

The Response of 4-Hydroxybenzoic Acid on Kv1.4 Potassium Channel Subunit Expressed in *Xenopus laevis* Oocytes

Authors : Fatin H. Mohamad, Jia H. Wong, Muhammad Bilal, Abdul A. Mohamed Yusoff, Jafri M. Abdullah, Jingli Zhang

Abstract : Kv1.4 is a Shaker-related member of voltage-gated potassium channel which can be associated with cardiac action potential but can also be found in Schaffer collateral and dentate gyrus. It has two inactivation mechanisms; the fast N-type and slow C-type. Kv1.4 produces rapid current inactivation. This A type potential of Kv1.4 makes it as a target in antiepileptic drugs (AEDs) selection. In this study, 4-hydroxybenzoic acid, which can be naturally found in bamboo shoots, were tested on its enhancement effect on potassium current of Kv1.4 channel expressed in *Xenopus laevis* oocytes using the two-microelectrode voltage clamp method. Current obtained were recorded and analyzed with pClamp software whereas statistical analysis were done by student t-test. The ratio of final / peak amplitude is an index of the activity of the Kv1.4 channel. The less the ratio, the greater the function of Kv1.4. The decrease of ratio of which by 1 μ M 4-hydroxybenzoic acid (n= 7), compared with 0.1% DMSO (vehicle), was mean= 47.62%, SE= 13.76%, P= 0.026 (statistically significant). It indicated more opening of Kv1.4 channels under 4-hydroxybenzoic acid. In conclusion, 4-hydroxybenzoic acid can enhance the function of Kv1.4 potassium channels, which is regarded as one of the mechanisms of antiepileptic treatment.

Keywords : antiepileptic, Kv1.4 potassium channel, two-microelectrode voltage clamp, *Xenopus laevis* oocytes, 4-hydroxybenzoic acid

Conference Title : ICNPDD 2016 : International Conference on Natural Products and Drug Discovery

Conference Location : Kuala Lumpur, Malaysia

Conference Dates : February 11-12, 2016