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DATA EVALUATION RECORD

TRICHLORFON

Acute Oral Toxicity in Sheep and Cattle

CITATION: Krustev Y. 1975. Studies of the activity of erythrocyte cholinesterase in healthy and Dipterex-poisoned sheep and cattle. Vet. Med. Nauki 12(1):10-15 [English translation].

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DATA EVALUATION RECORD

STUDY TYPE: Acute oral toxicity in sheep and cattle.

CITATION: Krustev Y. 1975. Studies of the activity of erythrocyte cholinesterase in healthy and Dipterex-poisoned sheep and cattle. Vet. Med. Nauki 12(1):10-15 [English translation].

ACCESSION NUMBER: Not available.

MRID NUMBER: Not available.

LABORATORY: Veterinary Scientific Research Institute, Veliko Turnovo.

TEST MATERIAL: Trichlorfon (purity unspecified).

PROTOCOL:

1. The test was conducted with Dipterex (source and purity not specified).
2. A total of 272 sheep and 120 cows and calves (source, sex, and strain not specified) over six months of age served as controls. Fifty-five sheep and 16 calves (source, sex, and strain not specified) six months of age were administered the test material. The sheep were given a single oral dose of Dipterex as follows: 23 animals received 150 mg/kg body weight, 17 animals received 200 mg/kg body weight, and 15 animals were given 250 mg/kg body weight. The calves were "randomly" poisoned (dose not determined).
3. Erythrocyte cholinesterase activity was to be assayed.
4. High variational coefficients were determined but additional statistical analyses were not performed.

RESULTS:

The average value for erythrocyte cholinesterase activity in control sheep was determined to be 82 ± 2.44 [assumed standard error], while the average value for cattle was 146 ± 6.13 units. However, the range was very broad, e.g., from 30 to 230 units for sheep and from 41 to 320 units for cattle. The results of cholinesterase activity determinations in sheep treated with Dipterex are presented in Table 1.

TABLE 1. Erythrocyte Cholinesterase Activities
in Sheep Exposed to Dipterex

Dose Level	Number of Animals		Suppression of Activity (in percent)	
	Without Clinical Symptoms	With Clinical Symptoms	With Clinical Symptoms	Without Clinical Symptoms
150 mg/kg	4/23	19/23	75-80	56-85
200 mg/kg	12/17	4/17	75-90	71-75
250 mg/kg	15/15	-----	88-100	-----

The erythrocyte cholinesterase activity in 14 of the 16 randomly treated calves was depressed below that of the 120 control animals; whereas it was higher in the remaining 2 calves.

CONCLUSIONS:

The purpose of this study was to establish the normal activity of erythrocyte cholinesterase in sheep and cattle, as a means for determining organophosphorus poisoning. The author concluded that when Dipterex was administered at the given dose levels, the "normal" erythrocyte cholinesterase activity declined by 50 to 100 percent. However, there was no direct relationship between the degree of cholinesterase inhibition and the expression of clinical symptoms of poisoning.

In the opinion of this reviewer, the use of an average cholinesterase value is inappropriate due to the broad range of "normal" values. In order to provide quantitatively useful data, test animals also should serve as their own controls; thereby providing their own baseline levels. However, this study does provide qualitative information regarding the lack of correlation between degree of cholinesterase inhibition and expression of clinical symptoms.

CORE CLASSIFICATION: Supplementary.

The source and purity of the test material and the source, age, and strain of animals used was not reported.