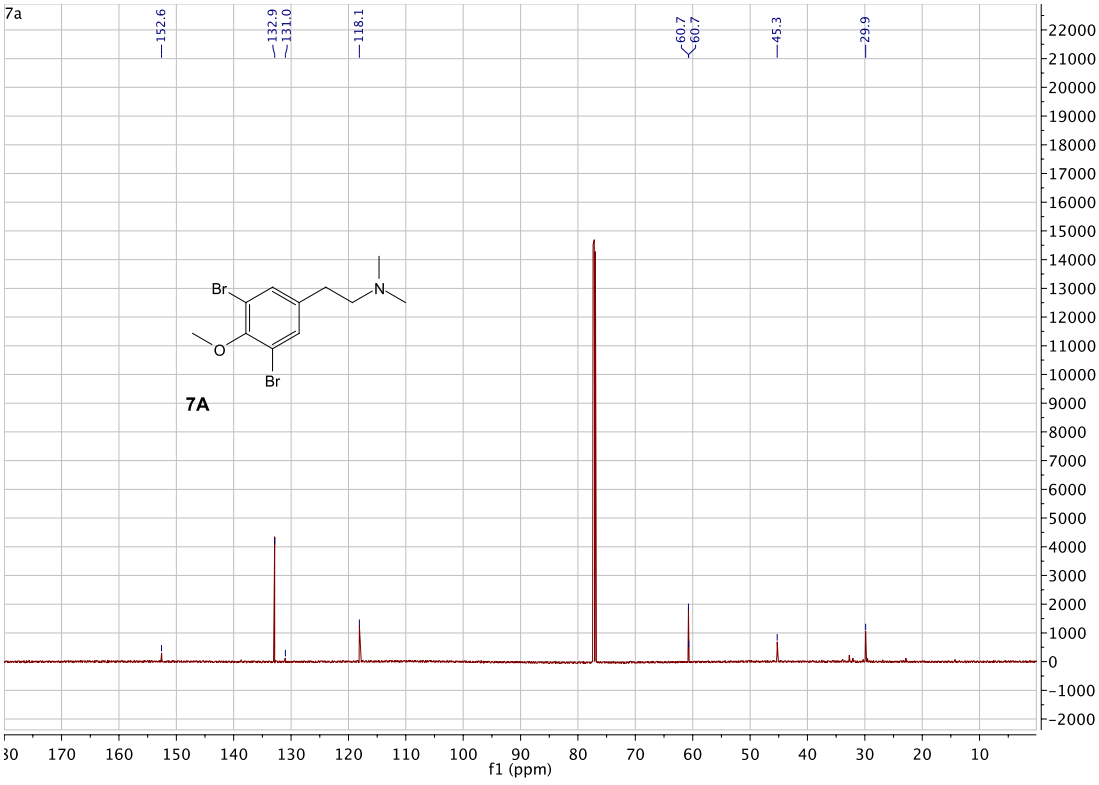
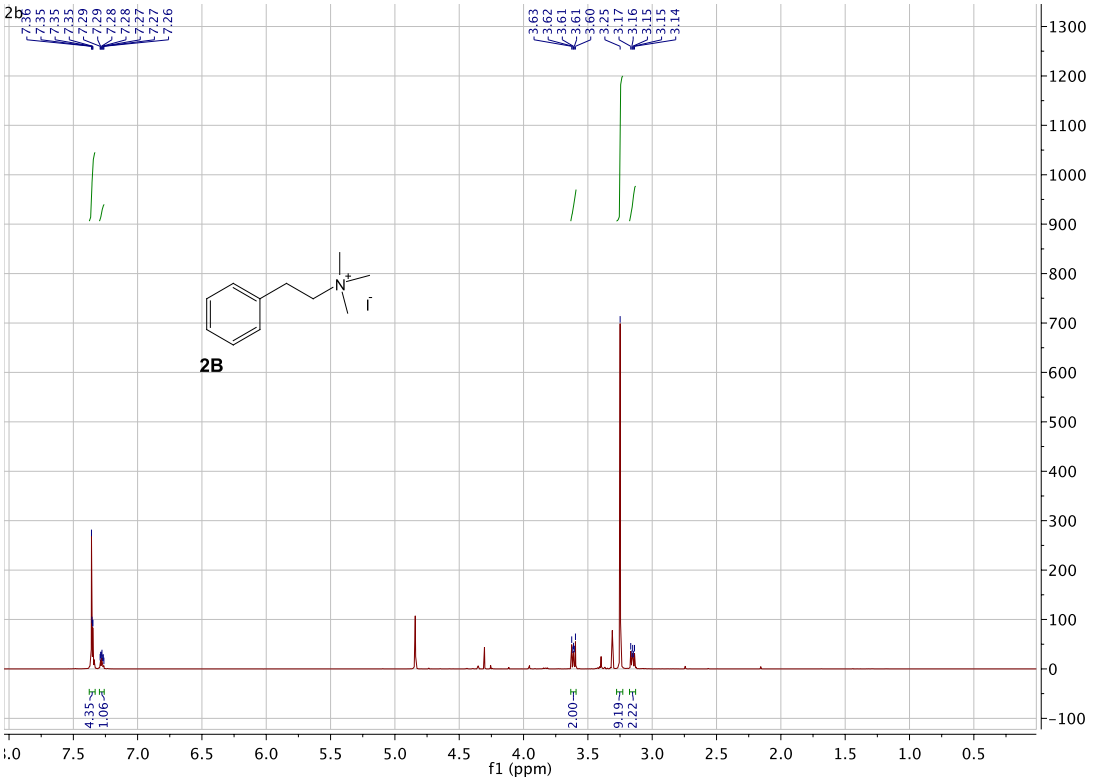


Figure S3. ^{1}H-NMR and ^{13}C-NMR spectrum of **2b** in methanol-*d4*.



