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Screening for inhibitor of recombinant *Drosophila melanogaster* tyramine- β -hydroxylase

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Biogenic amines are common biologically active substances extended within the whole animal kingdom where they play vital roles as signal transducer as well as regulator of cell functions. One of these biogenic amines called Octopamine (OA) originated in the insect nervous system is synthesized from Tyramine (TA) by the catalysis of Tyramine- β -Hydroxylase (T β H). Both tyramine and octopamine act as neurotransmitters, neurohormones and neuromodulators in the arthropod nervous system. Herein, inhibitory activity of 1-Arylimidazole-2(3H)-Thiones (AITs) were tested on *Drosophila* Tyramine- β -Hydroxylase (DmT β H) purified from recombinant *Bombyx mori* strain. Radiolabelled 3H-TA was used to analyze the activity of inhibitors and the radioactivity was measured by liquid scintillation counter. Different concentrations of AITs exhibited inhibitory effects on DmT β H which was ID50 values ranging from 0.020 nM to 2.511 μ M. The most effective compounds for DmT β H inhibition were 2-Me AIT; 2-Et AIT; 4-CF₃ AIT; 2,4-Me₂ AIT; 2,6-Me₂ AIT; 2,3,4-Cl₃ AIT; 3,5-(MeO)₂ AIT; 2-Me,4-Cl AIT; 2-Cl,5-Me AIT; 2-MeO,4-NO₂ AIT; unsubstituted AIT; 4-MeO AIT; 4-MeS AIT; 2,5-(MeO)₂ AIT and 2-Me,6-Cl AIT with ID50 values 5.820, 1.887, 0.235, 1.246, 0.020, 0.301, 3.175, 0.154, 0.796, 1.201 nM and 0.004, 0.009, 0.008, 0.009, 0.003 μ M, respectively. DmT β H was inhibited as a dose dependent manner at pH 7.6 and 25° C during a 30 min. of incubation. The inhibitory activity of AITs on DmT β H may be considered as lead compounds to control insect population after further extensive studies.

Biography

Md Nazmul Hasan is a PhD student at Kyushu University in Japan. He has completed his Master's degree from Khulna University, Bangladesh in collaboration with the Faculty of Agriculture in George August University of Gottingen, Germany. In Bangladesh, he is working as an Assistant Professor at the Department of Genetic Engineering and Biotechnology, Jessore University of Science and Technology. He has published more than 40 papers in reputed national and international journals.

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