

The Effect of Cypermethrin and Methylparathion on Endocrine Hormone and Immunological Function

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Abstract

Objective: To study the changes of relative viscera weight, reproductive hormone, thyroid hormone and immunological function in female rats exposed to combined pesticides of cypermethrin and methylparathion and in her baby rats.

Method: 10-week-old Wistar rats had been divided randomly into 4 groups. Three exposure groups were force-fed one time every day for 15 days using 1/300 LD₅₀, 1/95 LD₅₀, 1/30 LD₅₀ cypermethrin plus same equivalent doses of methylparathion, respectively. One control group were force-fed vehicle solvent only. Pesticides had been dissolved in vegetable seeds oil. The half female rats were killed when she were pregnant for 19 days and the viscera relative weight were measured. The serum genital hormone Luteinizing Hormone (LH), Follicle Stimulating Hormone (FSH), Estradiol (E₂) and Testosterone (T); the serum thyroid hormone Triiodothyronine (T₃), Tetraiodothyronine (T₄) and Thyroid stimulating hormone (TSH); IgG and IgA level were measured using Radioimmunoassay(RIA). The baby rats' body length, tail length and the time of auricle separation, teeth burgeon, eye opening, ear hole opening, hair appearance were measured. Then the baby rats were killed when they were 70-day-old and the viscera relative weight were measured. The serum genital hormone LH, FSH, E₂, T; the serum thyroid hormone T₃, T₄, TSH; IgG and IgA level were measured using Radioimmunoassay(RIA).

Results: The baby rats' body length in dose of 1/95 LD₅₀ were longer than those of baby rats in dose of 1/300 LD₅₀ ($P<0.05$), and the baby rats' tail length 1/30 LD₅₀ were longer than those of baby rats in dose of 1/300 LD₅₀ and those of control group ($P<0.05$). The mean serum T₁ level of female rats in dose of 1/95 LD₅₀ were higher than that of control group ($P<0.05$) and the mean serum IgA level of female rats in dose of 1/95 LD₅₀ were higher than that of female rats in dose of 1/300 LD₅₀ ($P<0.05$). The mean serum T level of male baby rats in dose of 1/300 LD₅₀ were higher than that of control group ($P<0.05$).

Conclusion: Our results showed that rats exposure to the combined pesticides of

cypermethrin and methylparathion 15 days had such effects as below:

- ① In dose of 1/95, The baby rats' body length increasing.
- ② In dose of 1/30, The baby rats' tail length increasing.
- ③ In dose of 1/95, the serum T_s, IgA increasing in female rats.
- ④ In dose of 1/300, the serum T increasing in male baby rats.

Key word Cypermethrin; Methylparathion; Reproductive hormone; Thyroid hormone; Immunological Function

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Effects of neurobehavior in offspring of Wistar rats after exposure to Cypermethrin and Methylparathion

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Abstract

Object: To detect effects of neurobehavioral teratology in offspring of Wistar rats after pregnant exposure to combined pesticides of Cypermethrin and Methylparathion.

Methods: 48 pregnant Wistar were divided randomly into 4 groups. Three exposure group were forced fed from the first day to fifth day after conception, with 1/30 LD₅₀, 1/95 LD₅₀, 1/300 LD₅₀ Cypermethrin plus same equivalent doses of Methylparathion, respectively. The control group is force-fed with vegetable seed oil. Morris water maze tests of 50-days old 32 offspring were carried out. Double blind test was used in whole experiment.

Result: There were no significant differences in performance of Morris water maze ($P > 0.05$).

Conclusion: Pregnant Wistar rats were exposure to mixture of Cypermethrin and Methylparathion, neurobehavioral effects were not observed in offspring in this experiment.

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