Letters to the Editor


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Confusing information with regards to the consumption of legumes and whole grains and their ability to contribute to adequate intake of folic acid has recently been published.

The paper by VanEenwyk et al. (1) states that "increased consumption of legumes and whole grains is also in accord with current dietary recommendations and both of these types of food are good sources of folates." It has also been said that "0.4 mg of folate is easily obtainable from the diet if adequate amounts of fruits, vegetables and legumes are consumed" (2).

Both these statements create an opportunity for misinterpretation and should be qualified.

As most food folates are polyglutamates and need to be hydrolyzed by conjugases to be absorbed, any impairment of this process can lead to folic acid deficiency. Conjugase inhibitors have been identified in legumes and are activated by heat (3).

High-temperature heating has been shown to be compulsory in the preparation of legumes for human consumption to remove lectins and other toxins as well as to inhibit other antinutritional effects (4). Heat treatment will, however, also destroy natural folates and activate conjugase inhibitors (5).

Whole grains such as corn, rice, and wheat have been shown to have an inhibitory effect on folic acid uptake. The mean absorption of synthetic folic acid (monoglutamate) in humans was only 56% when added to corn, 54% when added to rice, and 29% when added to bread (5).

It therefore seems that even though legumes as well as whole grains contain large amounts of natural folic acid, bioavailability thereof is limited. Both these foods have an inhibitory effect on folate metabolism and can be the cause of folic acid deficiency in populations consuming diets rich in legumes and whole grains if adverse nutrient-nutrient interaction is not taken into account.

References

Reply

Neville Colman, Juliet VanEenwyk, and Faith G. Davis
Department of Epidemiology and Biostatistics, School of Public Health, University of Illinois at Chicago, Chicago, Illinois 60612 [J. V., F. G. D.]; and VA Medical Center, Bronx, New York 10468, and Center for Clinical Laboratories, Mount Sinai Medical Center, New York, New York 10029 [N. C.]

Our paper in Cancer Epidemiol., Biomarkers & Prevention (1) demonstrated an association between poor folate status and cervical neoplasia, the first confirmation of the important report (2) a decade earlier suggesting this association. In the same month (January 1992), the group responsible for the original report presented their own case control study (3), supporting the hypothesis and providing striking evidence that the role of folate depletion was as a cofactor for other risk factors for cervical dysplasia, especially human papillomavirus type 16 infection.

Venter's challenge to a minor allusion in our article makes several unsupported assumptions. Although hydrolysis of food folates by conjugase is indeed a prerequisite for absorption, there is no evidence to support the claim that "any impairment of this process can lead to folic acid deficiency." In the absence of evidence, Venter's assertion is pure speculation. It also happens to conflict with the view of many investigators that the amount of folate absorbed may be unaffected by moderate changes in absorption rate due to impairment of either of the main phases of folate absorption.

Secondly, although conjugase inhibitors have indeed been reported in legumes, and we ourselves speculated on their nutritional effect over a decade ago (4), Venter cites no evidence for the statement that folate "bioavailability thereof is limited." In contrast, direct studies suggest that this may be as high as 70–96% (5).

Finally, the citation of our own work (6) to dispute the nutritional value of whole grains is incorrect. That report examined the effect of refined grains on absorption of added folic acid, and addressed neither the availability nor the quantity of endogenous folate. The cited percentage absorp-
tions are correct but do not diminish the potential value of whole grains as sources of food folate.

References

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