



## Study on eggs of Japanese quail (*Coturnix coturnix japonica*) during incubation in the controlled laboratory conditions

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**Abstract:** Study on newly laid eggs of Japanese quail *Coturnix coturnix japonica* was undertaken for a period of 18 days on incubation in controlled laboratory conditions. The aim of the study was to evaluate the changes in egg weight, shell weight, yolk weight and embryo weight throughout the period of incubation. It had been found that as the embryo grows, the egg weight slowly goes down while embryo weight goes on increasing day by day. The study inferred that the shift or reduction in weight of egg is attributable to the progressive growth of embryo which utilizes its yolk contents for its growth. Apart from this, the shell weight also reduced from first day to last day in order to facilitate hatching of the embryo.

**Keywords:** *Coturnix coturnix japonica*, Eggs, Incubation, Japanese quail, Shell weight

### INTRODUCTION

The eggs of Japanese quail are artificially incubated in the laboratory under controlled conditions in a sophisticated incubator to assess the changes. The Japanese quail has been used for lab. studies (Padgett and Ivey, 1959; Wilson *et al.*, 1961, Reese and Reese, 1962). Today work on *coturnix* is carried out by very few researchers across India (Woodard and Wilson, 1963, Charde, 1998) as well as abroad (Vasconcelos de Moraes *et al.*, 2008).

In this context studies on eggs of Japanese quail *Coturnix coturnix japonica* were undertaken with respect to shell weight, embryo weight as well as yolk weight during a period of 18 days time in incubation.

### MATERIALS AND METHODS

The freshly laid eggs of Japanese quail were procured from Chandrapur quailary of Maharashtra state during 2010 for studies with respect to egg weight, shell weight, yolk weight and embryo weight. Digital electronic balance was used for recording the weights of the eggs. The eggs were marked and store pointed end down in incubator racks. Studies were made using incubator Cabinet Model of A.P. Equipment Hyderabad under controlled laboratory conditions at temp. 35°C and humidity 60%. During incubation the tilting was done after every one hour. Tilting was stopped after 15 days of incubation.

### RESULTS AND DISCUSSION

Various parameters of fresh as well as incubated eggs were noted daily and are presented in Table 1.

Recently, the work on incubation of Japanese quail eggs (*Coturnix japonica*) stored in domestic refrigerator is limited to the work of Vasconcelos de Moraes *et al.* (2008). During present study, it was recorded that as the incubation progresses, egg weight slowly decreases day by day. There is also consistent decrease in shell weight from 2.00 g to 0.35±0.59 g during the study period of 18 days incubation period. Mohmond and Coleman (1967) reported the thickness of the shell and shell membrane to be respectively 0.197 and 0.063mm which was similar to our recorded results. The present study showed the decrease in shell weight during the period of experimentation i.e. from day 1 to day 18 showed that the growing embryo has to exert less pressure before hatching the egg and it is utilizing some of its contents for its growth.

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**Table 1.** Changes recorded in egg parameters of Japanese quail during 18 days incubation period (values are Mean  $\pm$  S.E.).

Day	Egg weight before incubation (gm)	Egg weight after incubation (gm)	Shell weight (gm)	Yolk weight (gm)	Embryo weight (gm)
0	13.28 $\pm$ 1.75	--	2.00	4.98 $\pm$ 0.58	--
1	12.05 $\pm$ 1.22	11.79 $\pm$ 1.21	1.98 $\pm$ 0.87	4.16 $\pm$ 0.62	0.089 $\pm$ 0.65
2	12.01 $\pm$ 1.56	11.39 $\pm$ 0.87	1.94 $\pm$ 0.76	6.13 $\pm$ 0.75	0.095 $\pm$ 0.79
3	10.46 $\pm$ 1.78	10.11 $\pm$ 0.96	1.90 $\pm$ 0.67	5.03 $\pm$ 0.67	1.01 $\pm$ 0.69
4	10.12 $\pm$ 1.65	09.78 $\pm$ 0.97	1.89 $\pm$ 0.56	6.16 $\pm$ 0.78	1.21 $\pm$ 0.75
5	10.24 $\pm$ 0.78	09.82 $\pm$ 0.98	1.84 $\pm$ 0.45	5.14 $\pm$ 0.69	1.45 $\pm$ 0.69
6	12.80 $\pm$ 1.23	11.60 $\pm$ 1.45	1.90 $\pm$ 0.86	5.83 $\pm$ 0.71	1.51 $\pm$ 0.78
7	11.91 $\pm$ 1.75	11.34 $\pm$ 1.42	1.81 $\pm$ 0.78	5.32 $\pm$ 0.78	1.62 $\pm$ 0.71
8	11.92 $\pm$ 1.67	10.75 $\pm$ 1.32	1.80 $\pm$ 0.75	4.68 $\pm$ 0.87	1.38 $\pm$ 0.81
9	12.04 $\pm$ 1.56	11.54 $\pm$ 1.22	1.80 $\pm$ 0.67	3.53 $\pm$ 0.95	2.35 $\pm$ 0.91
10	11.98 $\pm$ 1.23	11.18 $\pm$ 1.15	1.76 $\pm$ 0.71	2.36 $\pm$ 0.79	2.38 $\pm$ 0.89
11	11.72 $\pm$ 1.12	11.08 $\pm$ 1.11	1.71 $\pm$ 0.71	2.29 $\pm$ 0.59	2.46 $\pm$ 0.86
12	10.12 $\pm$ 1.65	09.32 $\pm$ 1.16	1.70 $\pm$ 0.69	2.20 $\pm$ 0.61	3.88 $\pm$ 0.78
13	10.21 $\pm$ 1.78	09.82 $\pm$ 1.14	1.60 $\pm$ 0.65	1.19 $\pm$ 0.79	4.42 $\pm$ 0.65
14	10.88 $\pm$ 1.64	10.15 $\pm$ 1.13	1.59 $\pm$ 0.59	0.46 $\pm$ 0.81	5.53 $\pm$ 0.71
15	10.24 $\pm$ 1.67	07.39 $\pm$ 1.12	1.21 $\pm$ 0.65	0.31 $\pm$ 0.79	5.55 $\pm$ 0.72
16	10.08 $\pm$ 1.76	07.49 $\pm$ 1.13	0.84 $\pm$ 0.59	0.58 $\pm$ 0.87	5.58 $\pm$ 0.69
17	10.46 $\pm$ 1.78	09.72 $\pm$ 1.14	0.56 $\pm$ 0.61	0.12 $\pm$ 0.95	7.44 $\pm$ 0.79
18	12.12 $\pm$ 1.23	09.25 $\pm$ 1.12	0.35 $\pm$ 0.59	--	7.75 $\pm$ 0.81

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