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DATA EVALUATION RECORD

TRICHLORFON

Embryotoxic Evaluation of Trichlorfon
Introduced into the Chicken Egg

CITATION: Belyayev V. 1974. Effect of organophosphorous compounds introduced into the yolk sac on the development of chick embryos. Khim. Selsk. Khoz. 12(9):623-626.

REVIEWED BY:

Curt Lunchick, M.S.
Project Scientist
Dynamac Corporation
11140 Rockville Pike
Rockville, MD 20852
301-468-2500

Signature: Curt Lunchick
Date: August 4, 1983

John R. Strange, Ph.D.
Department Director
Dynamac Corporation
11140 Rockville Pike
Rockville, MD 20852
301-468-2500

Signature: John R. Strange
Date: 4 August 1983

APPROVED BY:

Irving Mauer, Ph.D.
EPA Scientist

Signature: Irving Mauer
Date: 08-05-83

DATA EVALUATION RECORD

STUDY TYPE: Embryonic evaluation of trichlorfon introduced into the chicken egg.

CITATION: Belyayev V. 1974. Effect of organophosphorous compounds introduced into the yolk sac on the development of chick embryos. Khim. Selsk. Khoz. 12(9):623-626.

ACCESSION NUMBER: Not available.

MRID NUMBER: Not available.

LABORATORY: "The experiments were conducted in the unit of incubation of the sovkhos 'Krasnyy Kolos' of the Lipetsk region of the Lipetsk oblast."

TEST MATERIAL: Trichlorfon (formulation not specified). The purity was 82 percent, but the source was not stated.

PROTOCOL:

1. Trichlorfon was studied for its embryotoxic effects in ovo. The trichlorfon was identified as "0-0-dimethyl-(1-oxy-2,2,2-trichloroethyl)phosphonate." The purity was 82 percent and the source was not given.
2. Eggs from an unspecified breed of chicken were used in the study. The control groups consisted of "21-28" eggs. The trichlorfon groups consisted of "28-39" eggs each.
3. The experiment consisted of an incubation control group, an injection control group, a distilled water (solvent) control group, and the trichlorfon-treated eggs that were inoculated at 0.01, 0.1, 0.2, 1.0, 2.0, 10, 20, and 200 mg per kg of egg. The injection volume was not stated. The eggs were inoculated by inserting a hypodermic needle into the yolk sac of the egg through a hole made in the shell. The author did not state the day of inoculation.
4. The eggs were examined for embryo viability with an "egg candling device" on days 7, 11, 18, and 21 of incubation. The "filling with blood of the vessels of the chorioallantoic membrane" and the "vibrating movements of the embryo" were used to determine viability.
5. The use of statistics in the study was not specified.

RESULTS:

The method of inoculation appeared to be lethal to the chick embryo. Viabilities over the 21-day incubation period among the incubation control eggs were 87.4 and 73.6 percent. Among the injection control eggs, the overall viabilities were 39.4 and 26.2 percent. The overall viabilities for the vehicle control eggs were 7.8 and 17.4 percent. Trichlorfon-treated eggs had viabilities that ranged from 5.1 to 36.3 percent over the 21-day incubation period.

CONCLUSIONS:

Chicken eggs were inoculated with trichlorfon on an unspecified day of incubation. The technique proved unsuccessful as shown by the overall viability among the injection control groups of 39.4 and 26.2 percent. The percentages of viable vehicle-treated eggs were 7.8 and 17.4. The lethality of the technique prevents any evaluation of trichlorfon-related effects.

The author concluded from the data that trichlorfon was lethal at dose levels of 0.01, 0.1, 20, and 200 mg/kg of egg because the overall percentage of viable eggs was less than the vehicle controls. At dose levels of 0.2, 1.0, 2.0 and 10 mg/kg of egg the author concluded that trichlorfon stimulated chick embryo growth because more embryos survived the incubation period at those dose levels than among the vehicle controls. This reviewer fails to see how a compound could be embryotoxic at the low and high doses, yet enhance survival at the intermediate doses.

CORE CLASSIFICATION: Invalid data.

The major deficiency in the study was that the technique used to administer the trichlorfon was lethal to the test system thereby making the data presented uninterpretable.