

Abstract

This study was conducted to investigate the effects of adding organic selenium on quail's body, egg, offspring, and selenium concentration in liver of mice fed with egg fortified with selenium. A total of 240 *Japanese* quails (*Coturnix*-8 weeks old) were used in a completely randomized design with 5 treatments, 3 replicates and 16 birds (12 females, 4 males) in each replicate. The experiment lasted 6 weeks. Experimental treatments included 0, 0.2, 0.4, 0.6 mg /kg yeast selenium and 0.3 mg / kg sodium selenite in diet as a positive control. The studied traits included body weight gain, egg production, fertility percent, hatchability, egg quality characteristics, carcass traits, digestive organs, selenium concentration in different tissues of adult quails, off springs, egg, activity of anti-oxidant enzyme activities in blood and liver, total anti-oxidant capacity in quail, immunity parameters and breast meat quality. Results of the first study showed that different levels of selenium supplementation improved body weight compared with control treatment and the highest body weight gain was seen in group fed with 0.4 selenium / kg diet. Using different levels of organic selenium decreased liver relative weight ($P<0.05$), but it does not have any effect on carcass yield and heart relative weight ($P>0.05$). Using different levels of organic selenium decreased abdominal fat pad. Selenium supplementation changed selenium concentration in birds tissues. Also, selenium concentration in different parts of quail eggs significantly increased with selenium supplementation, especially the highest concentration was seen in egg albumen. Increasing organic selenium to quails diet increased selenium concentration in egg shell. Increasing dietary selenium level increased selenium concentration in yolk and albumen, linearly. Increasing selenium level to 0.4 mg / kg diet increased reduced glutathione in blood. Dietary selenium supplementation increased liver catalase activity compared with control group. Water holding capacity affected with different levels of selenium, significantly. The level of 0.4 mg Se/ kg diet caused the lowest meat MDA. Antibody against SRBC and Newcastle virus affected by experimental treatments, significantly, but there were no difference among lymphatic organs. In the second experiment, off springs of quails fed with different levels of selenium was investigated. Off spring of quails fed with selenium up to 0.4 mg / kg diet had higher body weight compared with control group. Off springs of quails fed diet contained selenium had lower feed conversion ratio. Selenium concentration in the liver

of quails (one- day old) in control group was half of them in egg yolk. During first week of rearing, selenium concentration in chicks liver and muscles decreased. Although, considering the total tissue weight, selenium concentration in liver increased from 0.058 to 0.317 μg in control treatment, and from 0.201 to 0.620 μg with the level of 0.6 mg selenium/ kg diet. The highest level of IgG and IgM related to the group fed with 0.4 mg selenium / kg diet. The results of the third study on rats showed that with increased levels of selenium in yolk fed to mice, selenium concentration in rats liver increased linearly, and the highest selenium concentration was seen in the group fed with 0.6 mg selenium per kg diet.

Keywords: *Japanese* quails, organic selenium, anti-oxidant, rat



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