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**Title:** FOLIC ACID IN DAILY MEALS AND ITS SERUM CONCENTRATION

**Aims of Study:**

The risk in the general population of having fetus with neural tube defects (NTDs) is between 0.5 to 3 per 1,000 births. Women who have had an earlier NTD-related pregnancy are at increased risk of having an affected fetus in a subsequent pregnancy, i.e. 10 to 50 per 1,000births. It has been reported that folic acid plays an important role in preventing conception of fetus with NTDs. Based on this fact women in their child-bearing ages have been recommended to take folic acid starting from 4 weeks before to 12 weeks after gestation. However, little is known how much folic acid women normally take through their daily meals, what is serum concentration, or how serum concentration changes when to supplement folic acid tablets.

**Methods:**

A total of 164 women over 15 years of age took part in the present study: 29 patients with myelomeningocele with a mean age of 24, 78 mothers who had borne myelodysplastic children with a mean age of 42, 47 nurse students with a mean age of 20, and 10 nurses with a mean age of 30. All women recorded a complete chart of foods and drinks for 3 days that told mean amounts of folic acid taken orally. They also gave a few ml of blood to measure folic acid serum concentration. After nurse students and nurses took folic acid of 400 µg a day for 1 week and for 3 weeks, respectively, the final serum concentration was again measured.

**Results:**

It was found that women orally took folic acid of 88µg a day (nurse students) to 142µg a day (nurses) through their foods and drinks. Nurses tended to take much folate-rich food compared to the other 3 groups. Serum concentration varied from 6.2 (myelodysplastic children) to 8.5 ng/ml (mothers). Folic acid tablets taken increased serum concentration to 18 ng/ml 1 week later (nurse students) and to 30 ng/ml 3 weeks later (nurses).

**Conclusions:**

The government of most developed countries recommends all fertile women or women planning a pregnancy to consume folates of 400 to 800 µg a day. The present study demonstrated that women took only one third or one fourth of folic acid required through daily foods and drinks and that folic acid serum concentration was around 6 to 9 ng/ml. When a 400µg tablet was consecutively administered, serum concentration increased to 18 ng/ml 1 week later and 30 ng/ml 3 weeks later. Since it is obviously difficult to take enough amount of folic acid through daily meals, women planning a pregnancy are recommended to take folic acid tablets of 400µg a day in addition to well-balanced foods and/or fortified foods.