

Folate is one of the B Group vitamins (vitamin B9) found naturally in foods. 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. 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. New Zealand has 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.

Folate is essential for the synthesis of nucleic acids RNA and DNA. The causes of folate deficiency are not eating enough food that contains folic acid. Humans need to take folate, as we are not capable of synthesising folate in the body, which means that they depend on sufficient levels of it in their diet. When eaten in food as part of the diet, both folic acid and folate are changed to tetrahydrofolate, the active form of folic acid. ①

Folate acts as a co-factor for enzymes. It helps prevent defects that are due to low folate intake needed by body. Folate is needed for growth and development in foetuses. It is especially important to women who are pregnant during their first six weeks to prevent neural tube defect (NTD). The neural tube is part of an embryo that develops into the spine and brain. 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

Though folic acid is good for the body there has also been research done saying benefits of folic acid will vary depending on the individuals and their health conditions. As folate helps rapid cell division people with pre-cancer or cancer are at risk as cancer cells DNA replication and cell division occur at a very fast rate, and this will only speed the growth of cell tumours. ②

Many other countries in the world have already passed a folate standard helped with research. 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 on long periods of folate fortification. In the USA, the folate fortification resulted in a 25% drop in the rate of Neural Tube Defects. Also, Lydia Buchtman (Food 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 ②

decrease in NTD rates of new-born babies and expect to reduce numbers of neural tube defects-affected pregnancies up to 14%.

While the cost fortifying bread with bread with folate is a large one for many baking businesses in the long run it may actually turn out to be a more cost effective. Currently the government funding for children with spina bifida is about \$1 million dollars. Since spina bifida is preventable with a larger intake of folate in expecting mothers, it would be more economical to introduce mandatory folate law reducing cases of over the following years. If the cases reduce perhaps more previously allocated money to the people with spina bifida can be reallocated to a cure. 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.

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There are differences of opinion concerning the fortification of folic acid in bread in New Zealand. While many countries have introduced mandatory fortification of folate in bread, Laurie Powell (President of the Association of Bakers) finds it inadvisable "to overlook international concerns being raised about the long term effects of higher concentration of folic acid... Though fortifying bread with folate is beneficial to prevent Neutral Tube Defects in pregnant women but what about the other effects on everyone else? The government's decisions should have a good understanding, researched and also know that the other children who may not need it or it may be unbeneficial to them. People need to have choices, as supporters who want mandatory folate law may not fully understand the effects of it on children who do not have this rare disease and actually cause dysfunctional brain development. As bakers are now seen as the centre of attention for the cases of Spina Bifida which is not true as... dosing every slice of bread is not a magical cure."

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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.

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I support mandatory bread fortification with folate as this will reduce kids being born with Spina Bifida and other NTDs. Also because everyone needs folate in their daily diet as low folate can result to other diseases such as anaemia and heart diseases, which are all preventable. The cost associated for those with Spina Bifida can also be deferred to a cure such as cancer.

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There should be a campaign to guarantee that women understand why folate is vital for the health of them and their children, and encourage women planning to become pregnant to increase their folate intake. The campaign should also advocate eating healthily to increase the amount of folate in the diet, as folate is found naturally in foods such as citrus fruits, vegetables and legumes.

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