Title: Influence of propafenone on the anticonvulsant activity of various novel antiepileptic drugs in the mouse maximal electroshock model

Authors: Kinga K. Borowicz-Reutt, Monika Popławska, Monika Banach, Dorota Wróblewska

PII: S1734-1140(17)30604-7
DOI: https://doi.org/10.1016/j.pharep.2017.11.014
Reference: PHAREP 824

To appear in:

Received date: 29-8-2017
Revised date: 14-11-2017
Accepted date: 22-11-2017

Please cite this article as: Kinga K.Borowicz-Reutt, Monika Popławska, Monika Banach, Dorota Wróblewska, Influence of propafenone on the anticonvulsant activity of various novel antiepileptic drugs in the mouse maximal electroshock model (2010), https://doi.org/10.1016/j.pharep.2017.11.014

Influence of propafenone on the anticonvulsant activity of various novel antiepileptic drugs in the mouse maximal electroshock model

Kinga K. Borowicz-Reutt[a,*], Monika Popławska[a], Monika Banach[a], Dorota Wróblewska[a]

[a]*Independent Unit of Experimental Neuropathophysiology, Department of Pathophysiology, Medical University of Lublin, Lublin, Poland*

Short title: Propafenone and antiepileptics in the maximal electroshock

*Correspondence: Kinga K. Borowicz-Reutt, e-mail: kingaborowicz@umlub.pl

ABSTRACT

Background: The main mechanism of action of propafenone (antiarrhythmic drug) involves the inhibition of the fast inward sodium current during phase 0 of the action potential. Sodium channel-blocking activity is also characteristic for some antiepileptic drugs. Therefore, it could be assumed that propafenone may also affect seizures. In the present study, we evaluated the effect of propafenone on the protective effect of oxcarbazepine, lamotrigine, topiramate and pregabalin against the maximal electroshock-induced seizures in mice.

Methods: Anticonvulsant activity of propafenone was assessed with the maximal electroshock seizure threshold (MEST) test. Influence of propafenone on the anticonvulsant activity of antiepileptic drugs was estimated in the mouse maximal electroshock model (MES). Drug-related adverse effects were determined in the chimney test (motor coordination) and passive-avoidance task (long-term memory). Brain concentrations of antiepileptics were assessed by fluorescence polarization immunoassay.

Results: Propafenone at doses 60-90 mg/kg significantly increased the threshold seizure, in turn at doses 5-50 mg/kg did not affect this parameter. Administration of propafenone at the subthreshold dose of 50 mg/kg increased antielectroshock activity of oxcarbazepine, topiramate and pregabalin, but not that of lamotrigine. As regards adverse effects, propafenone alone and