C107 Effects of Heavy Metal Accumulation on the Gill Structure of the Clam,Ruditapes philippinarum

Tae-Hyun Kim[1*], Moon-Jin Jeong[2] and Myung-Jin Moon[1]
[1]Department of Biological Sciences, Dankook University; [2] OIIB, Cellular Immunology Section, NIDCR, NIH

This study was initiated to establish the mud flat biomonitoring species of the heavy metal pollution. Exposure of clam, *Ruditapes philippinarum* to increasing concentration of three selected heavy metals dissolved in artificial sea water resulted in an order of toxicity by the fine structural and chemical effect on their gill structure. The major effects induced by heavy metals were destruction of the cilia and microvilli at the surface structure of gill filaments. Characteristically, mitochondrial destruction, ER swelling, nuclear invagination were observed. From analysis of SDS-PAGE, major band of protein was detected between 45 and 60 kDa. This result indicating that this major protein might be metal binding protein(metallothionein) induced by heavy metals.

C108 Dopamine transporter and Tyrosine hydroxylase expression: Changes and Distribution by Chronic Nicotine and Smoking in Rat Brain

Kun-Yang Kim*, Myeong-ok Kim
Division of Applied Life Science, Gyeong Sang National University

Compelling evidence exists that tobacco-smoking represents a form of drug addiction to nicotine. The reinforcing and behavioural effects of nicotine depend on activation of midbrain dopamine neurons. Dopamine transporter (DAT) is a highly specialized membrane-spanning protein that aids in terminating dopaminergic neurotransmission by sodium-dependent re-uptake of dopamine (DA) released into synaptic clefts. Tyrosine hydroxylase(TH) is rate-limiting enzyme of dopamine synthesis in the midbrain. The object of these study was to determine the effects of nicotine and smoking exposure on the TH protein and DAT mRNA expression in the midbrain and striatum. Adult male Spraque-Dawley rats (n=30) were administrated for with cigarette (inbaled for 10minutes, 30minutes, and 1hour, 3times x 500ml /day: 4weeks) and nicotine (oral, 3mg/day n=10 4weeks). TH proteins and DAT mRNAs were examined with immunocytochemistry and western blotting in the VTA, SNC, and striatum. DAT mRNAs were determined with RPA(RNase protection assay) and in situ hybridization. DAT mRNA were significantly increased in SNc and VTA of nicotine and smoking group. TH protein were significantly increased in SNc and VTA of nicotine group. Those of smoking and nicotine tended is higher up-regulate on the DAT mRNA expression than control in the rat midbrain. DAT binding sites show a distribution pattern similar to TH. DAT mRNAs were expressed in TH-containing some neurons.

C109 Changes of Gonadotrophin Releasing Hormone(GnRH) and GnRH-receptor mRNA Expression in Hypothalamus and Testis of Puberty and Mature Rat by Chronic Alcohol Exposure

Hye Lyoung Lee*, Jong Hun kim and Myeong Ok Kim
Division of Life Science and Applied Life Science, Gyeong Sang National University

Alcohol act on the reproduction in mamalian by suppression of the release of GnRH. We examined the expression of GnRH and GnRH-receptor mRNA through RPA(RNase Protection Assay) and *in situ hybridization*. We administrated 10% ethanol to puberty(150g) and mature(250g) Sprague-Dawley male rat during 1 month by self-administration. Alcohol repressed GnRH in testis of puberty and mature rats.

Especially puberty rat was more markedly expressed. But alcohol didn't affect the expression of GnRH-receptor. The other hand, alcohol diretly operated upon testis but not hypothalamus, because it was not change GnRH in hypothalamus. The action of chronic alcohol can be accounted for by inhibition of GnRH release that suppress spermatogenesis in testis.

C110 Effects of Nicotine on Tyrosine Hydroxylase(TH) Protein and Dopamine Receptor mRNAs in Pheochromocytoma(PC-12) Cell

Yoo-la Lee*, Jong-Yoon Bahk[1] and Myeong-Ok Kim.
Devision of Life Science and Applied Life Science, Department of urology[1], Gyeongsang National University.

Pheochromocytoma(PC-12) cell have been characterized from a chromaffin tumor of rat adernal pheochromocytoma, and have various function including the synthesis, storage, and secretion of catecholamine. Nicotine is a major component of cigarette smoke, stimulates catecholamine secretion and activates catecholamine biosynthetic enzyme such as tyrosine hydroxylase(TH) and dopamine -hydroxylase(DBH). In the present study, we studied the tyrosine hydroxylase(TH) protein and dopamine D1 and D2 receptor mRNAs by nicotine concentration. PC-12 cell is treated in 0.1, 1, 10, 100 and 1000M concentration nicotine for 4h and 12h. TH protein is examined with western blotting and immunohistochemistry. DA D1 and D2 receptor mRNAs were examined using in situ hybridization. TH protein and DA D1 and D2 receptor mRNAs were increased in concentration of nicotine 0.1M ~ 10M. However, TH protein and DA D1 and D2 receptor mRNAs were not changed in 100M and 1000M concentration of nicotine. Nicotine 12h treatment is higher expression of TH protein and DA D1 and D2 receptor mRNAs than 4h nicotine tratement. Our date indicated that TH protein and DA D1 and D2 receptor mRNAs were changed by the concentration of nicotine (0.1M~10M).

C111 Ultrastructure of the Rectum Epithelial Cells in the American Cockroach, Periplaneta americana

Yu, Chai Hyeock
Dept. of Biology, Inha University

The epithelium of the rectum in the american cockroach, *Periplaneta americana*, was observed with electron microscopy. The rectal epithelium of posterior hindgut was composed of rectal pads which were covered with cuticular intima on the luminal side. The rectal pads were composed of columnar absorptive cells, junctional cells and basal cells. The apical plasma membrane of columnar cells was made of regular invaginations, where mitochondria were associated with some of the invaginations. The lateral plasma membrane was infolded and space was an uniform width of approximately 200. Well developed mitochondria were found closely associated with infoldings and these were referred to as the "mitochondrial-scalariform complex." A septate junction was found near the apical zone between the columnar absorptive cells. The epithelium was surrounded by the periepithelial space and muscles. The periepthelial space which was composed of fivrous connective tissue, was innervated by many tracheoles and axons.

C112 한국산 다묵장어(L. reissneri)와 칠성장어(L. japonica)의 정자 미세구조 비교

이병찬[1]*, 민봉희[1], 김구환[2], 이준일[2], 권애숙[3]
대구대학교 생물학과[1]; 대구보건대학 방사선과[2]; 대구과학대학 식품영양과[3]

한국산 *Lampetra*속의 두 종, 다묵장어 *L. reissneri*와 칠성장어 *L. japonica* 정자의 미세구조를 전자현미경(TEM, SEM)으로 관찰하였다. 두 종의 정자의 미세구조는 매우 유사하였으며 칠성장어류 정자의 특징인 신장된 핵, 짧고 두꺼운 소포모양의 첨체, 핵을 관통하여 꼬리까지 신장된 perforatorium 그리고 endonuclear canal이 관찰되었다. 그러나 미토콘드리아의 배열과 수 그리고 축사의 수에 있