Vitamin D-enhanced eggs are protective of wintertime serum 25-hydroxyvitamin D in a randomized controlled trial of adults - DTU Orbit (19/03/2019)

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Despite numerous animal studies that have illustrated the impact of additional vitamin D in the diet of hens on the resulting egg vitamin D content, the effect of the consumption of such eggs on vitamin D status of healthy individuals has not, to our knowledge, been tested. We performed a randomized controlled trial (RCT) to investigate the effect of the consumption of vitamin D-enhanced eggs (produced by feeding hens at the maximum concentration of vitamin D3 or serum 25-hydroxyvitamin D [25(OH)D3] lawfully allowed in feed) on winter serum 25(OH)D in healthy adults. We conducted an 8-wk winter RCT in adults aged 45-70 y (n = 55) who were stratified into 3 groups and were requested to consume ≤2 eggs/wk (control group, in which status was expected to decline), 7 vitamin D3-enhanced eggs/wk, or seven 25(OH)D3-enhanced eggs/wk. Serum 25(OH)D was the primary outcome. Although there was no significant difference (P > 0.1; ANOVA) in the mean preintervention serum 25(OH)D in the 3 groups, it was ∼7-8 nmol/L lower in the control group than in the 2 groups who consumed vitamin D-enhanced eggs. With the use of an ANCOVA, in which baseline 25(OH)D was accounted for, vitamin D3-egg and 25(OH)D3-egg groups were shown to have had significantly higher (P ≤ 0.005) postintervention serum 25(OH)D than in the control group. With the use of a within-group analysis, it was shown that, although serum 25(OH)D in the control group significantly decreased over winter (mean ± SD: -6.4 ± 6.7 nmol/L; P = 0.001), there was no change in the 2 groups who consumed vitamin D-enhanced eggs (P > 0.1 for both). Weekly consumption of 7 vitamin D-enhanced eggs has an important impact on winter vitamin D status in adults.

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