

## ORIGINAL ARTICLE

# An independent audit of the Australian food industry's voluntary front-of-pack nutrition labelling scheme for energy-dense nutrition-poor foods

OBJ Carter, BW Mills, E Lloyd and T Phan

**BACKGROUND/OBJECTIVE:** Since 2006, the Australian food industry has promoted its front-of-pack (FOP) food labelling system—the Daily Intake Guide (DIG)—as a success story of industry self-regulation. With over 4000 products already voluntary featuring the DIG, the industry argues that government regulation of FOP nutrition labelling is simply unnecessary. However, no independent audit of the industry's self-regulation has ever been undertaken and we present the first such Australian data.

**SUBJECTS/METHODS:** Energy-dense nutrient-poor (EDNP) snacks were audited at nine Australian supermarkets, including biscuits, candy, ice creams, chocolates, crisps, sports drinks, energy drinks, flavoured milks, sweetened juices and soft drinks. In these categories nutrition labels were recorded for 728 EDNP products in various packaging sizes.

**RESULTS:** The DIG was displayed on 66% of audited EDNP products but most of these (75%) did not report saturated fat and sugar content. Only generic supermarket EDNP products were likely to display saturated fat and sugar content, compared with very few branded products (48% vs 4%,  $P < 0.001$ ). Branded products not displaying fat and sugar content contained on average 10-times more saturated fat than those displaying such (10% vs 1% DI,  $P < 0.001$ ) and nearly twice as much sugar (21 vs 13% DI,  $P < 0.05$ ).

**CONCLUSIONS:** Most Australian manufacturers of EDNP products have adopted the DIG; consistent with industry claims of widespread adoption, but almost all still avoid displaying the high saturated fat and sugar content of their products by opting for the 'energy alone' option, violating the industry's own voluntarily guidelines and highlighting serious weaknesses with the industry's self-regulation.

*European Journal of Clinical Nutrition* (2013) 67, 31–35; doi:10.1038/ejcn.2012.179; published online 21 November 2012

**Keywords:** public health; food industry; self-regulation; front-of-package; food labelling

## INTRODUCTION

Like most adults in the developed world, a majority of Australians (61%) are currently overweight or obese putting them at elevated risk of a variety of chronic conditions, including cardiovascular diseases, diabetes and some cancers.<sup>1</sup> It is estimated that 'extra foods'—energy-dense but nutrient-poor (EDNP) snack foods—account for 41% of saturated fat intake and 47% of sugar intake of the average Australian adult diet, amounting to 36% of total daily energy intake.<sup>2</sup> Children and adolescents obtain even more of their daily energy from EDNP products, estimated at 41–43%.<sup>3,4</sup> Overconsumption of EDNP products is therefore a major concern for Australian public health, prompting many advocates to call for compulsory, front-of-pack (FOP) nutrition labelling to empower people to make healthier food choices.<sup>5</sup>

In 2009, the Council of Australian Governments and the Australia and New Zealand Food Regulation Ministerial Council instigated a comprehensive review of food labelling law and policy. A panel reviewed over 6000 public submissions before concluding there was a 'strong case' for the introduction of a single, compulsory, interpretive, FOP nutrition label modelled after the multiple traffic lights system.<sup>6</sup> However, by December 2011 Council of Australian Governments ministers had declined to adopt this recommendation in the face of vigorous opposition

from Australia's \$108 billion (USD 113 billion, EUR 88 billion) food manufacturing industry.<sup>7</sup> Five years before, in November 2006, the industry had introduced its voluntarily Daily Intake Guide (DIG) and was therefore in a position to argue during the review that it had 'already introduced an effective front-of-pack labelling system' (p.17).<sup>8</sup> The DIG is based upon recommended average adult dietary intakes of 'core nutrients', described by the industry as 'the amount per serve for energy and the six nutrients—protein, carbohydrate, sugars, fat, saturated fat and sodium—and the percentage of daily intake (%DI) these represent per serve'.<sup>9,10</sup> However, this description only corresponds to one of six options provided by the DIG style guide, option 2 (E + 6). It and the other five display options can be seen in Figure 1.

