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Additional consumption of one egg per day increases serum lutein plus zeaxanthin concentration and lowers oxidized low-density lipoprotein in moderately hypercholesterolemic males.

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Abstract

The egg is a nutrient-dense food and contains antioxidative carotenoids, lutein and zeaxanthin, but its impact on serum cholesterol levels has been a matter of concern, especially for individuals who have high serum cholesterol levels. We conducted this study to determine whether and how the daily additional consumption of one egg affects serum lipid profiles and parameters of LDL oxidation in moderately hypercholesterolemic males. Nineteen male Japanese adults (total cholesterol [TC]>5.2mmol/L) participated, consuming one soft boiled egg per day for 4weeks in addition to their habitual diet. Despite the significant increase in their intake of dietary cholesterol during the intervention period, the subjects' serum concentrations of TC and low-density lipoprotein cholesterol (LDL-C) did not increase. Their serum malondialdehyde modified low-density lipoprotein (MDA-LDL) concentrations were significantly decreased and their LDL oxidation lag times, reflecting the resistance of free-radical-induced LDL lipid peroxidation (ex vivo), was prolonged after 2 and 4weeks. At weeks 2 and 4, the subjects' serum lutein+zeaxanthin concentrations were significantly higher than their baseline values and showed both an inverse relation with MDA-LDL and a positive relationship with the LDL oxidation lag time. These data showed that in moderately hypercholesterolemic males, the additional consumption of one egg per day for 4weeks did not have adverse effects on serum TC or LDL-C, and it might reduce the susceptibility of LDL to oxidation through an increase in the serum lutein and zeaxanthin concentrations.

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KEYWORDS: Cholesterol; Egg; LDL oxidation; Lutein; Zeaxanthin

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