B6

An ATX1 Gene from the Mole Cricket, *Gryllotalpa orientalis*, That is Up-regulated in Response to H_2O_2 Exposure and Temperature Stimuli

Iksoo Kim[1*], Kwang Sik Lee[2], Jae Sam Hwang[1], Mi Young Ahn[1], Eun Young Yun[1], Jian Hong Li[2,3], Hung Dae Sohn[2], and Byung Rae Jin[2]

[1]*Department of Agricultural Biology, National Institute of Agricultural Science and Technology, RDA, Suwon 441-100, Korea;* [2]*College of Natural Resources and Life Science, Dong-A University, Busan 604-714, Korea; and* [3]*Department of Plant Protection, Huazhong Agricultural University, Wuhan 430070, China*

To search for an insect homologue of ATX1, the mole cricket, *Gryllotalpa orientalis*, cDNA library was screened and isolated a cDNA clone, which encodes a 73 amino acid polypeptide with a predicted molecular mass of 8.0 kDa and pI of 5.68. The *G. orientalis* ATX1 (GoATX1) cDNA possesses both the MTC*XX*C copper-binding site in the N-terminus and the KTGK lysine-rich region in the C-terminus. The deduced amino acid sequence of the GoATX1 cDNA showed 63% identity to *Drosophila melanogaster* ATX1 and 55% to *Ixodes pacificus* ATX1. Northern blot analysis revealed the presence of GoATX1 transcripts in all tissues examined. When H_2O_2 was injected into the body cavity of *G. orientalis* adult, GoATX1 mRNA expression was upregulated in the fat body tissue. Furthermore, the expression level of GoATX1 mRNA in the fat body was induced when G. *orientalis* adult was exposed at low (4°C) and high (37°C) temperatures, suggesting that the GoATX1 seems to play a protective role against oxidative stress caused by temperature shock. This is the first report about a functional role of insect ATX1 in antioxidant defense. t temperature shock.