[PB3-13] [10/18/2001 (Thr) 14:00 - 17:00 / Hall D]

Changes in dopaminergic activity following bilateral entorhinal cortex lesions

Oh YounHee°, Kim HanSoo, Lim DongKoo

College of Pharmacy, Chonnam National University

To determine the effects of entorhinal cortex lesions on brain dopaminergic activity, rats were bilaterally treated with ibotenic acid (20 nmol) into entorhinal cortex. Ten days after the treatment, various brain regions were dissected out. Changes in the levels of dopamine and its metabolites and the characteristics of dopamine receptors (D-1 and D-2) were determined using HPLC and receptor binding assay, respectively. The levels of dopamine were decreased in entorhinal cortex, hippocampus and frontal cortex (59.1, 75.1 and 22.8%, respectively), but not in striatum. The levels of hippocampal and frontal cortical dihydroxyphenylacetic acid were decreased and increased (49% and 76.6%), respectively, but not in entorhinal cortex and striatim. The turnover rates of dopamine were increased in hippocampus and frontal cortex (114.8 and 131.5%, respectively). The maximum binding density of frontal cortical dopamine-1 receptor was decreased (13.8%) without changes in its affinity. Also specific binding sites of SCH23390 were decreased in entorhinal cortex, striatum and hippocampus (29.0, 23.9, and 37.3%, respectively). The maximum binding density of frontal cortical dopamine-2 receptor was also decreased (23.6%) without changes in its affinity. Also specific binding sites of spiperone were decreased in hippocampus and striatum (26.0 and 49.1%, respectively), but not in entorhinal cortex. The results indicated that the lesions of entorhinal cortex induced the alterations of dopaminergic activities in various brain regions and suggest that the altered dopaminergic activities may contribute in the impairments of memory processes.

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

Different action on amino acid neurotransmitters in rat brain regions by exposure to extremely low frequency magnetic field

Jeong Ji Hoon°, Kim Jeong Soo, Sung Ji Hyun, Choi Soo Hang, Huh In Hoi, Sohn Uy Dong

Department of Pharmacology, Chung Ang University

Groups of Sprague Dawley rats (4-5 rats each) were exposed to 20 G extremely low frequency magnetic field (ELF MF, 60 Hz) or sham for 5 days. Rats were decapitated and brain samples were isolated regionally in cortex, cerebellum, striatum, thalamus and hippocampus to determine the level of amino acid neurotransmitters (glutamic acid, glutamine, aspartic acid, glycine taurine, tyrosine and GABA). At 20 G MF exposure, there were overall different changes in amino acid neurotransmitters level with increase in thalamus and striatum, and with decrease in cortex, cerebellum and hippocampus. In contrast to significant elevation in striatum and thalamus, GABA decreased in cortex and hippocampus. Glutamine and glycine showed also similar pattern of level changes to GABA. The level of excitatory amino acid, glutamic acid, was significantly enhanced by MF exposure in thalamus, but not in other regions. Another excitatory amino acid, aspartic acid, was observed to decrease only in cortex. Significant increase of tyrosine, precursor of catecholamines, occurred in thalamus. From the present findings, it may be hypothesized that MF may produce change of level of amino acid neurotransmitters in animals, and affect brain regionally.

[PB3-15] [10/18/2001 (Thr) 14:00 - 17:00 / Hall D]

In vivo effects of extremely low frequency magnetic field on nitric oxide in rat brain.

Jeong Ji Hoon, Kim Jeong Soo°, Sung Ji Hyon, La Hyun O, Kum Chan, Huh In Hoi, Sohn Uy Dong

Department of Pharmacology, Chung Ang University

It has been reported that extremely low frequency magnetic field (ELF MF) is related to alteration of nitric oxide synthase (NOS) activity in vitro. To confirm this result, we studied effects of MF on nitric oxide (NO) pathway in central nerve system (CNS) in vivo. Rats were exposed to sham or 20 G MF (60Hz) for 5 days. In drug experiment, NNA, NOS inhibitor, was administered (10mg/kg, i.p.) once a day during MF exposure. We measured NOS activity, c-GMP level in brain, and pain threshold before and after sham or MF exposure, and NNA. MF exposure increased NOx and c-GMP level in striatum, hippocampus and thalamus, in which this elevation of NOx and c-GMP by MF was blocked by NNA treatment. There was no change of NOx or c-GMP by MF in cortex and cerebellum. Response to thermal stimuli, reported to change according to NO level in brain, was decreased by MF and recovered to normal state by NNA treatment during MF exposure. From these results, we suggest that MF exposure activates NOS pathway in brain, which implicates that MF may alter the brain functions such as behaviors, mood and memory.

Poster Presentations - Field B4. Immunology

[PB4-1] [10/18/2001 (Thr) 14:00 - 17:00 / Hall D]

Mechanism of Allicin-induced apoptosis in Human Gastric Epithelial Cell Lines

Park SY°, Rhee DK , Pyo S

College of Phamacy, Sungkyunkwan University

Garlic (*Allium sativum*) may be one food that contributes constituents that significantly affect human health. Garlic compounds have been shown to inhibit growth of tumors and to modulate the activity of carcinogenesis. Allicin (diallyl sulfide, DAS) is a main component of garlic. Since the mechanism of allicin in tumor growth inhibition remains unclear, we examined whether allicin affects each of the apoptotic parameters measured, i.e., viability, cell cycle arrest and sub-G1 content, morphological change, caspase-3 and -8 activation , and DNA fragmentation. The *in vitro* effect of allicin (5㎍/㎖, 10㎍/㎖, and 20㎍/㎖) on the growth of gastric epithelial cells (Kato III$^{p53(-)}$) was evaluated, and allicin had the inhibitory effect of tumors cells growth in a dose dependent manner. Our data also showed that the inhibitory effect of allicin on proliferation of tumor cells was associated with cell cycle arrest from S to G2M phase transition and with induction of apoptosis. The apoptosis of tumor cells was confirmed by DNA ladder formation and morphological change. However, activation of caspase-3 and -8 was not observed during allicin-induced cell death. In addition, morphological changes and sub-G1 contents was not inhibited by peptide caspase inhibitor(Z-VAD-FMK). These data suggest that allicin-induced cell death is caspases independent and p53 independent.

[PB4-2] [10/18/2001 (Thr) 14:00 - 17:00 / Hall D]

Study on immunomodulatory effect of a prescription including Agaricus blazei murrill

Lee JooRyung, Woo HeeJong+ Kim SungHoon

Department of Oncology, Graduate school of East-West medicine, Kyung Hee University, Yonin, Korea, +Department of Immunology, College of Veterinary Medicine, Seoul National University Suwon, Korea

Agaricus blazei murrill was reported to have immunostimulating and antitumor activities just like other mushrooms. Thus, we formulated a prescription including Agaricus blazei murrill(PAM) as a major