EFFECT OF CHOLESTEROL-REDUCED EGG YOLK ON PLASMA CHOLESTEROL CONCENTRATIONS AND LIVER HMGCoA REDUCTASE ACTIVITY IN JAPANESE QUAIL

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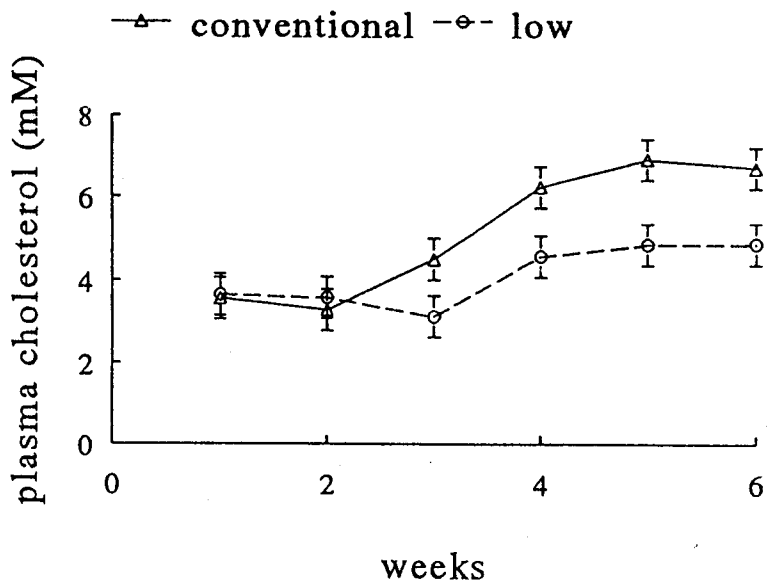
The concentration of cholesterol in blood is a function of *de novo* synthesis and dietary intake of cholesterol. Egg yolk is rich in cholesterol so egg, an otherwise nutritious and inexpensive food, is often avoided by people with elevated plasma cholesterol. Cholesterol-reduced egg yolk can now be produced by a process involving selective extraction of cholesterol with 13-cyclodextrin (the SIDOAK^{TM} process).

In this study we compared the effects of feeding cholesterol-reduced egg yolk (6 mg cholesterol/g dry yolk) with conventional egg yolk (20 mg cholesterol/g dry yolk) on the cholesterol status of Japanese quail *(Coturnix coturnix japonica)*. Young quail were given a commercial turkey starter diet for four weeks and then diets containing turkey starter (725 g/kg), whole wheat flour (200 g/kg) and dried egg yolk (75 g/kg). The yolk was spray dried and, to ensure complete mixing, all ingredients were ground together with dry ice.

Blood samples were collected at weekly intervals and analysed for total cholesterol. In male birds, total plasma cholesterol concentrations were consistently lower in those fed cholesterol-reduced egg - as shown in the Figure (dietary treatment started at week two). Similarly, in female birds, after two weeks on the egg yolk diet, those fed the cholesterol-reduced yolk had lower plasma cholesterol (total 4.80 mM; HDL 3.04 mM) than those fed conventional egg yolk (total 6.50 mM; HDL 3.74 mM).



We also measured the activity of liver HMGCoA reductase, the rate limiting enzyme in cholesterol synthesis. In birds of both sexes fed cholesterol-reduced yolk, the activity of this enzyme was higher than in those fed conventional yolk.

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