

Transfer of Dietary Coenzyme Q10 into the Egg Yolk of Laying Hens

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Abstract :

Coenzyme Q10 (CoQ10), a potent lipophilic antioxidant, is a naturally occurring compound with a ubiquitous distribution in nature, and CoQ10 is used as a dietary supplement to combat aging. There is evidence that lipid soluble nutrients can be transferred into the egg yolk from the feed in laying hens. It is therefore possible that feeding CoQ10 to laying hens increases the content of CoQ10 in the egg yolk. In the present study, we investigated the effect of dietary CoQ10 on its content in the egg yolk of laying hens. Twenty 30 weeks-old Boris Brown hens were assigned based on egg production rate and egg weight to 2 groups (10 birds in each group) and fed a diet containing CoQ10 at 0 or 0.8% for 28 days. Dietary CoQ10 did not affect average egg production rate, feed efficiency, egg weight, and egg yolk weight. CoQ10 content in the egg yolk was increased significantly at 7, 14, 21 and 28 days of the experimental period. Hepatic CoQ10 content and plasma very low density lipoprotein y (VLDL_y) CoQ10 concentration in 0.8% group were increased significantly compared with those in 0% group. Dietary CoQ10 significantly decreased cholesterol concentration in the egg yolk at 21st and 28th day of the experimental period. These findings suggest that, in CoQ10-fed laying hens, the increase of hepatic CoQ10 elevates the plasma VLDL_y CoQ10 concentration, which in turn results in a high CoQ10 content in the egg yolk of laying hens.

Key Word :

cholesterol, coenzyme Q10, egg, ubiquinone

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