

400 micrograms of folate from foods provides the same level of protection against NTDs.

As of Jan. 1, 1998, the Food and Drug Administration required the addition of 140 micrograms of folic acid per 100 grams of grain to cereals, bread, pastas and other foods labeled "enriched." This makes obtaining folic acid from the diet a little easier. The FDA did not require more be added to enriched foods due to the concern that folic acid might "mask" one sign of the condition called pernicious anemia, mainly seen in elderly people. The level of fortification currently required is believed to be safe for everyone.



Recommendation

The recommended amount of folic acid to prevent spina bifida and other neural tube defects is 400 micrograms (0.4 milligram) of synthetic folic acid daily. This probably is a well-known concern of women who plan to become pregnant; however, nearly half of all pregnancies in the United States are unplanned. For safety's sake, the upper limit for folic acid is 800 micrograms for those aged 14 to 18 and 1,000 micrograms for adults.

Nutrition experts suggest these convenient ways to get enough folic acid:

- Take a multivitamin with 400 mcg of folic acid or take a single pill of 400 mcg of folic acid every day. (Folic acid pills are small and easy to swallow.) Both folic acid pills and multivitamins can be bought at grocery stores, pharmacies or discount stores.
OR
- Eat a bowl of a breakfast cereal containing 100 percent of the daily value

of folic acid per serving. Total[®], Smart Start[®] and Multigrain Cheerios[®] are some examples.

AND

- Eat a healthy diet that contains lots of fruits and vegetables, and foods fortified with folic acid. "Enriched" cereal grain products, such as pasta, rice, bread, flour and cereals, have been fortified with certain amounts of folic acid. Read food labels for good sources of folic acid. Foods containing folate include fruits, especially citrus; green, leafy vegetables; and dried beans and legumes.

Folic acid is no magic bullet. But it is another example of the wisdom of eating a variety of foods, especially fruits, vegetables and grains.

Answers to student handout folic acid quiz: 1c, 2c, 3a

References and Resources

- NDSU Extension Service
www.ag.ndsu.nodak.edu/health.htm
- Centers for Disease Control and Prevention
www.cdc.gov/ncbddd/folicacid/
- March of Dimes, 1-888-MODIMES
www.marchofdimes.com
- Spina Bifida Association of America
www.sbaa.org
- Dietary Supplement Fact Sheets
<http://ods.od.nih.gov/factsheets/folate/>
- American Dietetic Association
www.eatright.org
- American Heart Association
www.heart.org/HEARTORG/

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Folic Acid Now

"B" Smart Today for Someday



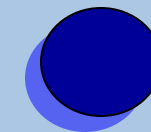
Folic Acid Awareness Lesson Plan

(grades 9-12)



North Dakota Healthy Pregnancy Task Force

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“B” Smart Today for Someday

Description

This lesson is designed to increase student awareness of the role and importance of an adequate folic acid intake. The B vitamin, folic acid, when taken before pregnancy and in the early weeks of pregnancy, can help prevent birth defects of the brain and spinal cord called neural tube defects (NTDs).

Goal

Increase the number of young women and men who know that 400 micrograms (mcg) of folic acid taken daily by women prior to pregnancy can help prevent birth defects of the brain and spinal cord.

Objectives

Students will:

- Know the role of folic acid in preventing neural tube birth defects
- Be able to state the recommended level of daily folic acid intake and sources of folate/folic acid

Process

Introduce the topic with questions about folic acid, birth defects and pregnancy, or ask students to complete the three quiz questions on their handout. Optional discussion questions:

- Do you know what folic acid is?
- Have you heard of neural tube defects? Spina bifida?
- Do you know someone with spina bifida?
- Guess the average total lifetime cost to society for an infant born with spina bifida. \$532,000
- Do you know someone who is planning to get pregnant?
- Do you know someone who could get pregnant?

Present the information in the background section below in either lecture or discussion format.

Assess whether students have adequate folic acid intake every day. Have students write down what they ate the previous day and circle those foods that are on the list of folate-containing foods.

- Do you take a vitamin supplement? If so, how much folic acid is in it?
- Do you eat fortified cereals such as Total®, Smart Start® or Multigrain Cheerios®?

Activity: Bring (or ask students to bring) cereal box labels. Compare contents of folic acid and other nutrients.

Have students share the folic acid message. Activities can include writing 30-second public service announcements (PSAs) for the local radio station, the school radio or morning announcements; creating posters or ads promoting folic acid; and preparing short, persuasive speeches on folic acid and birth defects, which can be delivered to other classes or community groups.

Examples of PSAs, posters and many other materials are available and free from the Centers for Disease Control and Prevention (CDC) Web site (www.cdc.gov/ncbddd/folicacid/).

NDSU Extension Service offices also have folic acid resources available for checkout.

Optional Activities

- Assign research reports on folic acid and birth defects.
- If computers are available, assign students to search for reliable information about folic acid and NTDs on the Web, and share with the class.

Background

Clinical studies have shown that folic acid may decrease the risk of serious birth defects called neural tube defects, or NTDs. NTDs are defects that occur very early in a baby's development, within four weeks after conception. During this early period of pregnancy, the neural tube forms and closes to become the spinal cord, brain and bone surrounding these organs.

When the neural tube does not close properly, an NTD occurs. Spina bifida and anencephaly are two common forms of NTDs.

More than 2,500 infants are born with these birth defects each year in the United States. Research has shown that if all women get 400 micrograms of folic acid every day before pregnancy, the incidence of neural tube defects could be reduced by up to 70 percent.

Babies with anencephaly do not develop a brain and are stillborn or die shortly after birth. Those with spina bifida have a defect of the spinal column that can result in varying degrees of disability, from mild scoliosis (bending of the spine) to paralysis and lack of bladder or bowel control.

With the proper medical treatment, most babies with spina bifida live to adulthood. But they may require leg braces or crutches, and they may have learning disabilities.

Other Health Benefits

Folic acid plays an important role in production of normal red blood cells, and individuals who are deficient in folic acid sometimes develop a form of anemia, called megaloblastic anemia, characterized by a reduced number of red blood cells.

Recent research suggests folic acid also may help prevent heart disease and stroke. According to some published research, people who have a high level of homocysteine in their blood have an increased risk of

heart disease and stroke, and when these people take folic acid, the homocysteine levels drop. Other studies suggest folic acid also may help prevent certain cancers, including colon cancer. While this research is preliminary, it suggests many people, in addition to women, may benefit from folic acid.

Sources

Folate and folic acid are the same B vitamin. Folate is found naturally in food. Folic acid is the synthetic form added to vitamins and enriched foods. Unlike some other vitamins, the synthetic form is better absorbed than the natural (food) form.

Foods that are naturally rich in folate include orange juice, other citrus fruits and juices, leafy green vegetables, beans, peanuts, broccoli, asparagus, peas, lentils and whole-grain products.

Multi-vitamins, fortified breakfast cereals and enriched grain products contain a synthetic form of folic acid that is more easily absorbed by the body than the natural form. Research hasn't shown yet whether consuming

