

blood dyscrasias is conditioned by the degree of loss of ability on the part of the erythropoietic tissues to elaborate cholinesterase. Though other cholinergics besides acetylcholine are undoubtedly involved in the production of cholinergic episodes and the maintenance of cholinergic states in the human, the concomitance of blood cholinesterase level depression with morbidity degree in these dyscrasias may indicate a rational approach to control through substitutive enzyme therapy. Such therapy appears to have been successful in an estrapenic condition, experimental surgical shock in dogs (5).

The presence in human plasma (which has not had its cholinesterase activity vitiated) of a factor which permits maturation of leucemic myeloblasts (2, 6) and of a factor (diminished in the estrapenic plasma of relapsing Addisonian anemia) which causes reticulocyte "ripening" (4) would appear to warrant the attempt at isolation and the therapeutic trial of these fractions.

References

1. ALLES, G. A., and HAWES, R. C. *J. biol. Chem.*, 1940, **133**, 375.
2. BARNARD, R. D. *Med. Rec.*, 1947, **160**, 610.
3. DAVIS, J. E. *Science*, 1946, **104**, 605.
4. JORGENSEN, S., and PLUM, C. M. *Ugesk. Laeger*, 1943, **31**, 787.
5. SCHACHTER, R. J. *Amer. J. Physiol.*, 1945, **143**, 552.
6. SCHWIND, J. L. *Amer. J. med. Sci.*, 1947, **213**, 170.

Sulfaquinoxaline in the Control of *Eimeria tenella* and *Eimeria necatrix* in Chickens on a Commercial Broiler Farm¹

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Delaplane, Batchelder, and Higgins (1) first reported the use of sulfaquinoxaline in the prevention of *Eimeria tenella* infection in chickens under laboratory and field conditions. Grumbles, *et al.* (2) continued these studies and made more extensive observations on sulfaquinoxaline in preventing and treating both cecal and intestinal coccidiosis (*E. tenella* and *E. necatrix*) under field and laboratory conditions.

Sulfaquinoxaline was fed at the rate of 0.05% to chickens subjected to severe exposure to coccidia on a commercial broiler farm. The drug was given 2 days out of 5 (2-3 schedule), 1 day out of 4 (1-3 schedule), 1 day out of 5 (1-4 schedule), 2 days out of 6 (2-4 schedule), 4 days out of 8 (4-4 schedule), and at the rate of 0.0125% fed continuously.

Results of studies on 43,309 sulfaquinoxaline-treated birds and 3,085 untreated controls are shown in Table 1. The deaths from coccidiosis among the medicated birds were 1.75, 2.17, 1.80, 0.86, 1.13, and 1.20% as compared to 17.43% in the controls. The birds which died from coccidiosis showing *E. necatrix* infection were 0.63, 0.26,

0.28, 0, 0.13, and 0.12%, respectively, as compared to 7.45% in the controls.

Thus, sulfaquinoxaline used at the rate of 0.05% intermittently and 0.0125% continuously in the feed is

TABLE 1

Schedule	No. of birds	Coccidiosis mortality (%)			
		Cecal	<i>E. necatrix</i>	Both*	Total
Control pens	3,085	9.98	3.53	3.92	17.43
"2-3"					
.05% S.Q.†	17,699	1.12	0.51	0.12	1.75
"1-3"					
.05% S.Q.	7,348	1.91	0.18	0.08	2.17
"1-4"					
.05% S.Q.	5,459	1.52	0.02	0.26	1.80
"2-4"					
.05% S.Q.	1,043	.86	0	0	0.86
"4-4"					
.05% S.Q.	1,575	1.00	.13	0	1.13
0.0125% continuous	10,181	1.08	0.1	0.02	1.20

* Both *E. tenella* and *E. necatrix* infections.

† Sulfaquinoxaline.

effective in the control of *E. tenella* and *E. necatrix* infection in chickens. No symptoms of toxicity were observed in the birds after the use of the drug at the levels cited.

References

1. DELAPLANE, J. P., BATCHELDER, R. M., and HIGGINS, T. C. *N. Amer. Vet.*, 1947, **28**, 19-24.
2. GRUMBLES, L. C., DELAPLANE, J. P., and HIGGINS, T. C. (To be published.)

Weed Control in the Tropics

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The use of cheap labor for hoeing weeds is traditional in the tropics. Only recently have chemicals been given serious consideration. The low cost and great effectiveness of the 2,4-D herbicides have created new opportunities for improvement of cultural methods and conservation of labor. Van Overbeek and Vélez (4) and White and Villafañe (6) have pointed out the unique value of 2,4-D as a selective weed killer in cane and other tropical crops.

The selective nature of 2,4-D is at once a virtue and a fault. Being relatively nontoxic to cane and coffee (4), this herbicide can be used with little or no injury in these crops. On the other hand, being nontoxic to grasses, one of the large and important groups of weeds is im-

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