Introduction

Food folate and synthetic folic acid have different bioavailabilities, and this can be expressed as Dietary Folate Equivalents (DFE) and used to compare information about the two sources of folate on a common basis. Food Standards Australia New Zealand (FSANZ) undertook a dietary intake assessment to estimate DFE intakes and to determine whether Australians and New Zealanders were currently meeting the Estimated Average Requirements (EAR) for DFEs. This is the first time DFE intakes have been estimated using folate and folic acid data for Australian and New Zealand foods.

What are Dietary Folate Equivalents?

Dietary Folate Equivalents (DFEs) are units that factor in differences in the bioavailability of food folate and of synthetic folic acid. Folic acid when consumed as a supplement on an empty stomach is almost 100% bioavailable. Absorption reduces to 85% when consumed with food. Food folate’s bioavailability is approximately 50-60% (West Suitor and Bailey, 2000; National Health and Medical Research Council, 2005).

DFEs are primarily used to compare information about physiologic requirements of folate on a common basis. Food Standards Australia New Zealand (FSANZ) undertook the Key Foods Program (Australian Bureau of Statistics, 1998). Dietary folate and DFE concentration data used were derived from the Key Foods Program.

Data sources and methods used in the assessment of DFE intakes

Food consumption data were derived from:

- the 1995 National Nutrition Survey (NNS) from Australia that surveyed 14,048 people aged 2 years and above; and
- the 1995 New Zealand NNS that surveyed 4,696 people aged 15 years and above.

Both NNSs used a 24-hour food recall methodology. A second 24-hour recall was also collected on a subset of respondents in both surveys. All intake estimates were adjusted using second day consumption NNS records to better estimate usual patterns of consumption (Australian Bureau of Statistics, 1995).

Dietary folate and DFE concentration data used were derived from the Key Foods Program and other analytical programs undertaken by FSANZ.

Current levels of fortification of food and food products, such as orange juice and bread, as permitted by voluntary permissions in the Australia and New Zealand Food Standards Code were taken into account, as was the market share of fortified product out of each product category.

Dietary Intake = nutrient concentration x food consumption

Estimated intakes of DFEs

Comparison of results with the Estimated Average Requirements (EAR)

Estimated DFE intakes were compared with the EAR. The EAR is “A daily nutrient level estimated to meet the requirements of half the healthy individuals in a particular life stage and gender group” (National Health and Medical Research Council, 2006). When certain conditions are met, the proportion of the population group with intakes below the EAR can be used to estimate the prevalence of nutrient inadequacy (Health Canada, 2006). The proportions of the population groups with dietary DFEs intakes below the EAR were assessed and used as an estimation of the prevalence of inadequate DFE intakes.

The proportion of Australian population groups with dietary DFE intakes below the EAR was low (1.1% or less including the target group of women of child bearing age 16-44 years). For each population group assessed, females were shown to have a higher proportion with DFE intakes less than the EAR than males.

In contrast, in New Zealand a higher proportion of each population group did not meet their EAR, ranging from 42 - 66%. As with Australia, females from each population group were found to have a higher proportion with DFE intakes below the EAR than males.

References


Table 1. Estimated mean and 95th percentile DFE intakes

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<thead>
<tr>
<th>Country</th>
<th>Estimated DFE Intake (ug DFE/day)</th>
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<tr>
<td></td>
<td>Mean (95th Percentile)</td>
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<tr>
<td></td>
<td>Women (16-44 years)</td>
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<tr>
<td>Australia</td>
<td>449 - 632 (795 – 1,144)</td>
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<tr>
<td></td>
<td>511*</td>
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<tr>
<td>New Zealand</td>
<td>338 - 363 (508 – 712)</td>
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<td>1,000*</td>
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* Estimated mean DFE intake