The DIG is similar to other industry-instigated FOP systems around the world, such as the Guideline Daily Amount (GDA) system originally devised in the United Kingdom in 1998 and a decade later adopted throughout Europe and the Nutrition Keys, recently changed to Facts Up Front programme, launched in the United States in January 2011 (see Figure 2).

Within Australia, the DIG style guide gives suggestions for which label option manufacturers should use. Option 1 (E + 4) is recommended as the default, with the other options being provided as alternatives based upon a combination of nutritional

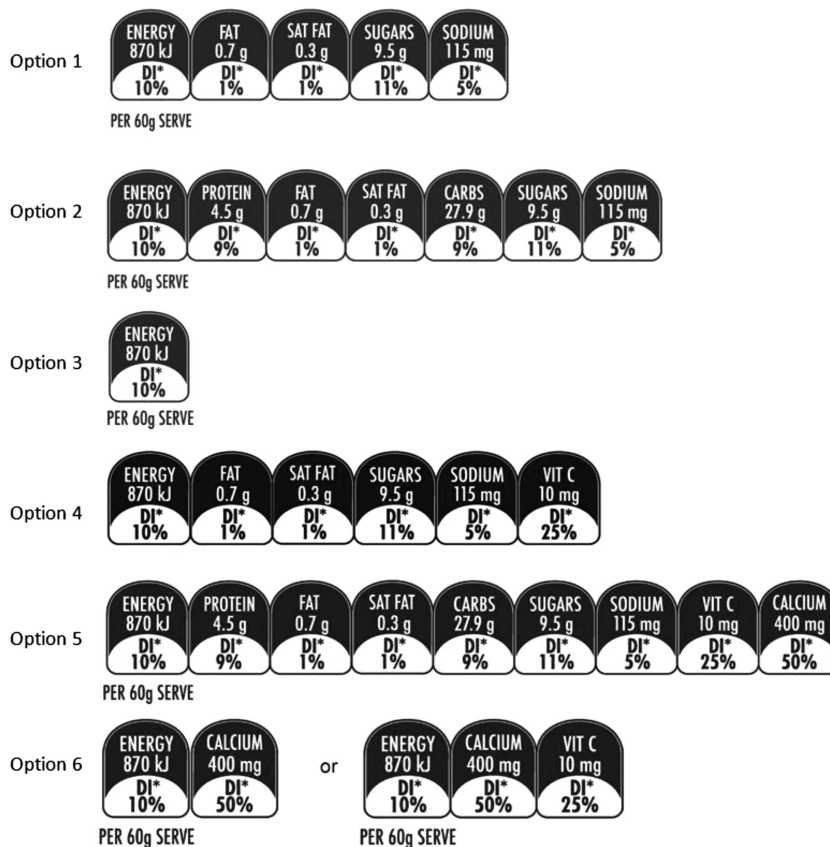


Figure 1. Six display options for the Australian food industry's Daily Intake Guide (DIG).

content and pragmatism. For instance, option 3 (E) is recommended for products 'very low in core nutrients' (listed as protein, carbohydrate, sugars, fats, saturated fat and sodium), and also for those that have 'limited label space' (p.5).<sup>11</sup> The corresponding guidelines for the GDA and Facts Up Front restrict their versions of 'energy alone' labels to packaging of no more than 80 cm<sup>2</sup> in Europe and 13 square inches (84 cm<sup>2</sup>) in the United States.<sup>12,13</sup> However, the Australian DIG style guide provides no specific dimensions.