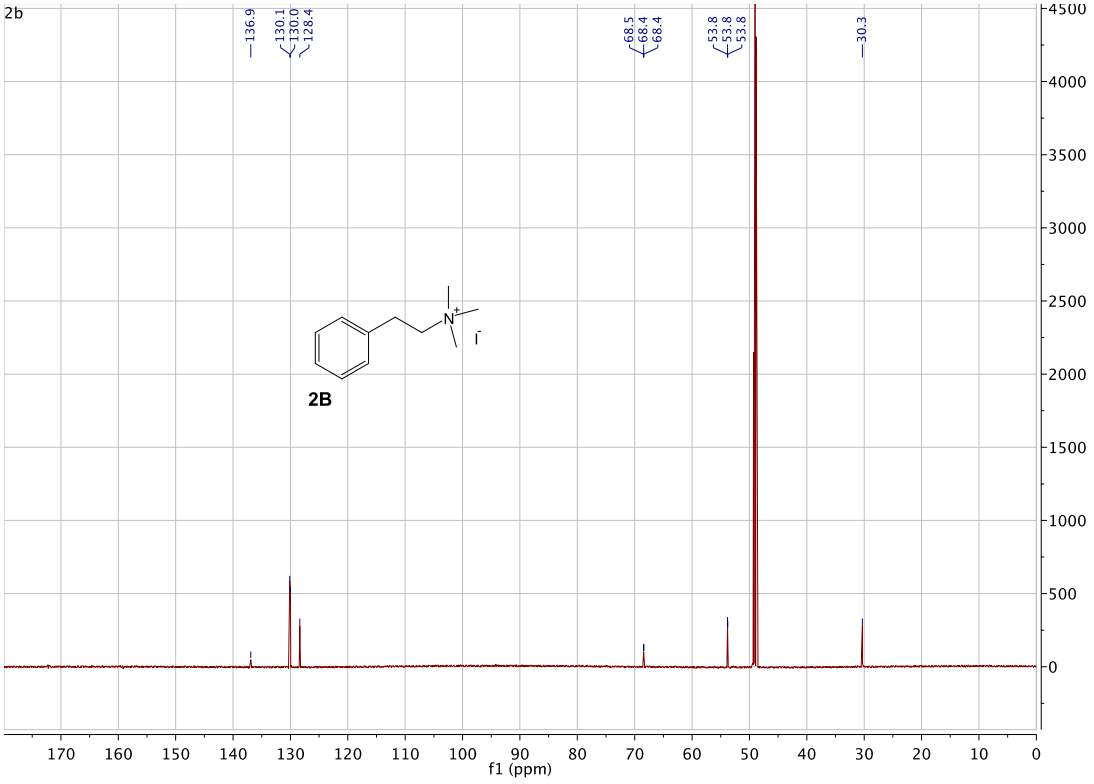
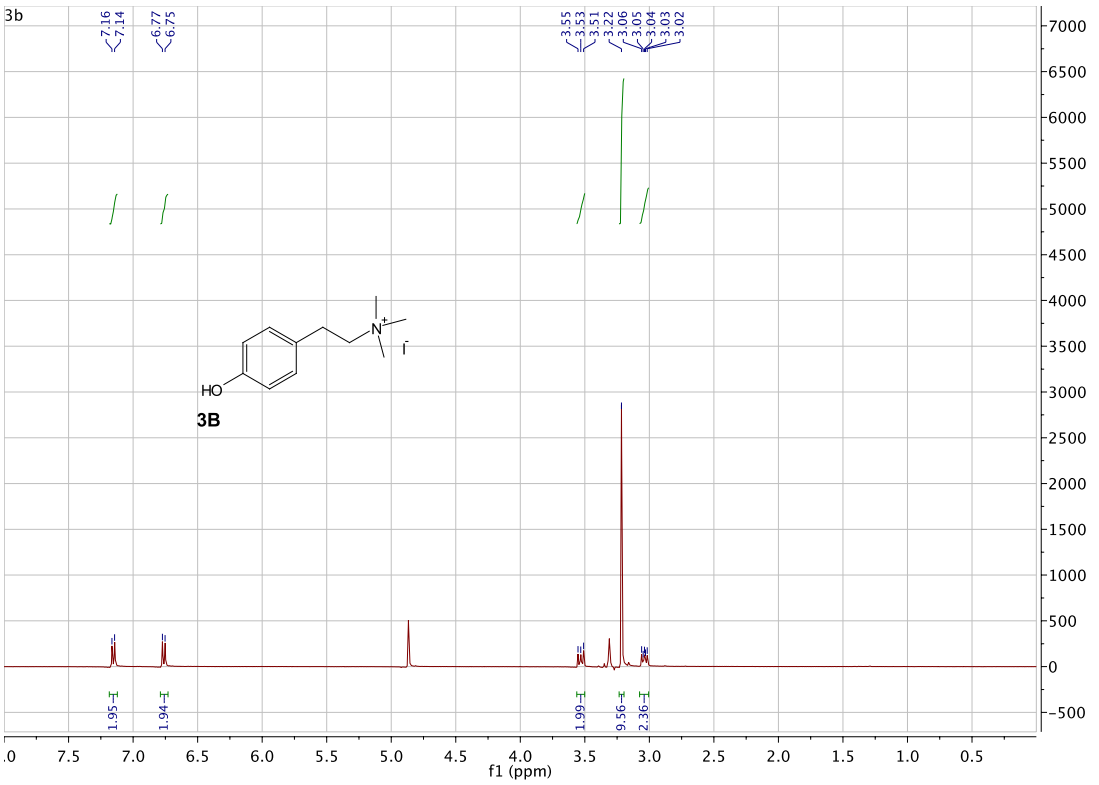


