acid > sinapinic acid > cinnamic acid. > ferulic acid > quinic acid. These differences of anti-inflammatory activity may be due to structural difference of phenylpropanoids. These data showed that phenylpropanoid has the anti-inflammatory activity in which the more has hydroxy group of benzene ring, the more has potent anti-inflammatory activity. From these results, phenypropanoids can be developed a led compound as a anti-inflammatory agents.

[PB2-2] [04/19/2001 (Thr) 15:30 - 16:30 / Hall 4]

Analgesic activity and Inhibitory Action of Capillary Permeability of phenylpropanoids in the HAc-induced Peritonitis

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In this study, the structure-activity relationship of phenylpropanoids in analgesic activity and inhibitory activity of capillary permeability were evaluated in the HAc-induced peritonitis. The writhing syndrome 10 min after i.p. injection of 0.1 ml/20g of 0.7 % acetic acid was measured for 10 min. The capillary permeability into peritoneal cavity 10 min after i.p. injection of 0.1 ml/20g of 0.7 % acetic acid and simultaneously i.v. injection of 0.1ml/20g of 1 % Evan's blue solution was measured. The peritoneal exudate 30 min after intravenous injection of Evan's blue was taken and the contents of Evan's blue was spectrophotometrically measured by ELISA microplate reader at 615 nm. It shows that all of phenylpropanoids have dose-dependently analgesic activity and inhibitory action of capillary permeability at a oral dose of 25mg/kg. Caffeic acid have the most activity, but their activity was less cative than indomethacin and ibuprofen. Their efficiency of analgesic action and inhibitory action of capillary permeability in the order: caffeic acid > chlorogenic acid > p-coumaric acid > sinapinic acid > cinnamic acid. > ferulic acid > quinic acid. These differences of anti-inflammatory activity may be due to structural difference of phenylpropanoids. These data showed that phenylpropanoid has the anti-inflammatory activity in which the more has hydroxy group of benzene ring, the more has potent anti-inflammatory activity.

Poster Presentations - Field B3. Neuroscience

[PB3-1] [04/19/2001 (Thr) 15:30 - 16:30 / Hall 4]

Changes in behavior and the levels of neurotransmitters after bilateral entorhinal cortex lesions

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To determine the effects of entorhinal cortex lesions on hippocampus and other regions, rats were bilaterally treated with ibotenic acid (20 nmol) into entorhinal cortex. On one week after the treatment, water maze and avoidance tasks were performed in each rat. In addition, changes in the levels of dopamine, serotonin and glutamate were determined in various brain regions. Ibotenic acid-treated rats showed impaired retention and acquisition compared to controls. In Morris water maze and passive avoidance tasks, the treated rats were more impaired in retention of memory than in acquisition. However, more impairments of acquisition than retention were shown in active avoidance tasks. In the biochemical studies, the activities of caspase-3 were increased in entorhinal cortex

(36.2%) and hippocampus (127%). Although the levels of dopamine and serotonin were not altered, the turnover rates of serotonin were increased in entorhinal cortex (27.7%) and hippocampus (22.7%). However, the levels of dopamine (22.8%) and serotonin (13.5%) were decreased and the levels of dihydroxyphenylacetic acid were increased (76.6%) in frontal cortex. The turnover rates of dopamine were increased in frontal cortex (131.5%) and striatum (24.2%) and that of serotonin was increased (19.6%) in frontal cortex. However, the levels of total glutamate were not changed in all examined regions. These results indicate that the lesions of entorhinal cortex induced the impairments of learning and memory and the alteration of the monoamine metabolisms in various brain regions. The results suggest that serotonergic activities in entorhinal cortex and hippocampus may contribute in the memory processes.

[PB3-2] [04/19/2001 (Thr) 15:30 - 16:30 / Hall 4]

The effects of tributyltin compounds on dopamine content and L-DOPA-induced neurotoxicity in PC12 cells

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There is little information concerning the effects of tributyltin compounds such as tributyltin acetate (TBTA) and tributyltin chloride (TBTC), which are the endocrine disrupters on living organisms. In this study, the effects of tributyltin compounds on dopamine content and L-DOPA-induced neurotoxicity in PC12 cells were investigated. TBTA and TBTC at concentration ranges of 0.05-0.75 μM decreased dopamine content in a concentration-dependent manner in PC12 cells. TBTA (0.1 μM) and TBTC (0.5 μM) showed 57.2% and 55.1% inhibition of dopamine content for 48 hr. IC50 values of TBTA and TBTC were 0.12 μM and 0.6 μM. Treatment of PC12 cells with L-DOPA at concentration ranges of 10-50 μM increased dopamine content and the increase in dopamine levels by L-DOPA were in part inhibited by TBTA (0.05-0.5 μM) and TBTC (0.5-5.0 μM). TBTA and TBTC did not show a up to 0.25 μM and 1.0μM, respectively. However, at concentrations higher than 0.5 μM and 1.5 μM, TBTA and TBTC caused a neurotoxicity through an apoptotic process. In addition, TBTA (0.05-0.5 μM) and TBTC (0.5-5.0 μM) also enhanced L-DOPA-induced neurotoxicity (L-DOPA concentration, 10-100 μM). These results suggest that tributyltin compounds inhibit dopamine biosynthesis and stimulate L-DOPA-induced neurotoxicity in PC12 cells.
*supported by the Brain Korea 21 project.

[PB3-3] [04/19/2001 (Thr) 15:30 - 16:30 / Hall 4]

The effects of protoberberine alkaloids on L-DOPA-induced neurotoxicity in PC12 cells

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It has been reported that berberine and palmatine decrease dopamine content by inhibition of TH activity, and the IC50 values were 18.6 μM and 7.9 μM, respectively. In this study, the effects of berberine, palmatine and coptisine on L-DOPA-induced neurotoxicity were investigated by using PC12 cells. Berberine and palmatine showed concentration-dependent decrease in dopamine content, however, coptisine did not. L-DOPA at concentrations of 10-50 μM increased dopamine content, but, the increased dopamine levels were in part inhibited when L-DOPA (10-50 μM) were associated with berberine or palmatine. L-DOPA (20-50 μM), berberine (10-20 μM), palmatine (20-50 μM) or coptisine (10-20 μM) did not affect the cell viabilities, which were determined by the MTT