**Supplementary Figure Legends**

**Supplementary Figure 1.** L-BMAA injection induced clinical severity, as detected by motor-evoked potential (MEP) latencies and amplitudes. Figures shows MEP waveforms at each time point. MEP amplitude became significantly lower following L-BMAA injection compared to rats in the control group, and latency was also significantly prolonged, especially from four weeks to eight weeks post L-BMAA injection.

**Supplementary Figure 2.** Analysis of motor unit potentials in L-BMAA-treated rats. Mean amplitude and mean duration of MUPs, as well as the percentage of polyphasic potentials in L-BMAA-treated rats, were much higher than rats in the control group.

**Supplementary Figure 3.** (A-D): L-BMAA injections increased GSK3β expressions in CNS of treated rats. GSK3β expression was upregulated, especially at 6-8 weeks post-injections in L-BMAA-treated rats, as shown by immunostaining of GSK3β, and counterstained with hematoxylin. (E-H): L-BMAA injections increased tau-5 expressions in CNS of treated rats. Expression of tau-5 increased with time in L-BMAA-treated rats as shown by immunostaining, and counterstained with hematoxylin. SC: spinal cord; Scale bar = 100 μm.
Supplementary Figure 4. Gradual loss of neurons in the CNS of L-BMAA-treated rats are shown by nissl staining (A-O). SC: spinal cord; BC: brain cortex; H: hippocampus; Scale bar = 100 μm.
Supplementary Figure 2

Normal

Treated group before L-BMAA injection

L-BAMM 1 week

L-BAMM 2 weeks

L-BAMM 3 weeks

L-BAMM 4 weeks

L-BAMM 5 weeks

L-BAMM 6 weeks

L-BAMM 7 weeks

L-BAMM 8 weeks
Supplementary Figure 3
Supplementary Figure 4

Normal SC  Normal BC  Normal H
A          B          C
L-BMAA 2w SC  L-BMAA 2w BC  L-BMAA 2w H
D          E          F
L-BMAA 4w SC  L-BNA 4w BC  L-BMAA 4w H
G          H          I
L-BMAA 6w SC  L-BMAA 6w BC  L-BMAA 6w H
J          K          L
L-BMAA 8w SC  L-BMAA 8w BC  L-BMAA 8w H
M          N          O