

## Determination of folate contents in vegetables

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Folate is an important B group vitamin with significant nutritional functions within the human body, particularly one-carbon metabolism. A deficiency of folate results in restricted cell division and elevated plasma homocysteine concentration. These conditions increase the risk of neural tube defect-affected pregnancy and cardiovascular diseases. Deficiency is mostly caused by an insufficient intake of dietary folate. There is currently no Australian data available for folate content in foods. This study analysed vegetables particularly green leafy vegetables (which are generally considered as good sources of folate) for their folate contents. This study analysed folate contents in 22 different types of vegetables that are readily available in the Australian market. The foods were purchased from the local fresh markets or/and supermarkets and analysed microbiologically according to the method outlined by Keagy (1) for deconjugated folate (total folate) by using chicken pancreas conjugase. Recovery studies and analysis of reference standard material were carried out along with the sample analysis for quality control.

Table 1 shows the total folate activities in the 22 vegetables. There were five green leafy vegetables containing more than 300 µg/100 g and three which had 200–300 µg/100 g. The regular consumption of these leafy vegetables may ensure a reasonable level of folate intake. Mungbean, snow peas and alfalfa sprouts contained intermediate levels of folate. Only two vegetables had less than 100 µg/100 g (Spring onion and cabbage).

Vegetables	Total folate contents (µg/100 g as is)*	Vegetables	Total folate contents (µg/100 g as is)*
Chinese flowering cabbage	425 ± 14 (91)	Ceylon spinach	180 ± 8 (93)
Chinese chard	340 ± 25 (91)	Broccoli	174 ± 14 (88)
Shanghai Chinese chard	333 ± 13 (91)	Chinese cabbage	170 ± 14 (94)
Amaranth	332 ± 14 (87)	Snow peas sprouts	169 ± 12 (90)
Spinach	302 ± 17 (92)	Chinese boxthorn	150 ± 8 (85)
Silverbeet	290 ± 22 (90)	Garlic chives	126 ± 5 (93)
Watercress	280 ± 22 (87)	Alfalfa	120 ± 8 (92)
Mustard green	278 ± 15 (94)	Flowering garlic chives	110 ± 8 (93)
Water convolvulus	225 ± 19 (88)	Asian basil	103 ± 10 (88)
Mung bean sprouts	208 ± 7 (69)	Spring onion	89 ± 8 (83)
Coriander	196 ± 11 (87)	Cabbage	68 ± 6 (92)

\* Values in parenthesis indicate % moisture content.

1. Keagy P. Folacin-Microbiological and animal assays. In *Methods of Vitamin Assay* (J Augustino, B P Klein, and P B Venugopal, eds) 4th edn. Chap. 18. Wiley Interscience Publication NY, 1985; 445–471.