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South Dakota State University
Brookings, South Dakota

Department of Animal Science
Poultry Section

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THE USE OF IODINE AND CHLORMADINONE ACETATE TO SUPPRESS
SEXUAL MATURITY IN CHICKENS

C. E. Holmquist¹ and C. W. Carlson²

Previous research reports have shown that a delay in sexual maturity of egg-type pullets was beneficial as measured by improved egg size, improved total egg production or less mortality during the production cycle.

DeKalb 161, Hy-Line 934E and Rando bred SCWL pullets were fed 0, 2,500, 5,000 and 10,000 ppm iodine as potassium iodide and 0, 10, 20 and 40 ppm chlormadinone acetate (a progesterone-like drug) in a 16% protein pullet grower diet at several ages when they were approaching sexual maturity. Pullets were grown under nine hours of illumination prior to, and during the four-week treatment period. At the time of treatment withdrawal, all experimental groups were changed to a 16% protein layer diet. Daylength was increased to 12 hours of continuous illumination at that time.

Iodine treatment levels of 5,000 and 10,000 ppm significantly delayed the onset of egg production during the initial four weeks after withdrawing the treatments. Egg size was significantly smaller in the 5,000 and 10,000 ppm iodine-treated groups as compared to the 0 and 2,500 ppm treatments.

Chlormadinone acetate treatments resulted in strain differences and treatment differences in mortality, the highest treatment level causing the most mortality (Table 1). Feed consumption increased significantly and a diarrhea condition was more evident with the increasing amounts of chlormadinone acetate in the diet.

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The progesterone-like drug, chlormadinone acetate, seemed to be more satisfactory than excess iodine as an ovulation inhibitor when fed in the diet of pullets. With only isolated exceptions, ovulation was effectively inhibited with all treatment levels of chlormadinone acetate. The drug treatments did not result in any change in average egg size or in an increased rate of egg production. Death losses from groups which received the chlormadinone acetate seemed to be a major problem associated with using this hormone-like drug. The causes of mortality were not unusual, perhaps the drug provided the stress that made the birds more susceptible to infections.

TABLE 1. CAUSE OF DEATH OF PULLETS (19-33 WEEKS OF AGE)
 THAT RECEIVED DIETARY CHLORMADINONE ACETATE
 SUPPLEMENTS OR EXCESS DIETARY IODINE
 FROM 19 THROUGH 23 WEEKS OF AGE

Diet	Strain					
	DeKalb 161		Hy-Line 934 E		Ranombred S.C.W.L.	
	Cause	No.	Cause	No.	Cause	No.
Control	Leukosis	2	Leukosis	2	Leukosis	2
	Peritonitis	1	Leukosis and			
	Unknown	1*	fatty liver	1		
10 mg CAP** /kg	Blow out	1	Leukosis	2	Leukosis	2
	Leukosis	3				
	Airsacculitis	1				
20 mg CAP /kg.	Leukosis	2	Leukosis and		Unknown	1*
	No gross lesions	1	fatty liver	1		
	Unknown	4*				
40 mg CAP /kg	Airsacculitis	1	Leukosis	2	Blow out	1
	Enteritis	1			Fatty liver	1
	Fatty liver	1			Impacted	
	Hepatitis	1			oviduct	1
	No gross lesions	1			Leukosis	2
	Leukosis	1				
	Leukosis and fatty liver	2				
	Unknown	2*				
10,000 ppm iodine	No deaths		Leukosis	1	Airsacculitis	1
					Fatty liver	1
					Unknown	1*

*The cause of death was unknown for nine hens. Six of these were necropsied but were not identified individually on the report from the diagnostic lab. (These six were DeKalb. Two were found to have leukosis and four of them had no gross lesions.) The remaining three hens in the unknown category were not submitted to the lab for diagnosis.

**Chlormadinone acetate.