Figure S4. ^{1}H-NMR and ^{13}C-NMR spectrum of **3b** in methanol-*d4*.



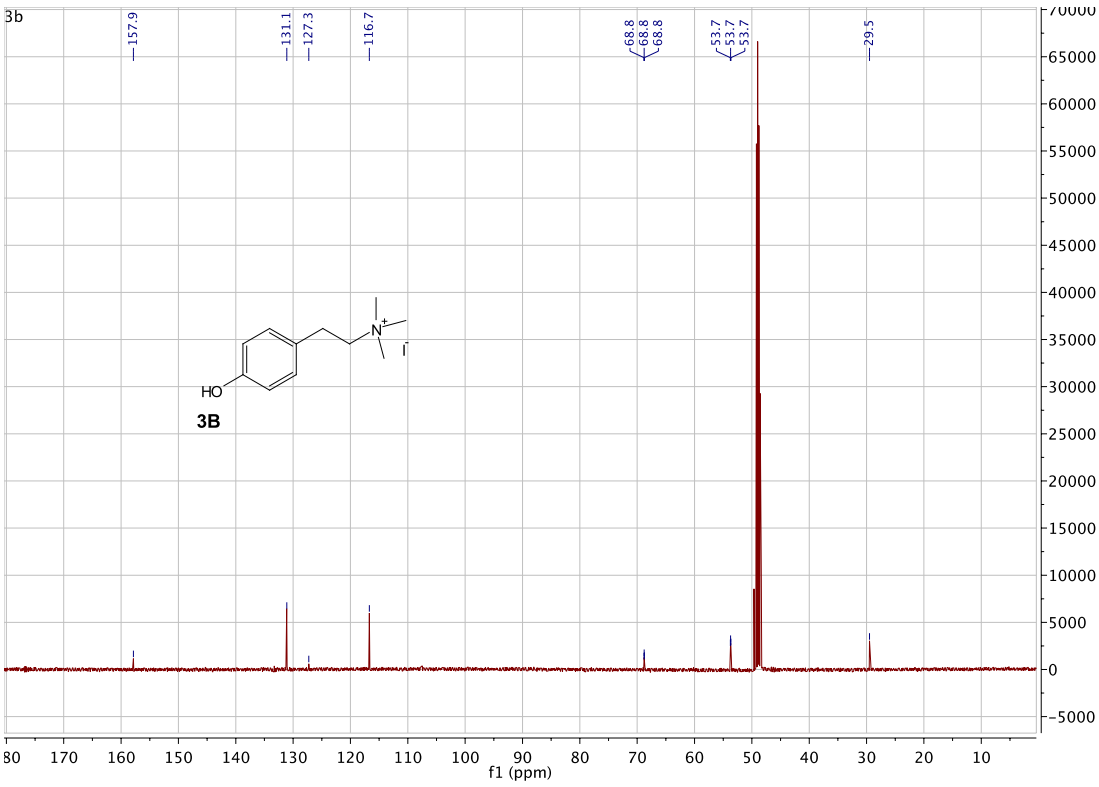
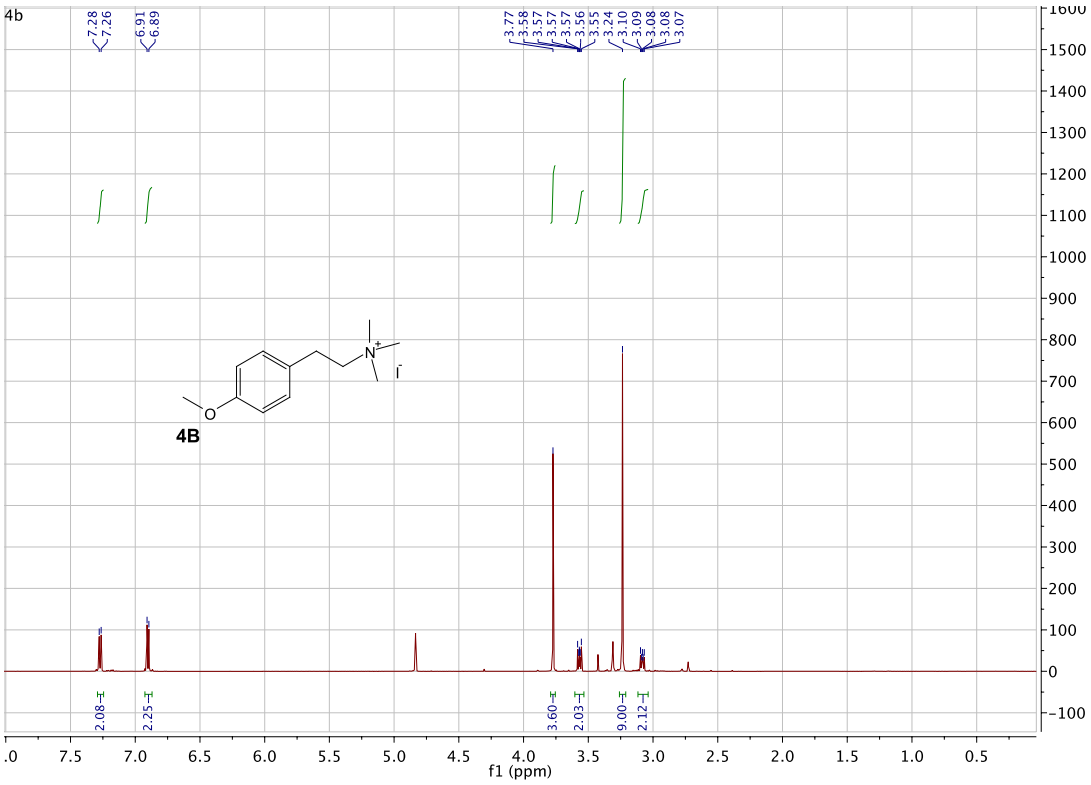


