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Background: It have been suggested that mast cells may play a role in the pathogenesis of ulcerative colitis (UC). To better define the role of mast cells in UC, we examined PAR2, tryptase, and TNF-α expression in normal tissue and UC tissue.

Methods: PAR2, tryptase, and TNF-α expression in 9 normal and 9 UC tissues were examined by immunohistochemistry.

Results: All of the three proteins were significantly more detectable in UC tissue than in normal tissue. Approximately 70.3 % of PAR2-positive lamina propria cells and 66.4 % of TNF-α-positive lamina propria cells were tryptase-positive mast cells, respectively.

Conclusions: These results show that PAR2-positive mast cells and TNF-α-positive mast cells may play an important role in the pathogenesis of UC.

[PB2-8] [10/18/2001 (Thr) 14:00 - 17:00 / Hall D]

Interrelation among Arachidonic Acid Release, Reactive Oxygen Species and Peroxynitrite Generation Induced by Silica in RAW 264.7 Cells

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Objective and Design: To investigate the underlying mechanism of silica in inflammatory response, we examined the interrelation among arachidonic acid (AA), reactive oxygen species (ROS) and nitric oxide (NO) in RAW 264.7 cells stimulated by silica.
Materials and Methods: RAW 264.7 cells were used for measurements of AA release, ROS, peroxynitrite (PON) generation and NO production elicited by silica. The effects of various inhibitors related to phospholipase (A2, C and D) pathway and ROS generation were observed.
Results: Silica dose-dependently increased [3H]AA release, ROS, PON generation and NO production. OPC (10 μM), DTT (5 mM) and MAFP (10 μM), significantly inhibited [3H]AA release, ROS and PON generation induced by silica. U73122 (a specific PLC inhibitor, 1 μM), neomycin (an nonspecific PLC and PLD inhibitor, 1 mM) and propranolol (a PLD inhibitor, 200 μM) significantly inhibited [3H]AA release and PON generation but did not inhibit ROS generation induced by silica. Diphenyleneiodonium chloride (10 μM), an NADPH oxidase inhibitor, and tiron (5 mM), an intracellular ROS scavenger, significantly inhibited [3H]AA release, ROS generation and PON generation induced by silica. NOS inhibitors, such as 1 mM L-NAME, 1 mM L-NNA and 1 mM L-NMMA significantly inhibited silica-induced PON production, but did not affect [3H]AA release and ROS generation induced by silica.
Conclusion: These results suggest that both AA release and ROS elicited by silica stimulate each other and these seem to be the upstream mediators in PON generation in RAW 264.7 cells.

[PB2-9] [10/18/2001 (Thr) 14:00 - 17:00 / Hall D]

Histamine Release by Hydrochloric Acid is Mediated via Reactive Oxygen Species Generation and Phospholipase D in RBL-2H3 Mast Cells

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Objective and Design: The underlying mechanism of HCl in oesophagitis caused by the reflux of gastric juice, especially HCl, remains unclear. To investigate the underlying mechanism of HCl in oesophagitis, we observed the inflammatory responses to HCl in RBL-2H3 mast cells.
Materials and Methods: The rat basophilic leukemia (RBL-2H3) cells were used for measurements of histamine release, arachidonic acid (AA) release and reactive oxygen species (ROS) and peroxynitrite generation induced by HCl.
Results: Exogenous HCl dose-dependently increased the histamine release and ROS generation, whereas it decreased spontaneous release of [3H] AA and spontaneous production of peroxynitrite. Mepacrine (10 μM), oleyloxyethyl phosphorylcholine (10 μM) and bromoenol lactone (10 μM) did not affect both histamine release and ROS generation induced by HCl. U73122 (1 μM), a specific phospholipase C (PLC) inhibitor did not have any influence on histamine release and ROS generation. Propranolol (200 μM), a phospholipase D (PLD) inhibitor, and neomycin (1 mM), an nonspecific PLC and PLD inhibitor, significantly inhibited both histamine release and ROS generation. Diphenyleneiodonium (10 μM), an NADPH oxidase inhibitor, and tiron (5 mM), an intracellular ROS scavenger significantly inhibited HCl-induced histamine release and ROS generation.
Conclusion: These findings suggest that inflammatory responses to HCl is related to histamine release and ROS generation, and that ROS generation by HCl may be involved in histamine release via PLD pathway in RBL-2H3 cells.

Poster Presentations - Field B3. Neuroscience

[PB3-1] [10/18/2001 (Thr) 14:00 - 17:00 / Hall D]

Effects of tributyltin compounds on catecholamine biosynthesis in PC12 cells.

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The effects of tributyltin (TBT) compounds on dopamine biosynthesis in PC12 cells were investigated. Treatments of PC12 cells with tributyltin acetate (TBTA) and tributyltin chloride (TBTC) showed 42.8% and 44.9% inhibition of dopamine content at a concentration of 0.1 μM and 0.5 μM for 48h. IC50 values of TBTA and TBTC were 0.12 μM and 0.6 μM, respectively. Next, the intracellular mechanisms of TBT compounds were examined. Dopamine content decreased at 6h and reached a minimal level at 24h after the exposure to 0.1 μM TBTA and 0.5 μM TBTC. The decreased dopamine level was maintained for up to 48h. TH activity was inhibited at 6h following the treatment with TBT compounds and was maintained at a reduced level for up to 36h (20-40% inhibition at 0.1 μM of TBTA and 0.5 μM of TBTC). TH mRNA level also started to decrease at about 6h and reached a minimal level at 24h after exposure of PC12 cells to TBT compounds. These results suggest that TBT compounds contribute to the decrease in dopamine content by the inhibition of TH activity and the regulation of TH gene expression in PC12 cells.
* This work was supported by the Brain Korea 21 project.

[PB3-2] [10/18/2001 (Thr) 14:00 - 17:00 / Hall D]

Effects of tributyltin compounds on L-DOPA-induced neurotoxicity in PC12 cells.