

Abstract

This experiment was conducted to estimate the requirement of digestible tryptophan amino acid in growing Japanese quail from 21 to 35 days of age. A total of 420 twenty one- day- old quail were Assigned into 7 experimental groups with including several levels of tryptophan (0.16, 0.17, 0.18, 0.19, 0.20, 0.21 and 0.22 % of diet) based on completely randomized design with 4 replicates and 15 birds in each, which was randomized distributed into 28 cages. A basal diet was formulated to provide all nutritional requirements of Japanese quail except tryptophan. In order to supply different experimental groups, incremental synthetic tryptophan levels were replaced with corn starch in basal diet. Data related to body weight gain (BWG), feed intake (FI) and feed conversion ratio (FCR) were measured and recorded on a weekly basis. The results showed that increasing tryptophan levels had a significant effect on mean BWG and FCR in grows period (21 to 35 days old) ($P<0.05$). The lowest FCR in 21 to 35 days old was 0.20 % group ($P<0.05$). Different digestible tryptophan levels had no significant effect on carcass weight ratio (thigh and breast). Also, different levels of tryptophan in diet had no significant effect on the immune organs including bursa of fabricius ($P<0.05$). Either linear broken- line or quadratic broken line model were used to determining break points of amount of digestible tryptophan requirement. Based on linear broken line analysis, the break point for weight gain and feed conversion were 0.176 and 0.173 percent of diet, respectively. Moreover based on quadratic broken line for weight gain and feed conversion were 0.184 and 0.179, respectively. Furthermore, the determination of digestible tryptophan requirements in diet influenced by modeling statistical methods and performance response.

Key words: Japanese quail, digestible tryptophan, requirement, regression.



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**The Thesis Submitted for the Degree of M. Sc
In the field of poultry production and management**

**Estimation of digestible tryptophan
requirements in growing Japanese quail
from 21 to 35 days of age**

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September 2016