

Folic Acid Fortification

What's the difference between "Folate" and "Folic Acid"?

The terms 'Folate' and 'Folic acid' are often used interchangeably, however they are not the same:

- The term **folate** really encompasses a group of nutrients that are all different types of **folates**. They belong to the B vitamin family group, otherwise known as **B9**.
- **Dihydrofolate** is the form of folate that is found in food sources, such as green leafy vegetables (2).
- This food form of folate is then metabolised into **tetrahydrofolate**, the main form of folate which can enter the folate metabolic cycle (1).
- Finally, the body converts these forms down into **methylfolate** – the most active and potent form of folate.

On the other hand:

- **Folic Acid** is an oxidised, synthetic compound used in dietary supplements and food fortification that does not occur naturally (2,3).

What foods are fortified with folic acid?

- Since 2009, The 'Mandatory Folic Acid Fortification Standard' requires that all wheat flour used for making bread, (except organic wheat flour), must be fortified with folic acid (4).
- **2-3mg** of folic acid is added per kg of wheat flour (4).

Therefore, with the exception of organic flours, all breads containing wheat flour will have the mandatory addition of folic acid (4):

- Plain white, white high fibre, wholemeal and multigrain bread loaves, buns and rolls
- Yeast-containing flat breads (e.g. pita bread, naan bread)
- Focaccia and pide (Turkish bread)
- Bagels (white, wholemeal, sweet)
- Topped breads, buns and rolls (e.g. cheese and bacon rolls)
- Baked English-style muffins (white, white high fibre, multigrain, wholemeal and fruit)
- Sweet buns, scones, pancakes, pikelets, crepes, croissants and doughnuts.
- Fruit breads and rolls.
- Pizza bases
- Wheat flour labelled for use for bread-making.

Food manufacturers may voluntarily choose to add folic acid to other foods (5). These will always state folic acid in the ingredient panel, so if it is not listed, you will know it is folic acid free. **Some examples of foods:**

- Any other package or pre-baked good (biscuits, snacks, cake mixes etc)
- Breakfast cereal
- Yeast spreads (eg. Vegemite)
- Fruit juice

What about other flours?

Organic wheat flour and breads made from non-wheat flours, such rice, corn or rye are not required to contain folic acid. However, manufacturers may choose to add it if they wish (5). If they choose to add it, they must list folic acid on their ingredient label (4).

Bread and Folic Acid Fortification

Bakeries which use flour fortified with folic acid (ie. Avoid):

- All wheat flour containing breads in the supermarket (eg. Buergen's bread, Helga's, Wonderwhite etc...)
- All Baker's Delight Bread
- Bowan Island Bread (Sydney specific).

Bread/Bakeries which don't use folic acid fortified bread:

- Bread made from **organic flour** where folic acid is not listed in the ingredients list (eg. Breads available from health food stores: Naturis, Ancient Grains, Dovedale).
- Britt's Organic Bakery Products (available at health food stores).

Read the Ingredients List

If a food has been fortified with folic acid, manufacturers are required to list folic acid on the ingredient list (5). Sometimes it is mistakenly listed as 'folate'. Unpackaged bread (eg. Bread bought from a bakery or Baker's Delight) may not have ingredient labels. They should have this information available on request.

What supplements contain folic acid?

Most retail multivitamins and B-complex vitamins currently sold on the Australian market contain the synthetically manufactured folic acid.

If you are required to supplement with folate, the best supplements will contain folate in its more active form; 5-methyltetrahydrofolate (5-MTHF).

Which drugs affect folate status?

