

# Effect Of L-Thyroxin Hormone (T4) On Compensatory Growth In Broiler Chicks

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**Introduction** Purpose of researches in feed restriction area is improvement of feed efficiency, decrease of carcass fat content and abdominal fat pad size (Plavnik and Hurvitz,1991).Birds after early life feed restriction have less maintenance requirements due to decrease of heat increment and decrease of basal metabolic rate and specific dynamic action of food (Forsum et al.,1981).In many investigations, compensatory growth have not observed (Summers et al.,1990).It seems administration of Thyroid hormone after feed restriction can induce compensatory growth. The objective of the present study was to investigate the effect of early feed restriction and L-Thyroxin administration after early feed restriction on compensatory growth in broiler chickens.

**Material and methods** Six hundred male and/or female day old chicks of a commercial strain (Hybro) were wing banded, weighted and randomly allocated to five treatment groups of each sex. There were 5 replicates of 12 male or female chicks in each treatment. Five treatments involved, one control group (No Restriction and No Hormone) and four restricted groups which were fed a mixture of 50:50 rice hulls and commercial starter diet from 4 to 11 days of age. Percent of trace minerals and vitamin premix in control and restriction diets were remained similar. All groups were fed the same diets from 11 to 56 days of age with the exception of the 4 restricted groups which their diets were supplemented with 0,1,2 and 3 ppm T4 from 11 to 28 days of age. Live body weight, feed intake, feed efficiency, body composition (protein, fat and ash), fat pad size at 49 and 56 days of age were determined. Analysis of variance and Duncan's new multiple range test were conducted using the General Linear Model procedure of SAS (SAS Institute, 1985) appropriate for a completely randomized design.

**Results** Live body weight of Non T4 Receiving Restricted birds was compensated on day 42 of age. But, the T4 treated birds after feed restriction period, showed a decrease in live body weight as the level of T4 increased. Daily feed intake up to 42,49 and 56 days was similar in control and only restriction (0ppm) groups and was significantly ( $p < .05$ ) decreased by dietary T4 as the level of T4 increased. Feed efficiency in the only restricted birds and control group was similar and all T4 treated birds exhibited a poorer feed efficiency for 42 and 49 days of experimental period, but it was not significantly different for 56 days period. Carcass fat content of only restricted birds was significantly ( $p < .05$ ) lower than of control birds but all T4 treated birds had a similar carcass fat with control group. Abdominal fat pad in only restricted birds at 49 days was significantly ( $p < .05$ ) lower than of control birds. Although, all birds had a similar abdominal fat percentage at 56 days of age.

**Table 1** Effect of L-Thyroxin Hormone after feed restriction on growth performance of broiler chicks in 49 days of age

Treat	Body weight(g)	Feed intake <sup>1</sup> (g/d)	Feed efficiency <sup>1</sup>	Carcass fat as % wet carcass	abdominal fat as % LBW
Control	2169.88 <sup>a</sup>	96.27 <sup>a</sup>	2.21 <sup>b</sup>	30.08 <sup>a</sup>	3.23 <sup>a</sup>
0ppm	2207.82 <sup>a</sup>	95.52 <sup>a</sup>	2.22 <sup>b</sup>	22.52 <sup>b</sup>	2.57 <sup>b</sup>
1ppm	2061.36 <sup>b</sup>	94.56 <sup>a</sup>	2.37 <sup>a</sup>	27.61 <sup>a</sup>	2.73 <sup>ab</sup>
2ppm	1998.29 <sup>bc</sup>	91.01 <sup>b</sup>	2.36 <sup>a</sup>	29.44 <sup>a</sup>	2.69 <sup>ab</sup>
3ppm	1935.73 <sup>c</sup>	88.93 <sup>b</sup>	2.38 <sup>a</sup>	29.29 <sup>a</sup>	2.67 <sup>ab</sup>
SE	22.412	1.011	.026	.689	.331

<sup>abc</sup> different superscript denote significant differences( $p < .05$ )

1- Without consideration of rice hulls

**Conclusions** With a period of moderate feed restriction in early of life, live body weight of birds was compensated in 42 days of age and in 56 days of age was numerically higher than control group (2.5%).T4 treated birds had a poorer body weight and other growth performances in overall period of experiment. Early life feed restriction caused significantly decrease in fat content of carcass and abdominal fat pad size.

## References

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