Figure S5. ^{1}H-NMR and ^{13}C-NMR spectrum of **4b** in methanol-*d4*.



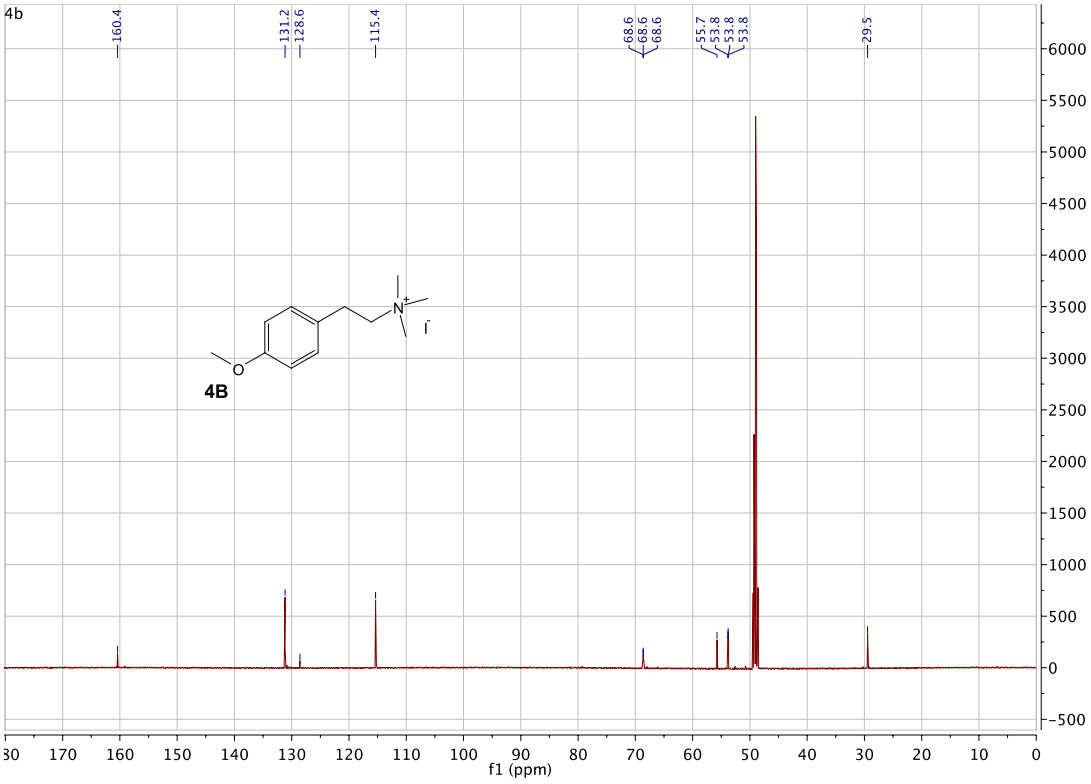
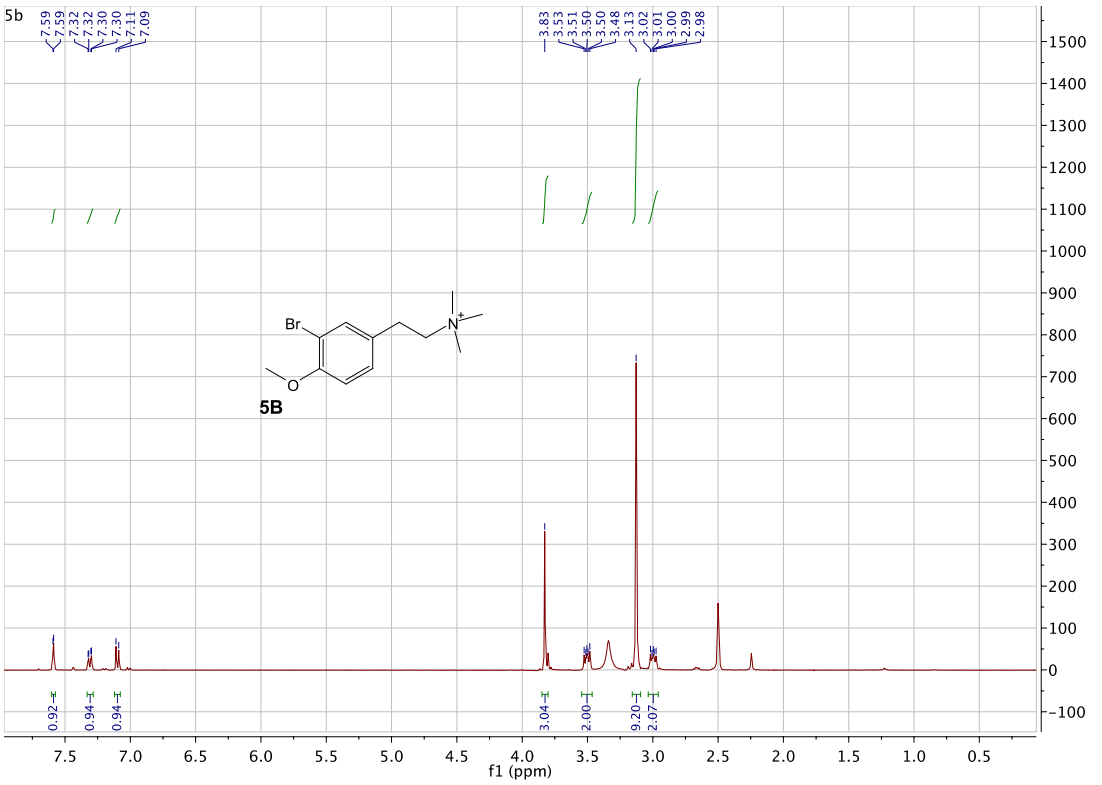