Industry-provided figures suggest over 4000 products currently feature the DIG, with this number having increased steadily since introduction.<sup>9,14</sup> An industry-commissioned survey also suggests most Australian consumers (78%) are now 'familiar' with the DIG, just over half (55%) claim it is 'useful', and 39% have 'ever used it'.<sup>8</sup> There is little reason to question that most Australians have noticed the DIG at least once since its introduction 6 years ago. However, the claims about the extent to which Australians find the DIG useful is incongruent with previous peer-reviewed research that concludes the DIG and GDA are difficult for consumers to utilise in any practical sense due to the lack of interpretive information they contain.<sup>15-18</sup> Notwithstanding, the industry claims that self-regulation is 'highly successful' and government-imposed regulation is consequently unnecessary, and indeed undesirable: 'voluntary codes can be as effective as black letter law but have the advantage of being more flexible' (p.17).<sup>19</sup>

There is no reason to doubt the industry's DIG adoption figures, but there is a paucity of information about which types of foods are being labelled with it, and perhaps more importantly, which are not. We hypothesised that Australian producers of EDNP foods would be unlikely to voluntarily use the DIG. This was based upon the assumption that food manufacturers would be willing to

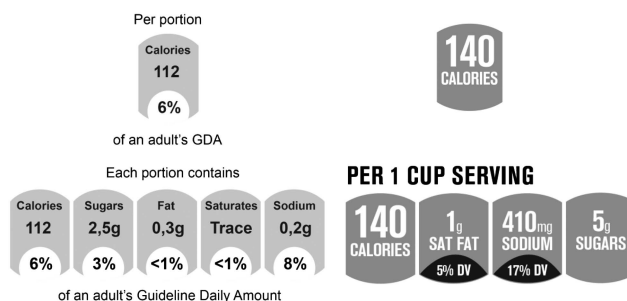


Figure 2. Europe's Guideline Daily Amount (GDA) and the US Facts Up Front (FUF) systems, respectively.

voluntarily display high levels of saturated fats and sugars contained within their products as these could potentially deter consumers within a highly competitive commercial environment. As such, we conducted what we believe is the first independent audit of DIG labelling usage on Australian EDNP foods.

**MATERIALS AND METHODS**

EDNP snack foods and drinks were defined as containing >6g of saturated fat and/or >15g of sugar per serve, as per criteria determined by Food Standards Australia New Zealand.<sup>20,21</sup> Consistent with the Australian Guide to Healthy Eating classifications for 'extra foods', 10 categories of EDNP packaged snack foods and drinks were identified: biscuits, candy, crisps, chocolates, individual serve ice creams, sweetened juices, soft drinks, energy drinks, flavoured milks and sports drinks. In Australia, over two-thirds (68%) of foodstuffs are purchased at supermarkets so we targeted the top three supermarket chains, representing a 78% market share, under the assumption this would

**Table 1.** List of EDNP products audited by category

Food category	Manufacturers (n)	Products (n)	FOP DIG-labelled, n (%)
Crisps	5	29	29 (100)
Ice creams	4	15	14 (93)
Sports drinks	6	17	15 (88)
Soft drinks	12	63	52 (83)
Biscuits	7	67	51 (76)
Flavoured milks	2	21	16 (76)
Juices	9	49	35 (71)
Energy drinks	5	9	5 (56)
Candy	5	21	5 (24)
Chocolates	4	74	18 (24)
Total	59 <sup>a</sup>	365	241 (66)

Abbreviations: DIG, Daily Intake Guide; EDNP, energy-dense nutrient-poor; FOP, front-of-pack. <sup>a</sup>Includes 43 different manufacturers of which 10 manufactured across multiple categories.

present a reasonable representation of the Australian market.<sup>22</sup> Nine supermarkets from the three chains were visited in Perth (population 1.7 million), the capital city of Western Australia. All food and drink products within each category appearing on shelves at each supermarket were audited. A standardised recording sheet was created to collect information on food category, product name, manufacturer, FOP label, suggested serving size (g/ml), and surface area of the FOP (cm<sup>2</sup>). For cylindrical containers (for example, cans and bottles), the FOP surface area was considered half the cylindrical surface area of the packaging. All data were entered into an SPSS database (IBM SPSS Statistics for Windows, Version 19.0. IBM Corp., Armonk, NY, USA) for analysis. Identical products appearing in one or more of the nine supermarkets were only entered once into the database.

