US EPA ARCHIVE DOCUMENT

RD-1616
TXR-550

Guthion

374

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Acute Toxicity

| Route | Animal | Sex | Formulation | $LD_{50}$ Value (mg/kg) |
|---|---|---|---|---|
| Oral | Rat | Male | Technical | 13 |
| Oral | Rat | female | Technical | 11 |
| Oral | Mouse | Mixed | Technical | 20 |
| Dermal | Rat | Mixed | Technical | 220 |

Females rats were exposed for one hour to air containing 2,00 or 20,00 ug/l of an unspecified Guthion spray without showing signs of toxicity. In another study make rats were exposed to air containing 2,000 ug/l Guthion spray or liquid. Mortality was 67% and 83% for the spray and the liquid, respectively. The formulations used were not described in more detail. The 1-hour $LDT_{50}$ for Guthion (formulation unspecified) in female rats in 6,400 ug/l of air. The value for female mice tested under the same conditions is 2,300 ug/l of air.

Subacute Toxicity

Five female and five male rats were exposed to daily dermal applications of 50 or 120 mg/kg, respectively. Applications were made 5 days each week of 3 weeks (The formulation of Guthion used was not specified in the reference.) Decreased body, liver, thymus, and adrenal weight and decreased growth were seen. No significant gross or histological observations were reported.

Groups of 18 male rats were given diets containing 0, 50, or 100 ppm Guthion for 16 weeks. Cholinergic signs of toxicity occurred in all tests animals, and mortality was 45% and 56% for animals receiving the 50 or 100 ppm diets, respectively. Body weights were decreased by 10.% in the low dose group and 18% in the high dosed group. Serum, brain, red blood cell, and submaxillary cholinesterase activity was inhibited after the three weeks without treatment. Histological examinatin of tests revealed no idication of atrophy. No other observation were made.

Groups of dogs (1 male and 1 female per group) were given diets containing 0, 5, 10, 20, or 50 ppm Guthion for 12 weeks. No weight loss was observed. Red blood cholinesterase was inhibited at 10 and 50 ppm, while serum cholinesterase was inhibited only in the 50 ppm dogs. No other effect were reported.

Diets containing 0, 2, 5, or 20 ppm Guthion (25% WP, doses are based on pp active ingredient) were fed to groups of rats (13 per sex per group) for 1 weeks. No effects cholinesterase activity were noted at 2 or 5 ppm Cholinesterase levels returned to normal in the 10 and 20 ppm groups after they revealed a control diet for 4 days. No other information was given regarding histological or gross examination of the animals.

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Chronic Toxicity

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Groups of rats (40 per sex per group) were given diets containing 0, 5, 20 or 50 ppm Guthion for 2 years. At 23 weeks a group was added to the study and given a 2.5 ppm diet. At 47 weeks into the study the 50 ppm diet was changed to 100 ppm. No effects on food consumption, growth, renal function and gosss or histological appearance were noted. No other effects were discussed.

Groups of dogs (4 males and 4 females per group) were given diets containing 0, 5, 20, or 50 ppm (400 gm dict each day) for two years. After 36 weeks the 20 and 50 ppm diets were changed to 50 and 100 ppm respectively. At 57 weeks the 100 ppm diet was changed to 150 ppm, and at 84 weeks the Guthion concentration was further increase to 300 ppm. No effects were obseved with respect to gross or histological appareance of the animals. Red blood cell and plasma cholinesterase activities were decreased in dogs getting diets containing 50 or more ppm Guthion.

Neurotoxicity

Leghorn hens were fed diets containing 0, 10, 50, 100 ppm Guthion for 30 days. Some of these hens were maintained on a 0 ppm diet for an additional 30 days. No leg weakness or demyelination was observed.

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Reproduction Toxicity

A three-generation study of Guthion was done with [illegible] 24 females and 6 males per group) given diets containing 0, 5, [illegible] 25, or 50 ppm. Fourteen of the 50-ppm Fo females and 9 of the [illegible] Fo females died before they could be mated. There were no effects on male or female fertility and litter sizes. Severe diarrhea and mortality were reported in the 0 and 5 ppm groups. There was a reduced lactation index in the 50 ppm group. All of the males fed Guthion showed increased testes weights when compared to controls. No other effects were observed.

Teratogenicity

Pregnant rabbits were given diets containng 0, 5, or 55 or 25 ppm Guthion on days 8 through 16 of gestation. No effects on litter size or postnatal mortality were seen.

Pregnant rats and mice were given dialy doses of ), 1.25 2.5, or 5 mg/kg on days 6 through 15 of gestation. An additional study with the same treatments in rats was done from day 6 of gestation through weaning. There were signs of maternal toxicity in the rats treated with the 5. mg/kg dose. The compound caused no increase in the occurrance of anomalies in rats or mice. The 5 mg/kg animals had decreased weight gain and food consumption, but these effects were reverse when treatment was discoutinued. No effects on litter size, number of resorption or fetal weight in any of the group were seen. Rats showed reduced pup weight and survival of weanlings at the 5 mg/kg treatment.

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information from the National Cancer Institute (Dr. Dale's phone conversation with Dr. Cueto, NCI; July 5, 1978) stated that Guthion is not oncogenic in male or female B6C3H mice. A study in Osborne-Mendel rats is suggestive but not sufficient evidence that Guthion is oncogenic.

Human Studies

Volunteers receiveing as much as 9 mg/kg/day Guthion for 28 days showed no depression of plasma or red blood cell cholinesterase levels.

Reference

Unpublished Draft of a Substitute Chemical Program report prepared by A.D. Little in 1975.

Prepared by Rober Gardner Date 8-25-78

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