Figure S6. ^{1}H-NMR and ^{13}C-NMR spectrum of **5b** in DMSO-*d6*



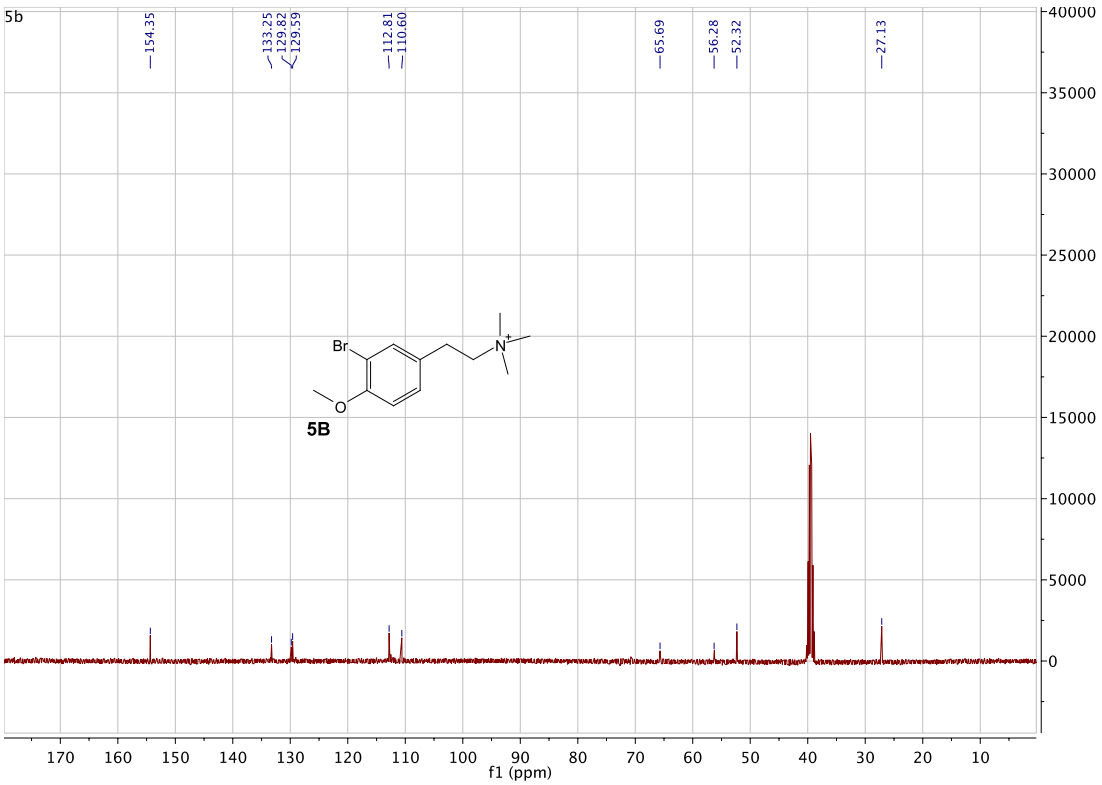
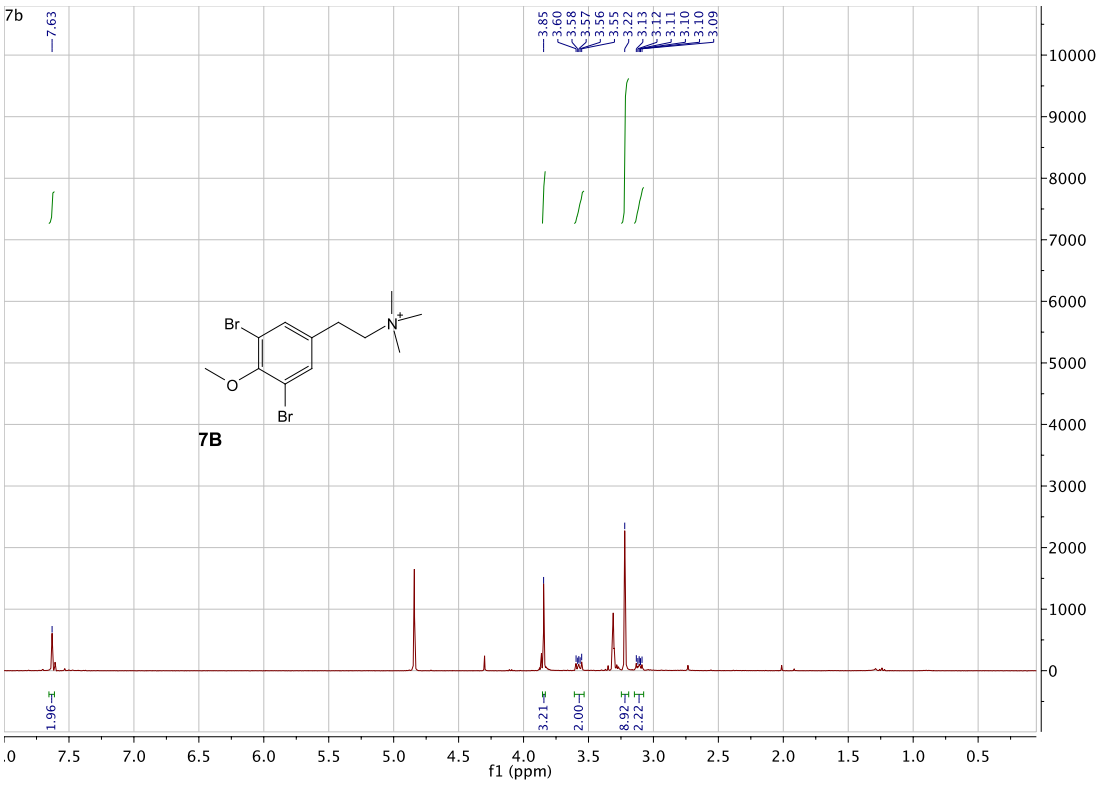


