DATA EVALUATION RECORD

TRICHLORFON

Chromosomal Aberrations: 1. Mouse Bone Marrow Cells
2. Human Lymphocyte Cultures

CITATION: Kurinnyi AI. 1975. Comparative study of the cytogenetic effect of certain organophosphorus pesticides. Genetika 11(12):64-69.

Pilinskaya MA, Kurinnyi AI, Kondratenko TI. 1976. Results of the study of the cytogenetic activity of some pesticides. pp 295-299, In Molecular mechanisms of genetic processes. Transactions of an International Symposium, Moscow.

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STUDY TYPE: Chromosomal Aberrations: 1. Mouse Bone Marrow Cells
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[Identical data present in both studies].

ACCESSION NUMBER: Not available.

MRID NUMBER: 05000617 (Kurinnyi, 1975).
~~Not available for~~ (Pilinskaya et al.)
05002806

LABORATORY: USSR Ministry of Health, Kiev.

TEST MATERIAL: Chlorophos (Dipterex), O,O-dimethyl-(2,2,2-trichloro-1-hydroxyethyl)phosphate [as stated; presumably...phosphonate] [source and purity not stated].

PROTOCOL:

1. White male mice "of no particular lineage" [age not stated] were injected intraperitoneally with chlorophos at 10 mg/kg. After 6, 9, 16, 20, and 24 hours, osseous bone marrow cells were harvested (5-11 mice at each time). A colchicine solution was injected intraperitoneally 2 hours before decapitation. Femoral bones were extracted, washed with .075 M KCl, and fixed with methanol:acetic acid (3:1). Chromosome preparations were prepared by the method of Ford and Hammerton (1956. Stain Technol. 31:247). From each animal, 100-200 metaphases were examined.

   In another experiment, the same type of male mice [age not stated] were treated ("method of injection--injected perorally") with chlorophos at 10, 20, 100, and 400 mg/kg. Bone marrow cells were obtained 20 hours after dosing, because the initial studies described above determined that the "maximum number of cells with chromosome aberrations was detected 20 hours after exposure." Chromosome preparations were prepared as described above.

Controls consisted of 16 "untreated" animals. Statistical analyses of chromosome aberrations were performed according to Plokhinskii (1970. Biometrics, Izd. MGU) [as stated in translation].

2. Human lymphocytes (from peripheral blood) [source of blood not stated] cultures were treated with chlorophos at 20 µg/ml "3-4 hours after the start of incubation and were left (in the culture) to the end of cultivation." "Cultivation of lymphocytes was performed according to the micromethod (Hungerfored, 1965) [Hungerford. 1965. Stain Technol. 40:333] during 54-56 hours." No further information on protocol and methods were stated.

RESULTS:

1. The number of chromosome aberrations in treated animals was greater than that in controls (Table 1). It was not stated if these differences were significant. The predominant type of aberration was single fragments (Table 1).

2. The frequency of metaphases with aberrations was 6 percent in lymphocytes treated with chlorophos at 20 µg/ml. No control data were presented.

CONCLUSIONS:

1. The results of statistical analyses of chromosome aberrations were not given, nor were individual animal data given. The solvent used for chlorophos was not stated and it was not stated that controls received the solvent. Consequently, these results cannot be evaluated.

2. The results of the treated lymphocyte cultures cannot be evaluated because control data were not given.

CORE CLASSIFICATION: Unacceptable.

The following deficiencies were noted:

- o The purity of the test material was not stated.
- o Positive controls were not included in either test.
- o Negative controls were not included in the lymphocyte culture assay. A solvent control in the chromosome aberration was not described. Negative controls were "untreated" mice, although chlorophos had to have been dissolved in a solvent for injection into mice.
- o Results of statistical analyses were not given.

TABLE 1. Chromosomal Aberrations in Bone Marrow Cells of Mice Treated with Chlorophos

Method of injection	Dose (mg/kg)	Fixation period (hours)	No. of animals	No. of metaphases studied	Percent of metaphases with aberrations	Aberrations per metaphase	Aberrations/100 cells		
							Single fragments	Paired fragments	Translo-cations
Control[b]	0	NA[c]	16	1,600	0.56	9	0.56	0	0
	0	NA	--[d]	650	0.46	--	--	--	--
	0	NA	--[d]	400	0.75	--	--	--	--
Intraperi-toneally	10	6	6	500	1.20	6	1.00	0.20	0
		10	5	500	0.80	4	0.80	0	0
		14	8	800	1.37	11	1.33	0	0
		20	11	1,400	1.50	29	1.85	0.21	0
		24	5	1,000	1.00	10	1.00	0	0
Perorally	10	20	7	700	0.71	5	0.71	0	0
	20	20	--[d]	700	0.57	--	--	--	--
	100	20	5	1,000	2.70	35	3.20	0.20	0.1
	400	20	10	1,000	0.80	8	0.70	0.10	0

[a] Data compiled by reviewer from both studies; some of the data reported twice, in both studies.

[b] Three sets of control data reported within both studies combined.

[c] NA = not applicable.

[d] Not reported.