

採卵鶏へのライストリエノールの飼料添加濃度の違いが卵黄中の ビタミンE構成および過酸化脂質に与える影響

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Effect of dietary Ricetrienol™ contents level on vitamin E concentration
in egg yolk and yolk lipid peroxidation status of laying hens

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要約

飼料用ライストリエノールの飼料添加濃度の違いが採卵鶏の卵黄中と肝臓中のトコフェロール (Toc), トコトリエンオール (T3) 濃度, 卵黄中 TBARS 濃度, 生産性, 卵質に与える影響を調べた. 採卵鶏 200 羽を 50 羽ずつ 4 群に分け, それぞれ飼料用ライストリエノールを 0%, 0.25%, 0.50%, 1.00% 含む飼料を 24 週齢から 74 週齢まで不断給与した. 単回帰分析の結果, 飼料中の Toc, T3 濃度と卵黄中と肝臓中の Toc, T3 濃度に正の相関が認められた. 卵黄中の Toc 同族体濃度は α -Toc > γ -Toc > β -Toc > δ -Toc となり, T3 同族体濃度は α -T3 > γ -T3 となった. 卵黄中 TBARS は飼料中ライストリエノールの飼料添加濃度の上昇にしたがい減少し, 卵黄色は a^* がやや減少した. 以上より, 飼料用ライストリエノールの飼料添加レベルは卵黄中の α -, β -, γ -トコフェロールおよび α -, γ -トコトリエンオール濃度をほぼ直線的に高め, 卵黄への移行はトコフェロールで顕著であり, 生産性には影響がないことがわかった.

Summary

Ricetrienol (RT) is a plant oil produced from rice bran which contains tocopherol (Toc) and tocotrienol (T3). The objective of this study was to investigate the effect of dietary RT contents level on egg yolk Toc and T3 concentrations, yolk antioxidative activities, egg production performance and egg quality of laying hens. Twenty four weeks old 200 laying hens were classified

randomly into four groups. Each group was fed layer diets containing RT at 0%, 0.25%, 0.50%, 1.00%, and were defined as CONT, 0.25%RT, 0.50%RT, 1.00%RT, respectively. Each group was fed diets at 24 to 74 weeks old. Yolk Toc and T3 concentrations increased in the dietary RT levels. Toc and T3 concentrations at 1.00%RT increased 4.6 and 7.5 fold, respectively, compared with CONT. Yolk Toc and T3 concentrations increased as α -Toc > γ -Toc > β -Toc > δ -Toc, α -T3 > γ -T3 >, respectively. Simple regression analysis revealed the correlation between feed and yolk vitamin E level, α -Toc ($R^2=0.88$, $P < 0.01$), β -Toc ($R^2=0.89$, $P < 0.01$), γ -Toc ($R^2=0.99$, $P < 0.01$), α -T3 ($R^2=0.55$, $P < 0.01$), γ -T3 ($R^2=0.66$, $P < 0.01$). Yolk TBARS decreased in inverse proportion to feed RT concentration. RT diets expanded yolk Metric-Hue angle but did not affect feed intake, egg mass, feed conversion, egg weight and Haugh unit. In conclusion, yolk α -, β -, γ -tocopherol and α -, γ -tocotrienol concentrations increased linearly with dietary ricetrienol concentration level. Ricetrienol diets increased yolk Toc more than T3, but did not affect the laying performance.