Figure S7. ^{1}H-NMR and ^{13}C-NMR spectrum of **7b** in methanol-*d4*.



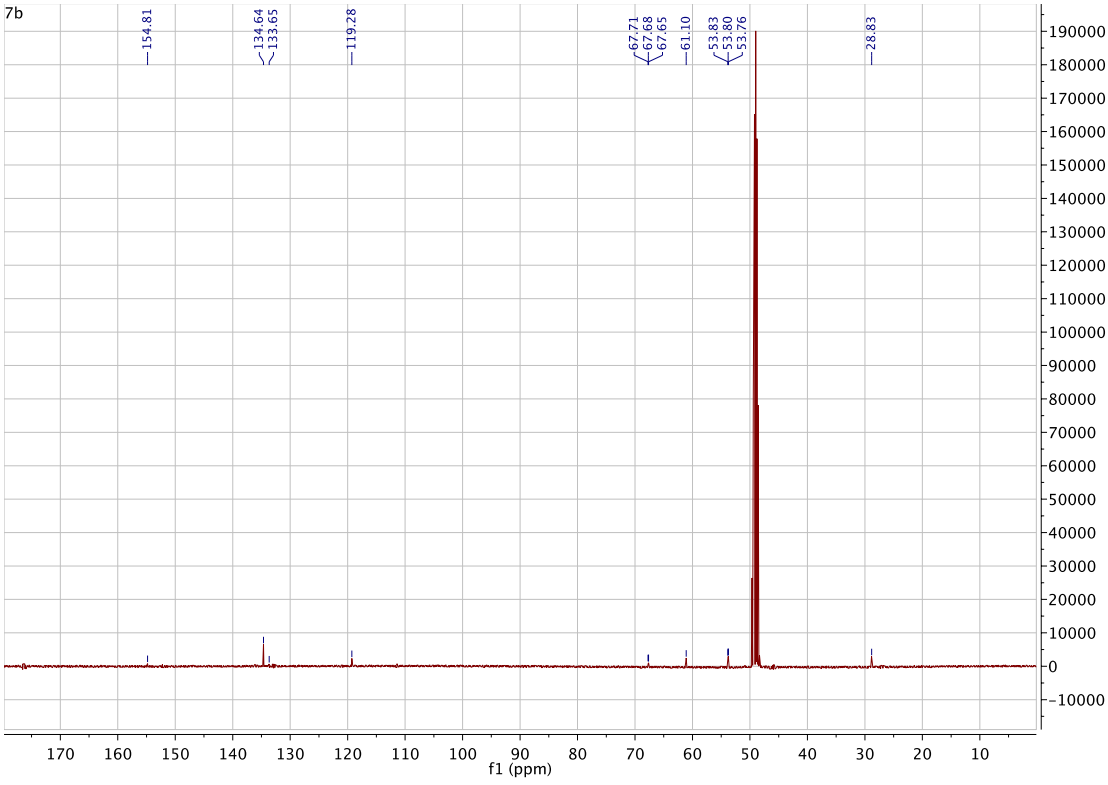
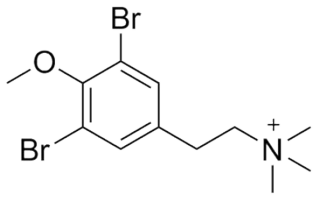
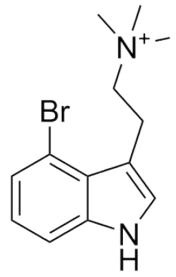