## RESULTS

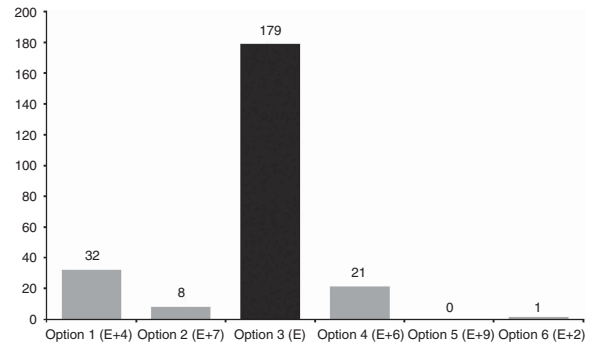
Data were gathered on 728 EDNP products packaged by 43 different companies. This list comprised of 186 products packaged in a single size plus 179 products packaged in 2–9 sizes (mean: 3), making a total list of 365 discrete products. No instances were noted of products varying FOP nutrition labels by package size and as such the label information was analysed by discrete EDNP product ( $n = 365$ ). A diagnostic check of these products confirmed that almost all products ( $n = 349$ , 96%) met our criteria for EDNP foodstuffs by containing  $>6$  g saturated fat and/or  $>15$  g of sugar per serve. Sugar-free drinks ( $n = 16$ , 4%) were the only exceptions. Similarly, 98% of audited food products (195 of 199, not including drinks) met the World Cancer Research Fund criterion for 'energy-dense food' ( $>225$  kcal/100 g). The only exceptions were four single-serve ice creams ranging from 116–158 kcal/100 g but all still containing between 19–21 g of sugar per serve (that is, exceeding the  $>15$  g criterion of Food Standards Australia New Zealand).

As can be seen from Table 1, 241 (66%) products displayed the DIG labelling system on the FOP. An additional 69 products (19%) featured a FOP logo and message 'Be treat wise. Get to know your % DIs' referring customers to DIG information on the back of packs (see Figure 3). Only 55 (15%) products featured neither the DIG nor 'treat wise' labels. As we were specifically interested in FOP nutritional labelling and the 'treat wise' logo provides no FOP nutrition information *per se*, products displaying the 'treat wise' logo were treated as featuring no FOP nutrition label and so were combined with the no DIG category.

The proportion of products featuring the DIG on FOP varied widely between food categories (see Table 1). Nonetheless, the DIG appeared on a majority of products on FOP in all categories, with the exception of chocolates and candy, for which the 'treat wise' logo appeared most commonly (73% and 71%, respectively).



**Figure 3.** Treat wise logo appearing FOP on confectionary products.



**Figure 4.** Distribution of FOP DIG label styles used for 241 EDNP snack foods.

An examination of nutrition labelling practices by the 43 different manufacturers in our sample suggested 22 (51%) used the DIG on all their products, 13 (30%) used the DIG on none of their products and 8 (19%) used the DIG on some but not others. Of the inconsistent group, six manufacturers used the DIG inconsistently between food categories but consistently within food categories, and two used the DIG inconsistently within the same food category. Clear usage patterns emerged for these last two manufacturers. Of 31 different biscuits recorded for one manufacturer, 5 did not feature the DIG and 26 did so. The former were brands clearly aimed at children, whereas the latter seemed aimed at the population as a whole. Fourteen varieties of flavoured milk were recorded for the second manufacturer; nine with the DIG and five without. Those not featuring the DIG consistently contained  $>20\%$  of recommended daily energy, while those below 20% consistently featured the DIG. A clear trend was also noted within generic supermarket brands, of which a significantly higher proportion ( $n = 50$  of 62, 81%) displayed the DIG vs branded products ( $n = 190$  of 303, 63%) (Fisher's exact test  $P = 0.008$ ).

