



EDITORIAL

Twenty-five years of knowledge of the prevention of neural tube defects with folic acid



Folic acid (FA) is a vitamin that belongs to the group B complex (B9). Its main sources are green leafy vegetables and legumes and citrus fruits, among others. Its deficiency is associated with anemia. However, what has come to catapult FA as a vitamin important to health, is the discovery that women with deficient FA blood levels have an increased risk of a defective childbirth due to the abnormal development of the nervous system, particularly anencephaly and spina bifida, known as neural tube defects (NTD). Periconceptional FA consumption decreases the risk of having a child with these malformations by up to 70%.

The first studies regarding this benefit in pregnancy were performed by Smithells et al. in 1980, who found that women who had a child with these defects had lower levels of formiminoglutamic acid excretion (FIGLU), a test that identifies a deficiency of folic acid and vitamin B12, compared to those whose children were born healthy.¹ On the other hand, mothers with a history of childbirth with NTDs are at greater risk of having another child with the same defect. This led researchers to analyze the probability of reducing the recurrence of NTDs by supplementation with FA before pregnancy, where they achieved a significant reduction in cases by consuming 4 mg of folic acid a day.^{2,3} After the results were obtained, they are given the task of investigating if supplementation could also reduce the incidence of NTDs, which was demonstrated and published in 1991.⁴

The next step was to find ways to raise the levels of folic acid in women of childbearing age, especially before pregnancy occurs. Strategies have been diverse, from promoting a diet of foods high in folate (the form of the vitamin in foods) to FA supplement tablets, at doses that vary according to the rules in different countries (0.4–0.8, micrograms/day or 5 mg/week). Another strategy is to use food fortified with FA, which ensures better bioavailability of the compound compared with that of natural origin.

Although there has been irrefutable evidence that folic acid prevents childbirth with neural tube defects (anencephaly, spina bifida) for 25 years, it has not been possible to position the knowledge in the medical community or among women of childbearing age. While it is true that health

professionals recommend the consumption of folic acid in women during pregnancy for the prevention of neural tube defects, consumption is necessary for three months before pregnancy because the embryonic nervous system develops between the third and fifth weeks, even before the woman realizes she is pregnant. In addition to that, about 40% of pregnancies are unplanned, and strategies to increase consumption of the vitamin B complex have failed in most countries.

Folic acid intake, either through supplementation or by eating fortified foods, should be a policy similar to the application of vaccines due to the prevention level obtained from these equally disabling and mortal diseases. Thanks to that vaccination campaigns which have achieved the virtual eradication of polio, NTDs are currently the most important cause of motor disability.

The United States of America have carried out food fortification with folic acid to help raise blood levels. However, it has been seen that further supplementation by consumption of a tablet containing 0.4 mg daily is necessary. They have fortified wheat, flour and corn in our country. Never the less, this is not enough to achieve blood levels sufficient for protection, requiring additional supplementation.

Consuming foods rich in folate (green vegetables, citrus fruits, liver, etc.) helps, but is not enough as around only 50% of its content is absorbed. Even with all the information on prevention, the percentage of women who use pre-conceptional FA have not increased above 30%, coupled with the lack of attachment to the daily intake of vitamins and second to the lack of planning pregnancies. In Mexico, bottles of folic acid tablets are delivered during vaccination campaigns. However, they are not linked to a campaign of information and awareness of its benefits and how they should be consumed.

In Nuevo León, we developed a strategy in 2000 for the weekly consumption of 5 mg of FA, aimed at all women of childbearing age, regardless of whether they were planning to become pregnant or not, which achieved a 50% reduction in anencephaly cases and a 70% reduction in cases of spina bifida.⁵

But why has it not been possible to reduce cases of NTDs the world over, even with the knowledge that it can be reduced by up to 70%?

First, we have no culture of prevention of taking medication (here we would like to clarify that FA is not a medicine as such. It is a B vitamin) when we are not suffering from any particular condition. Second, most health staff does not know that FA must be taken at least three months before pregnancy to prevent NTDs. Third, the large number of unplanned pregnancies.

It is necessary to create an awareness of prevention, not only of adverse events during pregnancy, but many aspects of our health. In the case of congenital defects, folic acid makes the difference between a healthy baby and one with disabilities.

References

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L.E. Martínez-Garza*

Department of Genetics at the "Dr. José Eleuterio González" University Hospital of the Autonomous University of Nuevo León, Monterrey, Mexico

*Corresponding author at: Av. Francisco I. Madero s/n, Mitras Centro, Monterrey, Nuevo León 64460, Mexico.
Tel.: +52 81 83294217; fax: +52 81 83483704.
E-mail address: laelmar@yahoo.com.mx