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**Short communication**

## Characterization of acute adverse-effect profiles of selected antiepileptic drugs in the grip-strength test in mice

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**Abstract:**

The aim of this study was to assess the acute adverse effects (neurotoxic) of several antiepileptic drugs (clonazepam, lamotrigine, oxcarbazepine, phenytoin, phenobarbital and topiramate) by measuring skeletal muscular strength in mice using the grip-strength test. Linear regression analysis of grip-strength in relation to drug dose-response allowed us to determine  $D_{50}$  values, the dosages of antiepileptic drugs that reduced grip-strength in mice by 50% compared to control animals. Each of the antiepileptic drugs studied reduced skeletal muscular strength in mice in a dose-dependent manner. The  $D_{50}$  for clonazepam was 31.7 mg/kg, lamotrigine – 47.7 mg/kg, oxcarbazepine – 87.3 mg/kg, phenobarbital – 128.7 mg/kg, phenytoin – 69.7 mg/kg, and topiramate – 509.5 mg/kg. In conclusion, the grip-strength test can aid in evaluating acute adverse effects of drugs with respect to their influence on muscular strength in experimental animals.

**Key words:**

antiepileptic drugs, grip-strength, linear regression, dose-response relationship analysis, acute adverse-effect profile, strength reducing dose by 50%, protective index

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