LANL Ref

6484

Proceedings of the Society for Experimental Biology and Medicine

5/1/1960

Vol. 104 MAY, 1960 No. 1

SECTION MEETINGS

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sis of the feed. Inspection of the feed revealed seeds resembling *Crotalaria spectabilis*. Thereafter, inclusion of such seeds in test rations produced lesions similar to those observed in the field.

Crotalaria depresses egg production and causes weight loss in laying birds. Crotalaria is known to produce firm and cirrhotic livers in horses(3,4,5). In chickens that died in these acute toxicity studies cirrhosis was not observed. Cattle consuming Crotalaria seed or plant have a loss of appetite, tenesmus and blood in the feces. Pigs eating Crotalaria develop hemorrhage into the serous membranes, anemia, enteritis, and jaundice(6). No anemia, enteritis, or jaundice was observed in the chickens in these assays.

Summary. Concentrations of 0.05% to 5% *Crotalaria spectabilis* seed were fed to chicks. All concentrations of the legume were shown to be toxic. Concentrations in excess of 0.3% produced death in all birds within 18 days. When less than 0.2% was fed there was a marked reduction in weight gain. In birds which died, hemorrhage was frequently observed in liver, lungs and the pericardium. Atrophy of liver and ascites were constantly encountered in test birds after death.

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Received May 16, 1960. P.S.E.B.M., 1960, v104.

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Tolerance of Chickens for Barium. (25866)

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Barium carbonate has been used for poisoning rats for many years. Several terms have been used in the literature to describe levels of barium that are toxic to animals. Lethal dose and fatal dose have been used in European literature, and LD_{50} dose in recent American literature. Hüter(1) considered the lethal dose of barium carbonate for rats to be 1500 mg/kg of live weight. Dieke(2) found that LD_{50} of barium carbonate for wild rats was 1480 mg/kg. The LD_{50} of barium, based on Dieke's observations would be about 1030 mg/kg. According to Dervillée and Raveleau(3), the range in fatal dose of barium, given in the form of carbonate, is 35-56 mg, 104-139 mg, and 418-557 mg, respectively, for the cat, guinea pig, and rabbit, per kilo of live weight. In view of wide differences among tolerances of different mammalian species for barium, it was of interest to study the tolerance of the chicken. Barium hydroxide and barium acetate were chosen for this study because they are among the most soluble of all barium compounds.

Procedure. Two types of experiments, single-dose toxicity and growth, were used. Single, graded doses of barium as barium hydroxide were administered to 40 male chickens 7 weeks old with average weight of 943 ± 44 g. The required quantities of barium hydroxide to supply 400, 500, 600, 700, and 800 mg of barium were weighed to nearest mg and packed into gelatin capsules. A capsule was placed as far down each chicken's esophagus as possible; then, by stroking the chicken's neck, the capsule was moved into the crop. Procedures in the two growth experiments were similar to those described by Mehring, *et al.*(4). In Exp. 1, 12 lots of chicks (10 males and 10 females per lot) were

TABLE IV. Effect of Barium Hydroxide and Barium Acetate on Growth, Mortality, and Feed Efficiency of Chickens between 1 Day and 4 Weeks of Age: Exp. 2.

	Barium hydroxide series			Barium acetate series		
Level of added barium, ppm	Gain in live wt, g	Mortality	Gain / Feed	Gain in live wt, g	Mortality	Gain / Feed
0	483	1	.554	435	2	.541
250	No chicks at this level			436	2	.566
500	450	0	.538	410	0	.538
1000	428	0	.552	448	0	.535
2000	406	0	.518	428	1	.540
4000	410	1	.537	357	1	.518
8000	231	14	.510	218	12	.485
16000		20			20	
32000		20		No chicks at this level		

the same basal diet in the barium acetate series. Chickens in lots fed diets containing barium hydroxide gained an average of 401 g, while those in lots fed diets containing barium acetate gained 390 g. Thus it appears that the 2 compounds had similar effects on growth of chickens. If the 2 series of lots in Exp. 2 are considered as duplicates, average gain in weight, for same level of barium, indicates that 1,000 ppm of barium was tolerated and that 2,000 ppm produced slight growth depression.

Addition of barium to the diet of chickens had little or no effect on efficiency of feed utilization, at least at levels to 4,000 ppm and possibly to level of 8,000 ppm.

Summary. The LD_{50} dose of barium for young growing chickens was 623 ± 156 mg/kg of live weight. When barium was fed continuously in the feed, either as barium hydroxide or barium acetate, chickens tolerated levels to 1,000 ppm without apparent ill effects. A slight depression in growth occurred when 2,000 ppm of barium was added to the diet. 8,000 ppm of barium caused death of more than one-half of the chicks in 4 week feeding experiment; and the higher levels (16,000 and 32,000 ppm) caused death of all chicks.

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Received May 18, 1960. P.S.E.B.M., 1960, v104.

Relation Between Plasma Iron Turnover and Plasma Iron Concentration at Different Levels of Erythropoiesis. (25867)

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When tracer doses of siderophilin-bound Fe^{59} are injected intravenously in rabbits, plasma radioactivity declines as a simple exponential function of time ($Fe^{59} = 1.e^{-Kt}$) (1). The value of time constant K is an estimate of fraction of plasma iron turned over per unit time. Plasma iron turnover is calculated as the product of K, plasma iron concentration and plasma volume. From results of

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