In total, five of the six variants of the DIG were noted. However, in a large majority of cases ( $n = 179$ , 74%), option 3 (E) was used, displaying energy alone (see Figure 4).

Mainstream brands displaying the DIG were significantly more likely to favour option 3 (E) than generic supermarket brands (87% vs 28%, Fisher's exact test  $P < 0.001$ ), with the latter more likely to favour option 1 (E+4) and option 2 (E+6), as per industry guidelines. Of the 190 mainstream branded EDNP products displaying the DIG, option 3 (E) was the only style observed at all within the categories of biscuits, candy, chocolates, ice creams, soft drinks, energy drinks, flavoured milks or sports drinks. Only 24 (13%) products featured other forms of the DIG, exclusively within the categories of crisps (15 of 25, 60%) and fruit juices (8 of 37, 22%). Branded products not displaying fat and sugar content contained on average 10-times more saturated fat than those displaying such (10% vs 1% DI,  $P < 0.001$ ) and nearly twice as much sugar (21 vs 13% DI,  $P < 0.05$ ).

The average FOP surface area of all 728 products, including those with no DIG and those in different sizes of the same products, was 223 cm<sup>2</sup> (range 24–1305). Although option 3 (E) is specified for use with products of 'limited label space', products



featuring this label averaged 215 cm<sup>2</sup> (range 35–1305), and did not statistically differ in FOP surface area from products using any other DIG option ( $t(698) = 0.914$ ,  $P = 0.361$ ). In total, 84% of Australian products using DIG option 3 (E) would not meet the size criteria for the European GDA cutoff for 'limited label space' (80 cm<sup>2</sup>) and 79% would not meet the US Facts Up Front criterion (13 inches<sup>2</sup>).

## DISCUSSION

It is reasonable to assume our sampling strategy was a representative audit of the most popular EDNP foods in Australia at the time of data collection (January to March, 2012). However, other products suffering low distribution may have been missed. Similarly, new products are constantly being introduced into the market while others are discontinued. With these caveats in mind, our data suggest two-thirds of EDNP products in Australia feature the DIG on an entirely voluntary basis. At first glance, this result seems to add credence to the Australian food industry's claim that its DIG labelling system is an example of successful industry self-regulation.<sup>19</sup> However, the present data reveal widespread use of the DIG for EDNP foods and drinks in a manner that appears to contravene the industry's own code of practice. Rather than using option 1 (E + 4) by default, a large majority of EDNP manufacturers chose option 3 (E) and thereby avoid display saturated fats and sugar content. The DIG style guide clearly specifies this option for foods 'very low in core nutrients', which include saturated fats and sugars in its definition, yet our selection criteria specifically screened for foods and drinks high in saturated fats and sugars (>6 and >15 g, respectively, per serve). Thus, other than the  $n = 16$  sugar-free drinks in our sample, all other products in our sample featuring option 3 (E) ( $n = 179$ ) appear to contravene the guideline for being very low in these 'core nutrients'. A few examples of this breach include a 600-ml flavoured milk product being labelled '25% DI energy' but not displaying 57% DI saturated fat and 66% DI sugar, a single-serve ice cream labelled 16% DI energy but also containing 64% DI saturated fat and 37% DI sugar, and a 500-ml can of energy drink labelled as '16% DI energy' but also containing 93% DI sugar.

The other guideline for use of option 3 (E) is for packages with 'limited label space'. Although this concept is not specifically defined in Australia, only approximately one-in-five Australian EDNP products in our sample that used option 3 (E) would be classified as having 'limited label space' in Europe or North America (<80–84 cm<sup>2</sup>). The DIG Code of Practice specifically defines as a breach when the 'E only (option 3) is used when E + 4 or E + 6 (options 1 and 2) would fit the pack' (p.14).<sup>23</sup> By international standards our data include 333 products making this breach from 30 different companies. Some particularly obvious examples included 24-can cartons of soft drinks, 20-packs of crisps, 12-packs of chocolate bars and 10-packs of ice creams, ranging in size from 308–1305 cm<sup>2</sup>, yet all featuring option 3 (E).

