on the pathogenesis of MeHg-induced central neuropathy, no useful mechanism of toxicity has been established so far. In this study, two methods, cDNA Microarray and SSH, were performed to assess the expression profile against MeHg and to identify differentially expressed genes by MeHg in neuroblastoma cell line. TwinChip Human-8K (Digital Genomics) was used with total RNA from SH-SY5Y (human neuroblastoma cell line) treated with solvent (DMSO) and 6.25 uM (IC_{50}) MeHg. And we performed forward and reverse SSH method on mRNA derived from SH-SY5Y treated with DMSO and MeHg (6.25 uM). Differentially expressed cDNA clones were sequenced and were screened by dot blot and ribonuclease protection assay to confirm that individual clones indeed represent differentially expressed genes. These sequences were identified by BLAST homology search to known genes or expressed sequence tags (ESTs). Analysis of these sequences may provide an insight into the biological effects of MeHg in the pathogenesis of neurodegenerative disease and a possibility to develop more efficient and exact monitoring system of heavy metals as common environmental pollutants.

Poster Presentations - Field B1. Physiology

[PB1-1] [04/18/2003 (Fri) 09:30 - 12:30 / Hall P]

Effects of protein kinase inhibitors on mellitin-induced histamine release in RBL 2H3 mast cells

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It has been previously reported that silica dose-dependently caused the increase of histamine release and arachidonic acid release in RBL 2H3 cells. In this study, to investigate role of arachidonic acid in inflammatory response including histamine release and reactive oxygen species (ROS) generation, we observed effects of mellitin on histamine release and ROS generation in RBL 2H3 cells. Mellitin, an endogenous phospholipase A2 activator, dose-dependently increased both histamine release and arachidonic acid release, whereas decreased the generation of ROS and peroxynitrite. Mellitin-induced histamine release was significantly inhibited by MAFP (cPLA2 inhibitor, 10 μM) and bromoenol lactone (iPLA2 inhibitor, 10 μM), but not by OPC and mepacrine (secretory PLA2 inhibitor). Arachidonic acid release induced by mellitin was augmented by histamine receptor antagonists (pyrilamine and cimetidine), which indicate that histamine may be involved in arachidonic acid release via negative feedback machanism. On the other hand, mellitin-induced histamine release was significantly inhibited by DHC (tyrosine kinase inhibitor, 10 μM) and worthmannin (phosphatidylinositol 3-kinase inhibitor, 10 μM), and mellitin-induced arachidonic acid release was significantly inhibited by bisindolmaleimide (protein kinase C inhibitor, 10 μM) and worthmannin (10 μM). These results indicate that phosphatidylinositol 3-kinase plays an important role in both arachidonic acid release and histamine release induced by mellitin in RBL 2H3 mast cells.

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[PB1-2] [04/18/2003 (Fri) 09:30 - 12:30 / Hall P]