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EFFECT OF IN OVO IODIDE INJECTION AND THERMAL MANIPULATION ON SOME IMMUNOPHYSIOLOGICAL TRAITS OF BROILER CHICKS

By

OMNIA SHAWKY MOHAMMED IBRAHIM
B.SC. Agric. Sc. (Animal and Poultry Production) Fac. of Agric., Alexandria Univ. (2008)
M.Sc. Agric. Sc. (Poultry Physiology), Fac. of Agric., Damanhour Univ. (2014)

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ABSTRACT

Omnia Shawky Mohamed Ibrahim: Effect of In Ovo Iodide Injection and Thermal Manipulation on Some Immunophysiological Traits of Broiler Chicks. Unpublished Ph.D. thesis, Department of poultry production, Faculty of Agriculture, Ain Shams University, 2022.

A total of 400 hatching eggs of Ross 308 broiler breeders were numbered and weighed (average 65±0.5g.) then incubated at 99.8ºF and 55% R.H. At the 7th day of incubation eggs were candled and infertile eggs were excluded then fertile eggs were distributed into 3treated groups (130 eggs/treatment) as follows; C: un-injected eggs (control); and two injected groups with 50 and 100 µl/egg of 0.9 % nano-I (T1 and T2, respectively). The hatched chicks were reared in caged wire floor battery in a controlled environmental room with 23-hour light/ day with luminous intensity 10 lux, for 5 weeks experimental period. The environmental temperature was about 32º C during the first week old and it was gradually reduced by about 2º C weekly until about 24º C at the fourth week up to the end of experiment. At 3rd days age of age chicks were subjected to thermal manipulation (TC) at 38±1 Cº for 6 hours for three consecutive days (from 3rd to 5th day of age) from 10 A.M. to 4 P.M.

Embryonic mortality, hatchability, chick quality and some anatomical parameters in broiler chickens were investigated. The body weight gain, feed consumption and feed conversion ratio were recorded weekly. At the last week of the experimental period (5th wk.), birds were weighed and slaughtered by cutting the jugular veins of the neck according to the Islamic religion instruction with a sharp knife. The body internal organs were weighed. Some blood constituents were determined. Histological observation was done on thyroid, intestine, thymus and bursa.

Results showed highly significant increase in the total embryonic mortality especially during the mid-stage of incubation (8 to18 days) in Nano-I-injected groups compared with control groups. Similar trend was recorded in hatchability percentage.

Tona score was significantly higher in control 94% compared with 92% in sham and 84% in nano-I injected eggs. While chick weight, chick length and yolk free body mass % (YFBM%) had no significant differences between all treatments.

Some anatomical observations were noted among the treatments. Duodenum, pancreas, thymus, spleen, and bursa of Fabricius were more developed in chicks that hatched from 50 µl/egg nano-I group compared with those injected by 100 µl/egg Nano-I and control groups and this is very evident in the thyroid glands.

The results indicated that there was a significant effect of the Iodine treatments and the thermal conditioning on the live body weight of 35 day of age (DOA) broiler chickens.

The thyroid hormones T_3 and T_4 affected significantly by the Iodine doses as their levels in the plasma increased by Iodine dose 50 and 100 µl/egg. There wasn't any significant effect of the Iodine doses on the different blood constituents.

It is concluded that, More studies are needed to determine the optimal dose of Nano-I for in Ovo injection in broiler chickens.

Key words: *In Ovo* injection, nano iodine, embryonic mortality, hatchability, chick quality, broiler chickens, thermal conditioning, blood constituents, T_3 hormone and thyroid.

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Abbreviations	Descriptions
%	Percent
Ag	silver
ALT	Alanine amino transferase
AST	Aspartate amino transferase
BWG	Body weight gain
C	control
C^{o}	Celsius degree.
Cu	copper
DOA	Day of age
DOI	Day of incubation
ED	Embryonic day
^{o}F	Fahrenheit degree
FCR	Feed conversion ratio
FI	Feed intake
g	Gram
hr	Hour
hrs	Hours
I	Iodine
Kg	Kilogram
mg	Milligram
µl	Micro liter
min	minute
NRC	National research council
P	Phosphorus
P value	Probability level
SAS	Statistical Analysis System
SEM	Standard error of the mean
Se	Selenium
T_3	Triiodothyronine
T_4	tetraiodothyronine

TC	Thermal conditioning.
WOA	Week of age.
VCR	Villi height/crypt depth ratio