

Soon Sun Kim, Gyu Seek Rhee, Byung Ho Kim, Rhee Da Lee, So Hee Kim, Kyung Hee Sohn, Seung Jun Kwack, Chul Hoon Park, Se Young Chung, Kui Lea Park

National Institute of Toxicological Research, Korea Food and Drug Administration, College of Pharmacy, Kyunghee University

Sumithrin is one of the synthetic pyrethroid insecticides, developed classes of insecticides, due to its high activity against insects, and relatively low mammalian toxicity compared to other insecticide classes. Sumithrin is commonly used insecticide for in-door pest control, providing for human exposure. Our uterotrophic assay using immature SD female rats demonstrated that sumithrin acts like an estrogen agonist. Estrogen or antiestrogen clearly influence reproductive development. Therefore, We determined the effects of in utero exposure to sumithrin on postnatal body weight, reproductive development (anogenital distance(AGD), vaginal opening, organ weight) in rat offspring. Pregnant SD rats were intraperitoneally injected with sumithrin (300 mg/kg/day) from gestation day(GD) 6 to 18. Male and female offsprings were examined at postnatal days(PND) 3, 15 and 1, 22, respectively. Rat exposed to sumithrin had a statistically significant increase in body weight on PND21(male) and 22 (female) and brought significant decreases in male AGD on PND 15 and 21. Also, vaginal opening was accelerated significantly ($P < 0.05$). These results indicate that persistent exposure to this compound may contribute to reproductive developmental dysfunction.

[PA4-20] [10/18/2001 (Thr) 14:00 - 17:00 / Hall D]

Identification and Cloning of Multiple Forms of Neutral Sphingomyelinase in Bovine Brain

Jung SungYun^o, Chang DongHoon, Jeon HyungJun, Kim DaeKyong

Dept. of Environmental & Health Chemistry, College of Pharmacy, Chung-Ang Univ., Seoul, Korea

Neutral form of sphingomyelinase (N-SMase) is a family of enzymes which hydrolyze sphingomyelin to produce a lipid-derived tumor suppressive second messenger ceramide. N-SMase exists as multiple forms in brain and seems to transmit different signals and to give rise to different pools of ceramide, eliciting cellular responses ranging from apoptosis and cell cycle arrest to cell survival and cell proliferation. In previous study, we have identified at least seven forms of N-SMase activities termed N-SMase α , β , γ , δ , ϵ , ζ , λ in bovine brain based on extraction patterns, column profiles and biochemical properties (*J. Neurochem.* 75, 1004-1014, 2000, Jung et al.). Here we first report the purification of 68 kDa N-SMase λ , a cytosolic form of Mg^{2+} -independent N-SMase. Second, we report cDNA cloning of the 30 kDa forms of SMase α , β , γ , δ using a specific antibody against the 30 kDa protein from rat brain λ ZAP II cDNA library expressing proteins. The resulting three positive clones were identified as an identical gene encoding one of isoforms of a signaling protein playing a crucial role in cell survival and death. Third, we also identified the 60 kDa N-SMase ϵ as a known stress protein whose role has not been fully defined by MALDI-TOF analysis. We are underway to confirm these proteins as the respective N-SMase enzymes through overexpression of these proteins in eukaryotic cells and immunoprecipitation experiments.

[PA4-21] [10/18/2001 (Thr) 14:00 - 17:00 / Hall D]

Role of Ceramide in Hypoxia-induced Neuronal Cell Death

Kang MiSun^o, Jeong JuYeon, Kim DaeKyong

Dept. of Environmental & Health Chemistry, College of Pharmacy, Chung-Ang University

Ceramide is an important lipid messenger involved in mediating a variety of cell functions including proliferation, differentiation, growth arrest and apoptosis. This study was undertaken to determine