

Effect of Dietary Fortification with Hibiscus Sabdariffa Calyces Meal on Egg Production and Egg Quality of Japanese Quail

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Abstract : In order to enhance egg production and egg quality from layer poultry, producers use synthetic feed additives that enhance nutrient digestion and absorption in the gut. Synthetic feed additives have negative effects on consumer health hence the need to replace them with natural alternatives which are deemed safer for consumer health. Hibiscus sabdariffa calyces meal has hypolipidemic, probiotic and antioxidant activities; hence we investigated the effect of fortifying Japanese quail pullet diets with its calyces meal on egg production and egg quality. A standard Japanese quail layer diet was supplemented with H. sabdariffa calyces meal at 0%, 5% and 10% in diets 1, 2 and 3, respectively. Ninety, 5-week old Japanese quail hens were randomly allocated to and fed the layer diets for 56 days. Body mass, feed intake and egg mass, width, length, shell mass and thickness, yolk mass, height and diameter, albumen mass, length, width and height, and the proximate content and fatty acid profile of the egg albumen and yolk were determined. Supplemental fortification of the Japanese quail layer diet with H. sabdariffa calyces meal had no effect on growth performance and feed intake and conversion rate of the quail ($P > 0.05$). The meal delayed the onset of laying and reduced ($P < 0.0001$) the number of eggs laid. It did not affect the external and internal egg quality parameters of Japanese quail ($P > 0.05$). Dietary fortification with H. sabdariffa calyces meal at 10% significantly increased the dry matter and reduced the fat content of the yolk and albumin of Japanese quail eggs ($P < 0.05$). Dietary H. sabdariffa calyces meal reduced the total omega 3 fatty acids in the yolk and significantly increased arachidonic acid ($P = 0.0019$), an omega 6 fatty acid. Inclusion of Hibiscus sabdariffa meal depressed egg production, suppressed omega 3 fatty acids and increased arachidonic acid thus, using it as a dietary supplement may result in losses to producers of Japanese quail eggs and may result in eggs whose fatty acid profile can compromise consumer health.

Keywords : quail, eggs, hibiscus sabdariffa, quality

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