Figure S8. Structures of compounds evaluated in the comparative neuromuscular studies



7b
Current study



9a
(Olsen *et al*. Organic & biomolecular chemistry, 2016, 14, 1629-1640)

Figure S9. Single twitch experiments - Nerve evoked responses

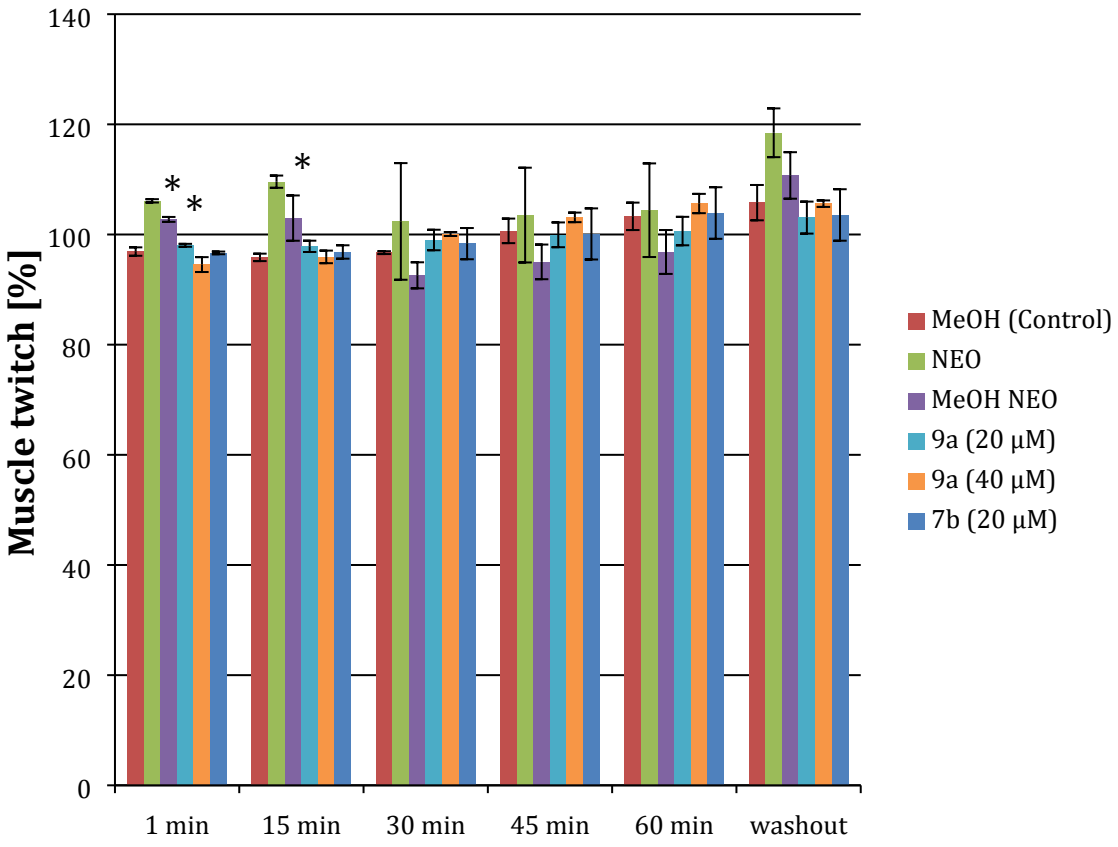


Figure S9. The time-course effects of different concentrations of **7b** and **9a** on indirectly evoked muscle twitch of isolated mouse hemidiaphragm preparation. Each point represents the mean value ± SEM obtained from 2–4 different nerve muscle preparations. Note that there are no significant differences in the amplitude of indirectly elicited muscle contractions. Significant increase in single twitch was only observed in neostigmine group of experiments within first 15 min after application of neostigmine.

