

Abstract

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Correcting a marginal riboflavin deficiency improves hematologic status in young women in the United Kingdom (RIBOFEM).

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BACKGROUND: Moderate riboflavin deficiency is prevalent in certain population groups in affluent countries, but the functional significance of this deficiency is not clear. Studies have indicated a role for riboflavin in the absorption and use of iron.

OBJECTIVE: We investigated the effect of riboflavin supplementation on hematologic status in a group of moderately riboflavin-deficient women aged 19-25 y in the United Kingdom.

DESIGN: One hundred twenty-three women with biochemical evidence of riboflavin deficiency [erythrocyte glutathione reductase activation coefficient (EGRAC) >1.40] were randomly assigned to receive 2 or 4 mg riboflavin or a placebo for 8 wk. Measurements of hematologic status were made pre- and postsupplementation, and dietary intakes were also assessed; iron absorption was measured in a subgroup of women.

RESULTS: One hundred nineteen women completed the intervention. The use of a riboflavin supplement for 8 wk elicited a significant improvement in riboflavin status with a dose response ($P < 0.0001$). For women who received supplemental riboflavin, an increase in hemoglobin status correlated with improved riboflavin status ($P < 0.02$). Women in the lowest tertile of riboflavin status at baseline (EGRAC >1.65) showed a significantly greater increase in hemoglobin status in response to the supplement than did women in the first and second tertiles ($P < 0.01$). Dietary iron intake and iron absorption did not change during the study.

CONCLUSION: Moderately poor riboflavin status can affect iron status: the lower the riboflavin status, the greater the hematologic benefits of improving status. The results also suggest that consideration should be given to raising the currently accepted EGRAC threshold for deficiency. This trial was registered at controlled-trials.com as ISRCTN35811298.

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