The only companies that consistently seem to be following the DIG guidelines are the three generic supermarket brands we observed. This may be owing to their primary competitive strategy being low pricing, rather than packaging, whereas mainstream branded products cannot ignore packaging as an essential aspect of their marketing. *Prima facie*, it appears mainstream manufacturers are less willing to overtly display high levels of saturated fats and sugars in their EDNP products but there is no direct evidence to suggest they are trying to be deliberately misleading. However, the industry seems to tacitly acknowledge the limited usefulness of the option 3 (E) by placing specific restrictions on its use. Furthermore, previous peer-reviewed research suggests that 'energy alone' nutrition labels are virtually meaningless to consumers and simply do not facilitate informed consumer choices.<sup>24,25</sup> This fact seems to be recognised by Australian

consumers who have voiced deep-seated suspicions regarding the motivations of EDNP manufacturers' use option 3 (E), suggesting that such companies are cynically trying to 'look good' while actually conceding very little.<sup>24</sup>

Ultimately, our data suggest there is a near-universal use of option 3 (E) for EDNP foods and drinks in breach of the Australian industry's own guidelines. This casts serious doubt over the industry's claims of effective self-regulation and, if anything, points to the need for more government regulation, not less. It would be beneficial to replicate our study in the European and the US markets in order to assess whether their specific definitions for 'limited label space' help restrict the use of 'energy alone' labels to packages of appropriate size, or whether voluntary industry guidelines are equally ineffectual the world over.

## CONFLICT OF INTEREST

The authors declare no conflict of interest.

## REFERENCES

- 1 Australian Bureau of Statistics. *National Health Survey 2007-08. Cat 4364.0*. ABS: Canberra, 2008.
- 2 Rangan AM, Schindeler S, Hector DJ, Gill TP, Webb KL. Consumption of 'extra' foods by Australian adults: types, quantities and contribution to energy and nutrient intakes. *Eur J Clin Nutr* 2009; **63**: 865–871.
- 3 Rangan AM, Kwan JSL, Louie JCY, Flood VM, Gill TP. Changes in core food intake among Australian children between 1995 and 2007. *Eur J Clin Nutr* 2011; **65**: 1201–1210.
- 4 Savage GS, Ball K, Worsley A, Crawford D. Food intake patterns among Australian adolescents. *Asia Pac J Clin Nutr* 2007; **16**: 738–746.
- 5 Australian Chronic Disease Prevention Alliance. *Front of Pack Labelling: An Agreed Public Health Position 2009*, Available at [http://www.cancer.org.au/File/PolicyPublications/FOPL\\_Final\\_Consensus\\_Statement\\_23March09.pdf](http://www.cancer.org.au/File/PolicyPublications/FOPL_Final_Consensus_Statement_23March09.pdf) (Accessed on 07 August 2012).
- 6 Blewett N, Goddard N, Pettigrew S, Reynolds C, Yeatman H. *Labelling Logic: Review of Food Labelling Law and Policy* Department of Health and Ageing: Canberra, 2011, Available at [http://www.foodlabellingreview.gov.au/internet/foodlabelling/publishing.nsf/content/48C0548D80E715BCCA25782501E5DC0/\\$File/Labelling%20Logic\\_2011.pdf](http://www.foodlabellingreview.gov.au/internet/foodlabelling/publishing.nsf/content/48C0548D80E715BCCA25782501E5DC0/$File/Labelling%20Logic_2011.pdf) (Accessed on 07 August 2012).
- 7 Australian Food and Grocery Council. *Welcome to AFGC*, 2010. (cited on 14 November 2011); Available from: <http://www.afgc.org.au/>.
- 8 Australian Food and Grocery Council. *Response to Department of Health and Ageing Labelling Law and Policy Report (September 2011)* Australian Food and Grocery Council: Canberra, 2011.
- 9 Australian Food and Grocery Council. *Traffic light labelling sends all the wrong signals*. Australian Food and Grocery Council: Canberra, 2009.
- 10 Australian Food and Grocery Council. *CHOICE's 'simple and nutritious' recipes get red lights* (Media Release Friday, 23 September 2011).
- 11 Australian Food and Grocery Council. *Daily Intake Guide Labelling Scheme: Style Guide 2009*. Australian Food and Grocery Council: Canberra, 2009.
- 12 Food and Drink Federation. *GDA Labelling Industry Style Guide*. Revised on May, 2012. Available from <http://www.fdf.org.uk/publicgeneral/GDAStyleGuide.pdf>.
- 13 US Food and Drug Administration. *'Nutrition Keys' Style Guide: FDA-Regulated Foods*. US Food and Drug Administration: Washington DC, 2011, Available from <http://www.fda.org/docs/regulatory/NutritionKeysStyleGuide.pdf> (accessed on 06 August 2012).
- 14 Australian Food and Grocery Council. *3,000% increase in the number of supermarket products with front of pack labelling*, Media Release 2010; Australian Food and Grocery Council: Canberra.
- 15 Borgmeier I, Westenhofer J. Impact of different food label formats on healthiness evaluation and food choice of consumers: a randomized-controlled study. *BMC Public Health* 2009; **9**: 184.
- 16 Kelly B, Hughes C, Chapman K, Louie JCY, Dixon H, Crawford J *et al*. Consumer testing of the acceptability and effectiveness of front-of-pack labelling systems for the Australian grocery market. *Health Promot Int* 2009; **24**: 120–129.
- 17 Malam S, Clegg S, Kirwan S, McGinival S. *BMRB Social Research. Comprehension and use of UK nutrition signpost labelling schemes*. Food Standards Agency: UK, 2009.