Some drugs can inhibit enzymes which are involved in converting folic acid to its more active form tetrahydrofolate. These drugs are:

- Methotrexate (Anti-rheumatic drug which is sometimes prescribed for Rheumatoid Arthritis) (1).
- Some antibiotics (trimethoprim, tetracycline) (6,7)
- Sulfasazine (For ulcerative colitis) (6,7)
- Oral Contraceptive Pills (7)

Other drugs reduce serum and tissue concentrations of folate by different mechanisms and include:

- Antacids, H₂ blockers, proton pump inhibitors (7)
- Antiepileptics (carbamazepine, phenytoin, lamotrigine, primidone, valproic acid, phenobarbital) (6)
- Cholesterol lowering drugs (7)
- Non-steroidal anti-inflammatory drugs (NSAIDS) (7)
- Some diuretics (Triamterene) (7)

Foods High in Natural Folate

Food	Approximate Measurement	Folate (mcg)
Juice		
Juice, vegetable blend, 55% carrot & 45% celery, silverbeet & parsley	1 cup (250ml)	135
Fruit		
Apple, royal gala, unpeeled, raw	1 cup (125g)	63
Kiwifruit, gold, peeled, raw	1 cup (152g)	59
Strawberry, raw	1 cup	59
Coconut, fresh, mature fruit, flesh	1 cup	39
Legumes		
Baked beans, canned in tomato sauce	1 cup (170g)	85
Bean, cannellini, canned, drained	1 cup	138
Bean, haricot, dried, boiled, drained	1 cup	238
Bean, lima, dried, boiled, drained	1 cup	141
Bean, red kidney, dried, boiled, drained	1 cup	221
Bean, red, kidney, canned, drained	1 cup	68
Bean, soya, canned, drained	1 cup	41
Bean, soya, dried, boiled, drained	1 cup	92
Beans, mixed, canned, drained	1 cup	114
Chickpea, canned, drained	1 cup	107
Lentil, dried	1 cup	189
Pea, split, dried	1 cup	466
Pea, split, dried, boiled, drained	1 cup	111
Poultry		
Chicken egg, whole, raw	1 egg	39
Chicken egg yolk, raw	1 egg yolk	23
Chicken egg, whole, hard-boiled	1 egg	42
Chicken egg, whole, poached	1 egg	33
Game		
Chicken, liver, cooked	100g	1530
Chicken, liver, raw	100g	1450
Lamb, liver, grilled	100g	759

Meat		
Pork, silverside steak, separable lean, dry fried	100g	
Nuts		
Nut, almond, with skin	1 cup (120g)	35
Nut, almond, without skin, blanched	1 cup	52
Nut, hazelnut, raw	1 cup	136
Nut, peanut, with skin, raw	1 cup	288
Nut, pistachio, unsalted	1 cup	98
Nut, walnut, raw	1 cup	84
Seed, pumpkin, hulled & dried	½ cup	40.6
Seed, sesame, white	½ cup	81
Seed, sunflower	½ cup	161
Tahini, sesame seed pulp	1 Tbsp	15
Seafood		
Mussel, green, steamed or boiled	100g	39
Vegetables		
Asparagus, boiled	1 cup	113
Beetroot, fresh, peeled, boiled, drained	1 cup	110
Beetroot, fresh, peeled, raw	1 cup	156
Bok choy, stir-fried	1 cup	34.3
Cabbage, chinese, raw	1 cup	119
Capsicum, red, raw	1 cup	48
Cauliflower, boiled, drained	1 cup	42
Kale, raw	1 cup	19.4
Lettuce, cos, raw	1 cup	22.8
Melon, bitter, raw	1 cup	28.8
Pea, green, fresh, boiled, drained	1 cup	94.5
Silverbeet, boiled, drained	1 cup	17
Sprout, alfalfa, raw	1 cup	36
Spinach, English, raw	1 cup	48
Spinach, English, boiled, drained	1 cup	34
Herbs		
Basil, green, raw	¼ cup chopped	10
Coriander, fresh, leaves & stems	¼ cup chopped	9.5
Watercress, raw	¼ cup chopped	17

Source:

NUTTAB 2010 Online Searchable Database, *Foods that contain folate, natural* [Online database], Food Standards Australia, available from:

<http://www.foodstandards.gov.au/science/monitoringnutrients/nutrientables/nuttab/Pages/default.aspx>

References

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