

Iron absorption in young Indian women: the interaction of iron status with the influence of tea and ascorbic acid.

BACKGROUND: Ascorbic acid (AA) enhances and tea inhibits iron absorption. It is unclear whether iron status influences the magnitude of this effect.

OBJECTIVE: We evaluated the influence of the iron status of young women on iron absorption from a rice meal with or without added tea or AA.

DESIGN: Two stable-isotope iron absorption studies were made in 2 groups of 10 subjects with iron deficiency anemia (IDA) and 10 subjects who were iron replete (control subjects). In study 1, the reference rice meal was fed alone or with 1 or 2 cups of black tea. In study 2, the reference meal was fed alone or with AA (molar ratio to iron, 2:1 or 4:1). Iron absorption was measured by the erythrocyte incorporation of (⁵⁷Fe and ⁵⁸Fe) labels at 14 d.

RESULTS: Mean fractional iron absorption from the reference rice meal was approximately 2.5 times as great in the IDA group as in the control group ($P < 0.05$). The consumption of 1 or 2 cups of tea decreased iron absorption in the control subjects by 49% ($P < 0.05$) or 66% ($P < 0.01$), respectively, and in the IDA group by 59% or 67% ($P < 0.001$ for both), respectively. AA (molar ratio to iron, 2:1 or 4:1) increased iron absorption by 270% or 343%, respectively, in control subjects and by 291% or 350%, respectively, in subjects with IDA ($P < 0.001$).

CONCLUSIONS: The inhibitory effect of tea and the enhancing effect of AA on iron absorption were similar in the 2 groups. Overall differences in iron absorption in the 2 groups, however, continued to be dictated by iron status.

16th June, 2008