

Through using the computer auto monitor system, the experiment involved the affect of surrounding environment and can make the results more sensitive and reliable. It is easy to find the early impairment of central nerve system combining many neurobehavioral teratology methods and quantity indexes. So the method will be widely used in public health, toxicology and pharmacology.

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## **Effect of combined pesticides during pregnancy on hippocampal \_expression of NMDAR-1 protein in the offspring rats**

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### **Abstract**

Combined pesticides exposure during brain development is known to affect cognitive and behavioral functions in children and animals. The combined pesticides exposure on pregnant rats from 1st to 15th day of gestation was used as a model to examine the \_expression of NMDAR-1 protein in hippocampus DG CA1 CA3 area by immunohistochemistry (IHC) in the offspring. The pregnant rats had been divided randomly into 4 groups. Three exposure groups were exposed to 1/300LD50, 1/95LD50, 1/30LD50 cypermethrion plus same equivalent dose of methylparathion respectively in vegetable seed oil since 1 day before mating. One control group were force-fed vehicle solvent only. Animals were deeply anaesthetized and perfused transcardinally with 4% paraformaldehyde on 7days, 14days, 21days, 28days after born. Cryostat sections of hippocampus were cut to 25  $\mu$ m thickness. The rabbit anti-NMDAR-1 monoclonal antibody was used. The positive and negative controls were used in each test. After stained, a light microscope was used to observe at regions of hippocampus DG CA1 CA3 area. In the control group, Level of NMDAR-1 protein \_expression in hippocampus were lowest on 7th after born, increasing to reach peak levels by 21 days of age and subsequently decreasing at 28days of age. However, the peak of NMDAR-1 \_expression in three dose groups was at 8days of age.

Combined pesticides exposure resulted in significant effects in NMDAR-1 expression in hippocampus DG CA1 CA3 area. NMDAR-1 expression level were significantly decreased in the CA1 area ( $F=12.58$ ,  $P=0.0000$ ) and CA3 area ( $F=3.95$ ,  $P=0.0130$ ) from control group to high dose group. But in the DG area, the level of NMDAR-1 expression were significantly increased ( $F=4.005$ ,  $P=0.0120$ ). It indicated that the cognitive deficits indeed by low-level combined pesticides exposure in early state of life may persist to adulthood, and the modified NMDAR protein expression may play a key role in the cognitive deficits associated with pesticides exposure during development.

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