

Expert panel identifies research needs on high folic acid intake

By Robin Mackar

The National Toxicology Program (NTP) and the National Institutes of Health (NIH) Office of Dietary Supplements (ODS) convened an [expert panel](#) to identify research needs related to high intakes of folic acid.

The panel was asked to review scientific literature on the topic, after studies suggested that consuming high levels of folic acid may be associated with potential adverse health effects. At a May 11-12 meeting in the NIH Natcher Conference Center in Bethesda, Maryland, the panel made recommendations in four health areas, to help guide future research.

Setting the stage

NIEHS and NTP Director Linda Birnbaum, Ph.D., and NTP Associate Director John Bucher, Ph.D., welcomed participants. Meeting chair [Cutberto Garza, M.D., Ph.D.](#), from John Hopkins University, introduced three presenters who provided the context for the evaluation.

[Gary Shaw, Dr.P.H.](#), from Stanford University, presented an epidemiological perspective on the important role that folic acid plays in preventing birth defects. Folic acid is a B vitamin that helps the body's cells grow and divide. He reviewed well-established research demonstrating that the risk of neural tube defects in infants can be lessened if women take folic acid before getting pregnant and during early pregnancy. Shaw said it is unclear how it prevents the defects, but that folic acid supplementation has been a clear success story.

Nutritional epidemiologist [Regan Bailey, Ph.D.](#), with ODS, discussed folic acid sources and supplement use. She cited ready-to-eat cereal, yeast bread, rolls, and pasta as some of the main food sources. There is very little folic acid deficiency in children or adults in the U.S., Bailey said, but about 65 percent of children have high folate levels, as do 60 percent of adults. Folic acid is the synthetic form of folate and is used in fortified foods and supplements. Folate occurs naturally in food. According to Bailey, the upper limit for folic acid intake set in 1998 by the Institute of Medicine is 1000 micrograms per day. The recommended daily allowance is 400 micrograms per day.

Christine Pfeiffer, Ph.D., of the Centers for Disease Control and Prevention, described three laboratory methods used most often to assess levels of folate in blood. She discussed the pros and cons of each and discussed the assays, or tests, used in the National Health and Nutrition Examination Survey ([NHANES](#)) across the years and explained how conversions were made when assays were changed.

Expert subpanels

After the morning talks, the experts divided into subpanels to address the four major health effects that emerged from a comprehensive literature search conducted by staff from the NTP [Office of Health Assessment and Translation](#). These included cancer, cognition in conjunction with vitamin B12 deficiency, hypersensitivity-related outcomes, and thyroid and diabetes-related disorders.

[Abee Boyles, Ph.D.](#), lead NTP scientist for the project, explained the literature review process and how the major health effects were determined. The panel members deliberated throughout the afternoon and into the evening, and approved a lengthy list of research recommendations the following day.

Although the experts were not asked to rank their recommendations, a few priority areas emerged. The cancer group, for example, discussed the need for more studies of cancer growth, especially in vulnerable populations and at different stages of life. The cognition group discussed the need for a meta-analysis of human studies, with additional studies to look at the biological mechanisms behind cognitive impairments related to high folic acid use in people with vitamin B12 deficiency.

The hypersensitivity group found little concern in the current literature on respiratory infection and eczema. Also, the diabetes and thyroid group had little concern about increased diabetes risk from high folic acid intake.

NTP has made available a [full list of the recommendations](#) and will issue a monograph on the topic.

(Robin Mackar is news director in the NIEHS Office of Communications and Public Liaison, and a frequent contributor to the Environmental Factor.)



Expert panel chair Garza, right, kept the meeting on track. ODS Director Paul Coates, Ph.D., co-chaired the meeting. (Photo courtesy of NIH)



NTP Associate Director John Bucher, Ph.D., left, and NIEHS and NTP Director Linda Birnbaum, Ph.D., listened carefully to the panel discussions. (Photo courtesy of NIH)



Participants in the meeting included, from left, Joseph Braun, Ph.D., from Brown University, who chaired the subpanel on thyroid and diabetes-related disorders; NTP Board of Scientific Counselors representative Sonya Sobrian, Ph.D., from Howard University; Barry Shane, Ph.D., from the University of California, Berkeley; and Paul Thomas, from the Office of Dietary Supplements. (Photo courtesy of NIH)