- 18 Sanitarium Australia. Front of Pack Labelling: Which Traffic Lights? 2011, Available at <http://www.sanitarium.com.au/~media/sanitarium/about-us/traffic-light-report.ashx> (Accessed on 07 August 2012).
- 19 Australian Food and Grocery Council. Australian Food and Grocery Council Submission to the Department of Health and Ageing Food Regulation Secretariat in response to the Review of Food Labelling Law and Policy, 20 November 2009. Australian Food and Grocery Council, Canberra, 2009.
- 20 Kelly B, Hughes C, Chapman K, Louie J, Dixon H, King L. On behalf of a Collaboration of Public Health and Consumer Research Groups. *Front-of-Pack Food Labelling: Traffic Light Labelling Gets the Green Light*. Cancer Council: Sydney, 2008.
- 21 Food Standards Australia and New Zealand. Final Assessment Report Proposal P293: Nutrition, Health and Related Claims. FSANZ, 2008. Available at <http://www.foodstandards.gov.au/foodstandards/proposals/proposalp293nutritionhealthandrelatedclaims/> (accessed on 06 August 2012).
- 22 IBISWorld. G5111–Supermarkets and other grocery stores in Australia–Major Companies, 2011. Available from <http://clients.ibisworld.com.au/industryau/Majorcompanies.aspx?indid=1834> (Accessed on 17 November 2011).
- 23 Australian Food and Grocery Council. *Code of practice for food labelling and promotion*. Australian Food and Grocery Council: Sydney, 2011. Available from <http://www.afgc.org.au/industry-codes/cop-food-labelling-a-promotion.html> (Accessed on 06 August 2012).
- 24 Carter O, Mills B, Phan T. An independent assessment of the Australian food industry's Daily Intake Guide 'Energy Alone' label. *Health Promot J Austr* 2011; **22**: 63–67.
- 25 van Kleef E, van Trijp H, Paeps F, Fernández-Celemín L. Consumer preferences for front-of-pack calories labelling. *Public Health Nutr* 2008; **11**: 203–213.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.