

Folate is a water soluble form of the B Group vitamins (vitamin B9) found naturally in foods. It is needed for growth and development in foetuses. Folic acid is the synthetic form of folate, typically used for supplementation and food fortification, whereas folate is found naturally in fruit, leafy vegetables, dried beans, peas, nuts, eggs and orange juice. Folate is a necessary part for enzymes to carry out their functions. When eaten in food as part of the diet, both folic acid and folate are changed to tetrahydrofolate, the active form of folic acid. This is necessary to make an essential component for nucleotide synthesis. Up to 50 – 80% of naturally occurring folate is lost after cooking, while folic acid is much more stable. Fortification is the addition of one or more essential nutrients in a food, whether or not it is normally contained in the food. It is known that New Zealand has successfully fortified salt with iodine since the 1920's to prevent goitre and cretinism, and milk with Vitamin D to prevent rickets in the 1930's. The New Zealand Government has been debating over the issue of fortifying bread with folic acid as this may lead to implications that will affect our daily lives deeply. ①

There are researches about the danger of megadoses of folic acid, saying that overdose of folate will cause cancers. There are dual effects seen in colorectal, breast and prostate cancers making society concerned about it. In fact, folate deficiency may promote initial stages of carcinogenesis, whereas high doses of folic acid may enhance growth of cancer cells. ②

Folate plays an active role in DNA and RNA synthesis. Tetrahydrofolate is involved in the synthesis of amino acids. Folate is required for cell division - mitosis and meiosis. The multiplication of cells during growth and development requires an increased amount of folate in the blood to make of red blood cells for the development of the foetus. The deficiency of folate decreases oxygen in red blood cells resulting in megaloblastic anaemia. ①

Another deficiency that may result is the infant developing neural tube defects (NTD). This happens when the neural tube of the foetus does not close when it should, 3 to 4 weeks after conception. Depending on where the defect is located along the backbone, the defect is most commonly spina bifida, which results in nerve damage that causes lower body paralysis. Such defects may also result in anencephaly, where much of the brain of the infant has not formed. These babies will die shortly after birth. ①

All these conditions have negative consequences for the child, as of the 64% at babies with NTD's born alive, 100% of babies with anencephaly will die within the month, and 90% of babies with spina bifida will have severe thoracic or lumbar lesions. Those with a thoracic lesion have a life expectancy of 40 years, and a low quality of life. ②

Many other countries in the world have already passed a folate standard and the decision can be aided with the research done in these countries. Sixty three other countries in the world have already started fortification with folic acid, fifty-seven of them having mandatory folate fortification. Such countries are the United States of America {1998, all cereal/grain flours}, Canada (1998, white flour and pasta), Chile (2000, flour), and Australia (2009, bread making flour). As these dates show, America, Canada, and Chile are way ahead of Australia and New Zealand. There have been researches done with excellent results from the long period of folate fortification. In the United States, the folate fortification resulted in a 25% drop in the rate of Neural Tube Defects. Also Lydia Buchtman, a spokesperson for Food ②

Standards Australia commented, "Mandatory fortification of folic acid has taken place in the USA for over 12 years and during this period neural tube defects have been reduced and there is no other evidence of ill health." In Canada, they have seen decreases in the birth prevalence of severe congenital heart defects. Even in the short time that Australia had the mandatory fortification; research has shown that there has been some decrease in NTD rates of new-born babies and expect to reduce numbers of neural tube defects-affected pregnancies up to 14%. 2

There has been speculation on the role of folate in decreasing the occurrence cardiovascular disease and strokes. In conjunction with vitamins B6 and B12, folate has been proven to regulate the levels of homocysteine in blood, an amino acid independently linked to cardiovascular disease. It is still unclear as to whether low homocysteine levels will result in fewer occurrences of these diseases. 1

Folate deficiency has economic implications. The rate of NTDs is approximately 9.1 per 10000 pregnancies (including live births, stillbirths and abortions) in New Zealand. This rate may seem low and has been dropping over time, but it still causes significant costs to the government. About \$355,000 is needed over a 20-year period to treat and care for a sufferer of spina bifida, and each year approximately \$5 million is spent on caring for New Zealanders with spina bifida. 3

There are differences of opinion concerning the fortification of folic acid in bread in New Zealand. The main group against the legislation includes the NZ Bakers Association and the Green Party. These groups argue that they value consumer choice and that each individual has a right to choose their own nutritional diets. The NZ Food & Grocery Council believes fortification would not result in significant further reduction as the incidence of NTDs has already decreased during the past 20 years. 4

The main groups for the mandatory fortification include the NZ Paediatric Society, the Labour party and families affected by NTDs. Rosemary Marks states that such a deferral will result in "perhaps up to 20 preventable NTD pregnancies per year in NZ and up to 15 preventable terminations." (Paediatric Society, 2009). Scientists like Murray Skeaff (Otago University) advocate fortification, arguing that scientific research shows that folate fortification is safe for the whole population. 5

From all the above points, I think the mandatory fortification of bread with folic acid is the most feasible method and I strongly support it. Voluntary fortification would probably not work as women likely to eat the fortified bread are those that are also likely to take supplements. 6

My proposed personal actions are to maintain a healthy diet, learn more about folate and other nutrients' implications on us, and to persuade others to support mandatory fortification of bread with folate. By having a balanced and healthy diet, I could ensure my intake of folate and other nutrients is sufficient and appropriate when looking up the nutrient labels on food and eating the right amount. Eating fortified bread could aid me doing the action and reduce the risk of NTDs. As for what the society can do for the mandatory fortification of bread with folate, they should join educational campaigns and watch relative TV programmes about the importance of folate and other nutrients on us so that they can eliminate their bias on the issue. 7