Figure S10. Maximal amplitude of nerve evoked tetanic contraction experiments

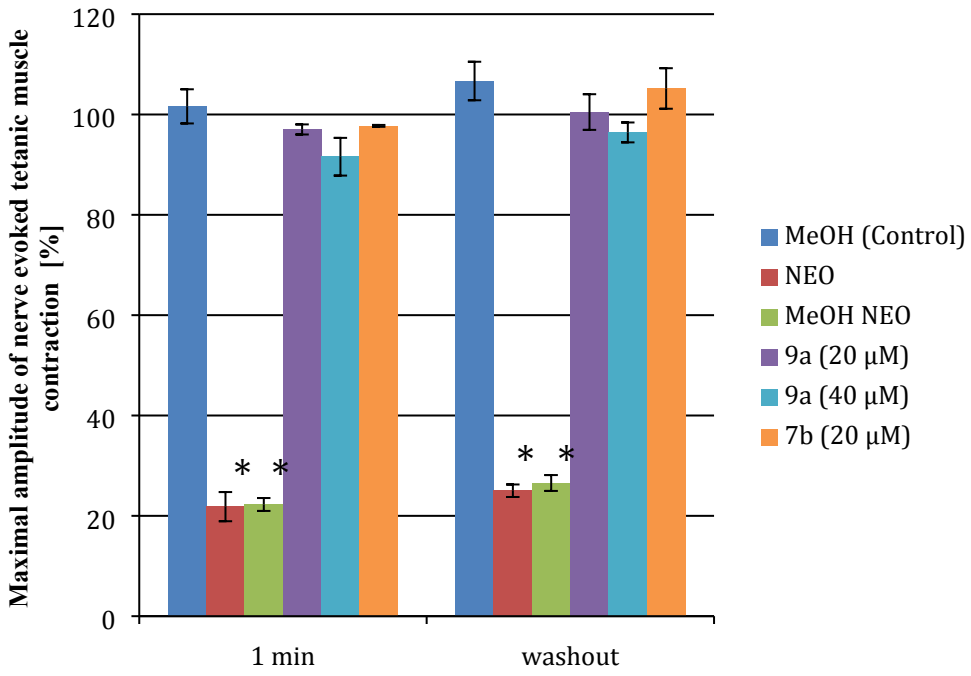


Figure S10. Effects of **7b** and **9a** on nerve evoked tetanic contractions of isolated mouse hemidiaphragm preparation exposed neostigmine and different concentrations of **7b** and **9a**. Each point represents the mean value ± SEM obtained from 2–4 different nerve muscle preparations. Note that **7b** (20 µM) and **9a** (20 and 40 µM) have no effect on the amplitude of indirectly evoked tetanic muscle contraction.

Figure S11. EPPs amplitude experiments

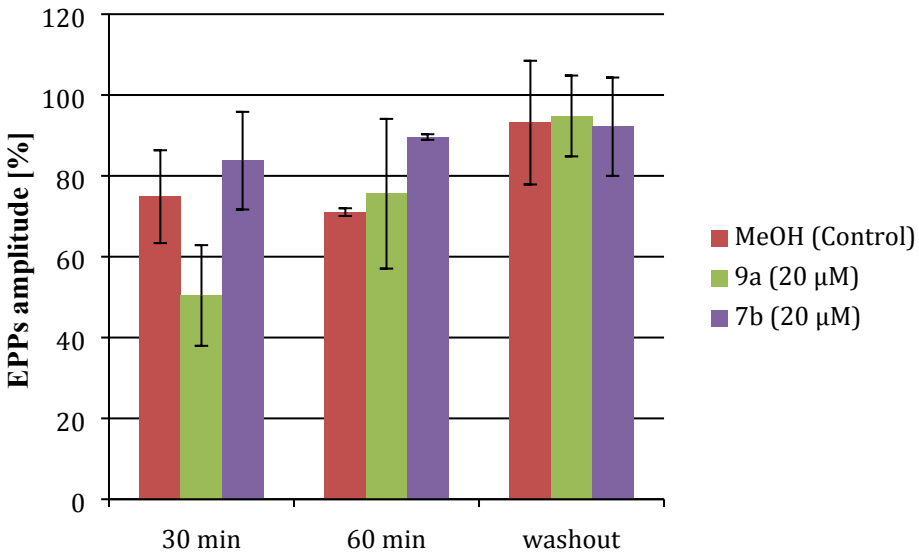


Figure S11. Endplate potentials recorded after blocking voltage-dependent sodium channels with 2 µM µ-conotoxin GIIIB and exposed to **7b** (20 µM) and **9a** (20 µM) for 30 and 60 minute. Each point represents the mean value ± SEM obtained from 2-3 different nerve–muscle preparations. Note that there is no effect observed on EPPs amplitude after the muscle exposure to **7b** and **9a**.

Figure S12. EPPs half decay experiments

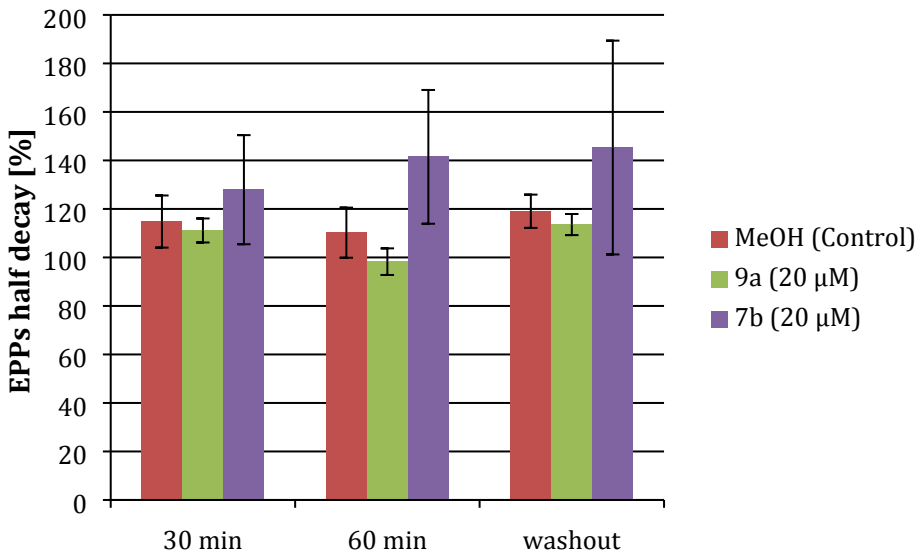


Figure S12. Effect of **7b** and **9a** on half decay of end-plate potentials. Each point represents the mean value ± SEM measured in 8-12 muscle fibers from each of 2-3 different nerve–muscle preparations. No significant increase of half decay time after exposure to 20 µM **7b** and **9a**.