

Enhancement Effect of Compound 4-Hydroxybenzoic Acid from Petung Bamboo (*Dendrocalamus Asper*) Shoots on $\alpha 1\beta 2\gamma 2S$ of GABA (A) Receptor Expressed in *Xenopus laevis* Oocytes- Preliminary Study on Its Anti-Epileptic Potential

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Abstract : Epilepsy is one of the major brain afflictions occurs with uncontrolled excitation of cortex; disturbed 50 million of world's population. About 25 percent of patients subjected to adverse effects from antiepileptic drugs (AEDs) such as depression, nausea, tremors, gastrointestinal symptoms, osteoporosis, dizziness, weight change, drowsiness, fatigue are commonly observed indications; therefore, new drugs are required to cure epilepsy. GABA is principle inhibitory neurotransmitter, control excitation of the brain. Mutation or dysfunction of GABA receptor is one of the primary causes of epilepsy, which is confirmed from many acquired models of epilepsy like traumatic brain injury, kindling, and status epilepticus models of epilepsy. GABA receptor has 3 distinct types such as GABA (A), GABA (B), GABA(C). GABA (A) receptor has 20 different subunits, $\alpha 1\beta 2\gamma 2$ subunits composition of GABA (A) receptor is the most used combination of subunits for screening of compounds against epilepsy. We expressed $\alpha 1\beta 2\gamma 2s$ subunits of GABA (A) Receptor in *Xenopus laevis* oocytes and examined the enhancement potential of 4-Hydroxybenzoic acid compound on GABA (A) receptor via two-electrode voltage clamp current recording technique. Bamboo shoots are the young, tender offspring of bamboo, which are usually harvested after a cultivating period of 2 weeks. Proteins, acids, fat, starch, carbohydrate, fatty acid, vitamin, dietary fiber, and minerals are the major constituent found systematically in bamboo shoots. These shoots reported to have anticancer, antiviral, antibacterial activity, also possess antioxidant properties due to the presence of phenolic compounds. Student t-test analysis suggested that 4-hydroxybenzoic acid positively allosteric GABA (A) receptor, increased normalized current amplitude to 1.0304 ± 0.0464 (p value 0.032) compared with vehicle. 4-Hydrobenzoic acid, a compound from *Dendrocalamus Asper* bamboo shoot gives new insights for future studies on bamboo shoots with motivation for extraction of more compounds to investigate their effects on human and rodents against epilepsy, insomnia, and anxiety.

Keywords : $\alpha 1\beta 2\gamma 2S$, antiepileptic, bamboo shoots, epilepsy GABA (A) receptor, two-microelectrode voltage clamp, *xenopus laevis* oocytes

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