

Original Research Article

<https://doi.org/10.20546/ijcmas.2018.702.128>

Effect of Macroalgae Supplementation on Growth Performance of Japanese Quails

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ABSTRACT

Keywords

Seaweed, Quail,
Growth

Article Info

Accepted:

10 January 2018

Available Online:

10 February 2018

An experiment was conducted to assess the growth performance of quails on supplementation of seaweeds. 600 numbers of day old quail chicks were randomly divided into four groups with five replicates and 25 chicks in each replicate. Seaweeds viz., *Chaetomorpha antennina*, *Sargassum wightii* and *Gracilaria corticata* were collected from Gulf of Mannar region and was dried and included in the ration @ 3 % level and treated as group - 2, 3 and 4, respectively. Quail on normal ration was kept as control (Group -1). The trial was conducted for six weeks period. Daily feed intake and weekly changes in body weight were recorded. Analyzing the data revealed that there is no significant differences in body weight and FCR @ 3 % level of seaweeds supplementation compared to control group.

Introduction

Brown, Red and Green seaweeds are an alternate source of nutrients in livestock and poultry. Seaweeds are very good sources of organic minerals, sulphur containing aminoacids, omega fatty acids besides its prebiotic property. Seaweeds have been used in poultry to improve the immune status, to decrease the microbial load in digestive tract and also for their beneficial effect on meat and egg quality. The researches have been conducted mostly in broilers where improvement in growth, FCR and immune status were observed along with enhanced meat quality. The study on Japanese quails is scanty. Hence, the research was conducted to assess the growth performance of Japanese

quails on supplementation of *Chaetomorpha antennina*, *Sargassum wightii* and *Gracilaria corticata* @ 3 % level of supplementation.

Materials and Methods

The research was conducted at Poultry Unit of Post Graduate Research Institute in Animal Sciences, TANUVAS, Kattupakkam. 500 Japanese quails were randomly divided into four treatment groups with 5 replicate in each treatment. Each replicate consists of 25 birds. Quail on normal ration was kept as control (Group -1). Seaweeds viz., *Chaetomorpha antennina*, *Sargassum wightii* and *Gracilaria corticata* were collected from Gulf of Mannar region and was dried and included in the ration @ 3 % level and treated as group - 2, 3

and 4, respectively. The trial was conducted for six weeks period. Daily feed intake and weekly changes in body weight were recorded. The proximate composition of seaweeds was analyzed at Institute of Animal Nutrition, Kattupakkam.

At the end of the sixth week 10 birds from each treatment (2 per replicate) was slaughtered to study the effect on carcass characteristics. The data collected are analysed statistically using IBM SPSS 20 software.

Results and Discussion

The Proximate composition viz., Crude protein, Ether extract, Crude fibre, Total ash and Nitrogen free extract of *Chaetomorpha antennina*, *Sargassum wightii* and *Gracilaria corticata* are 11.03±0.29, 1.49±0.07, 8.20±0.48, 31.94±0.85 and 47.34±1.60; 19.23±0.21, 0.81±0.03, 5.32±0.53, 44.86±0.74

and 29.78±1.97; 15.99±0.30, 1.87±0.02, 11.98±0.64, 47.82±0.69 and 22.34±1.24, respectively.

The growth performance of quails on supplementation of seaweeds @ 3% level revealed that there are no significant differences in weight gain in the control and treatment groups at the end of six week period, though some depression in weight gain of seaweed supplemented group was observed during initial period. This finding corroborate with the earlier findings of Adubados *et al.*, (2013) in broilers and on contrary to that Wang ShuBai *et al.*, (2013) and Sun JianFeng *et al.*, (2010) found to improve the growth performance of broilers on seaweed supplementation at 4% level. However, on higher level of inclusion (10%) resulted in lower feed intake and reduced growth rate in 3 week-old broilers and cockerels (Ventura *et al.*, 1994).

Table.1 Growth performance of Japanese quails on *Chaetomorpha antennina*, *Sargassum wightii* and *Gracilaria corticata* supplementation (Mean ± S.E.)

Treatments	Group -1 (Control)	Group -II (<i>Chaetomorpha antennina</i> @ 3% level)	Group -III (<i>Sargassum wightii</i> @ 3% level)	Group -IV (<i>Gracilaria corticata</i> @ 3% level)
Body weight (g)				
Hatch weight ^{NS}	8.57±0.08	8.48±0.07	9.17±0.73	8.45±0.08
I week	33.59 ^b ±0.62	33.14 ^b ±0.61	31.50 ^a ±0.54	30.63 ^a ±0.47
II week	76.90 ^b ±1.00	77.47 ^b ±0.99	74.73 ^a ±0.92	73.94 ^a ±0.085
III week	108.27 ^a ±1.51	115.96 ^b ±1.53	113.30 ^b ±1.45	114.23 ^b ±1.33
IV week ^{NS}	155.35±0.73	153.58±0.61	154.60±0.072	153.94±0.83
V week ^{NS}	203.83±0.82	204.73±0.88	203.80±0.94	205.21±0.93
VI week ^{NS}	242.84±0.78	243.11±0.75	242.20±0.81	242.97±0.77
FCR (Cumulative) ^{NS}	2.92±0.04	2.91±0.03	2.97±0.02	2.99±0.02

**Mean bearing different superscripts within a column differ highly significant (P<0.05)

The Feed Conversion Ratio (FCR) of treatment groups were found to be non-significant and lies between 2.91 to 2.99. This is in accordance with the earlier findings of El-Deek *et al.*, (2009) who reported that no significant changes was observed in feed

conversion efficiency of seaweed supplemented birds. The carcass characteristics revealed that the dressing percentage was not affected by supplementation and the values are 77.44±0.98, 77.32±0.81, 75.96±0.54 and

77.02±0.67, respectively in group 1, 2, 3 and 4 and this finding was in accordance with the earlier report of El-Deek *et al.*, (2011) (Table 1).

The research revealed that supplementation of seaweeds @ 3% level had no influence on the growth performances of Japanese quail. However, growth performance on higher levels of inclusion and immunological study are to be carried out to exploit the possibility of prebiotic and immune enhancing property of seaweeds in quails.

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How to cite this article:

Pasupathi Karu, S.T. Selvan, H. Gopi and Manobhavan, M. 2018. Effect of Macroalgae Supplementation on Growth Performance of Japanese Quails. *Int.J.Curr.Microbiol.App.Sci.* 7(02): 1039-1041. doi: <https://doi.org/10.20546/ijcmas.2018.702.128>