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Changes in Serum Lipids from Egg Consumption Are Associated with Clinical Erythrocyte Indices (P08-093-19)

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Objectives: Serum lipids may influence the lifespan of erythrocytes, and have been associated with clinical erythrocyte indices at the population level. Consumption of whole eggs vs. egg whites exerts varying effects on serum lipids and lipoprotein profiles; therefore, we investigated whether egg-induced changes in serum lipids correspond to changes in clinical erythrocyte markers.

Methods: Young, healthy men and women (18–35y, BMI < 30 kg/m², *n* = 11) were recruited to participate in an ongoing intervention trial. All subjects followed an egg-free diet for 4 weeks, then were randomized to consume either 3 whole eggs or 3 egg whites per day for 4 weeks. Fasting serum lipids, complete blood cell counts, and dietary intake analysis was performed at the end of each study period.

Results: Average serum lipids and erythrocyte indices were within normal ranges at the end of each diet period. Changes in total

cholesterol following the whole egg (+4.8%) and egg white (0.4%) diet period were not significant as compared to the egg-free diet period. Similarly, clinical erythrocyte markers were not significantly altered by daily consumption of whole eggs or egg whites. However, changes in total cholesterol and LDL-cholesterol between diet periods were positively correlated with changes in total red blood cell counts and hemoglobin. Total cholesterol was additionally correlated with hematocrit levels, and negatively associated with red cell distribution width. Total red blood cell counts and hemoglobin were further correlated with changes in the total cholesterol to HDL-cholesterol ratios, but not HDL-cholesterol alone.

Conclusions: Our findings indicate that egg-induced changes in serum lipids are associated with clinical erythrocyte indices, and that total cholesterol levels and dyslipidemia may be more significant determinants of erythrocyte profiles.

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