

Assessing Levels of Folate, B Vitamins, and Related Metabolites in the U.S. Population

Public Health Problem

- Folate, a water-soluble vitamin, helps prevent neural tube defects and reduce the level of plasma homocysteine (HCY), which is considered an independent risk factor for vascular disease.
- Deficiencies in folate and vitamin B12 cause a condition known as megaloblastic anemia. Untreated vitamin B12 deficiency can lead to irreversible degeneration of the nervous system.
- Now that so many foods are fortified with folic acid, the ability to assess folate status is more critical than ever to ensure that folate levels in the U.S. population are optimal. Yet determining folate levels has been difficult because no reference or definitive method exists, and appropriate standard reference materials are not available.



Woman taking her daily multivitamin supplement

CDC Laboratory Response

CDC is developing candidate reference and definitive methods for analyzing folate and HCY levels in human specimens. For these accurate and precise analyses, CDC scientists are using state-of-the-art technology known as isotope dilution mass spectrometry (MS). CDC is also collaborating with the National Institute of Standards and Technologies (NIST) to develop reference materials for folate and HCY.



DLS scientist developing reference method for analyzing homocysteine levels

Public Health Impact

These methods and materials will provide public health and clinical laboratories with the reliable and standardized measurements they need to assess risk factors associated with adverse health outcomes or disabling conditions such as vascular disease or neural tube defects.

Future Plans

- Once these methods are developed, CDC will collaborate with NIST and the U.S. Department of Agriculture to compare the reference methods that the three agencies developed with other MS methods.

- CDC will distribute collaboratively developed reference materials to other laboratories and manufacturers of commercial assays for standardization purposes.
- CDC will collaborate with the Mayo Clinic to evaluate the Mayo Clinic's recently published tandem MS assay for plasma HCY.
- CDC will develop a method for assessing vitamin B6 status.
- CDC will continue to participate in the International Federation of Clinical Chemistry Working Group for HCY Standardization and on the International Committee for Standardization in Hematology Subcommittee for Folate and Vitamin B12.

Questions or Comments

<http://www2.cdc.gov/nceh/contactnceh/frmSubmit.asp>

The Centers for Disease Control and Prevention (CDC) protects people's health and safety by preventing and controlling diseases and injuries; enhances health decisions by providing credible information on critical health issues; and promotes healthy living through strong partnerships with local, national, and international organizations.

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