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Are foods with fat-related claims useful for weight management?☆



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ABSTRACT

Many consumers believe that foods labelled with fat claims (e.g. low fat) are lower in calories than comparable regular foods and are therefore helpful for weight management. However, it is unknown whether such foods are actually lower in calories. Our aims were to determine 1) the relative proportion of foods carrying fat claims among various food categories within the Canadian marketplace; and 2) whether foods with fat claims are actually lower in calories than comparable foods without claims. The Food Label Information Program 2010, a database of Canadian foods developed at the University of Toronto, was used to compare the calorie content of products with and without fat claims within a given food subcategory, as defined by Schedule M of the *Food and Drug Regulations*. Median differences of 25% or greater were deemed nutritionally significant, as that is the minimum difference required for comparative claims such as “reduced” and “lower” in the *Food and Drug Regulations*. Fat claims were present on up to 68% of products in a given food subcategory. Products with fat claims were not significantly lower in both fat and calories compared to comparable products without fat claims in more than half of the subcategories (24 out of 40) analyzed. Conversely, in 16 subcategories, foods with fat claims were at least 25% lower in calories; however, for many of these foods, the absolute difference in calories was small, i.e., for 9 of the 16 subcategories, the absolute difference between foods with and without fat claims was <50 calories, even though the relative percent difference was high. This research suggests that foods with fat claims may be misleading consumers and undermining their efforts to manage body weight or prevent obesity.

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1. Introduction

The recommendation to choose low fat foods has been a cornerstone of healthy eating nutrition recommendations for many years; however, limiting total dietary fat for weight management remains a controversial topic. A number of past studies have suggested that the consumption of lower fat foods is associated with various health benefits including lower intakes of calories, thereby having the potential to reduce the prevalence of obesity (Bray & Popkin, 1998; Peterson, Sigman-Grant, Eissenstat, & Kris-Etherton, 1999; Sigman-Grant, Warland, & Hsieh, 2003; Wirfalt & Jeffery, 1997). Meanwhile, other studies have shown no link

between dietary fat and obesity (Austin, Ogden, & Hill, 2011; Langlois, Garriguet, & Findlay, 2009; Lichtenstein et al., 1998; Willett, 2003). For example, results from the 2004 Canadian Community Health Survey found that the relative amounts of fats, carbohydrates and protein did not increase the odds of obesity for adults (Langlois et al., 2009). Rather, higher total calorie intake in both sexes and lower fibre intake in men were the main risk factors for obesity. Similarly, longitudinal analysis of the National Health and Nutrition Examination Surveys (NHANES), from 1971–4 to 2005–6, showed that while the percentage of calorie intake from fat had decreased over time, calorie intake increased overall, as did obesity rates (Austin et al., 2011). Regardless, since the 1980s, there has been a plethora of messages from various sources advising consumers to choose lower fat foods, from government (e.g. Canada's Food Guide and MyPlate in the United States) (Health Canada, 2002; United States Department of Agriculture, 2015), and advice from health professionals (Dietitians of Canada, 2013), to messages from media and industry. Thus, it is not surprising that with this focus on dietary fat, fat information on nutrition labels is used by Canadian consumers more often than any other nutrient (Canadian

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Council of Food and Nutrition, 2008; The Strategic Counsel, 2011).

In the Canadian *Food and Drug Regulations*, there are 10 types of nutrient content claims about total fat allowed on food packages – free of fat, low in fat, reduced in fat, lower in fat, 100% fat free, (percentage) fat free, no added fat, light in fat, lean and extra lean – along with a number of permitted wording variations for each type of claim (e.g. variations for “free of fat” include “fat-free” and “no fat”) (Government of Canada, 2003). Nutrient content claims are included on food packages voluntarily by food manufacturers, but conditions governing their use are regulated by Health Canada (Government of Canada, 2003; Health Canada, 2010) and the US FDA (U.S. Food and Drug Administration, 2009). A recent study by Schermel, Emrich, Arcand, Wong, and L’Abbe (2013) showed that fat claims were the most prevalent nutrient content claim in Canada, found on 16% of food and beverage products (2010–2011). Similarly, in the US, claims about total fat were also the most prevalent type of nutrient content claim and were found on 22% of products (2006–2007) (Brandt, Moss, & Ferguson, 2009). This percentage rose from 17%, as reported in 2000–2001 (Legault et al., 2004).

The mandatory Nutrition Facts table, which provides information about calories and the 13 core nutrients calculated from the serving size, is important for allowing consumers to track the nutrient amounts they are consuming and compare foods. Studies have shown that although sceptical of claims, consumers often rely on them alone without considering the Nutrition Facts Table in order to accelerate their search for nutritional information (Chan, Patch, & Williams, 2005; Roe, Levy, & Derby, 1999). This can lead to more favourable and potentially misleading evaluations of the overall nutritional quality of products (Roe et al., 1999). In regard to fat claims, some consumers believe that foods that are lower in fat are beneficial for weight management (Chan et al., 2005; Roy Morgan Research, 2008). This belief has led consumers, particularly overweight consumers, to increase their food intake of products labelled with a fat claim (Ebnetter, Latner, & Nigg, 2013; Wansink & Chandon, 2006). In a study by Wansink and Chandon (2006), “low fat” labelling led participants to eat 28.4% more (54 calories) M&M candies and 50.1% more (84 calories) more granola than when they were labelled as regular. Furthermore, low fat labelling of the M&Ms led to greater consumption among overweight compared to normal weight participants. A similar recent study by Ebnetter et al. (2013) showed that participants underestimated the calorie content of “low fat” M&Ms by 71 calories and overestimated the calorie content of regular M&Ms by 38 calories; however, differences in food consumption were not significantly different. Similarly, other studies have shown that marketing foods as “healthy” has led consumers to underestimate caloric content or to consume more of the product (Chandon & Wansink, 2007; Finkelstein & Fishbach, 2010; Provencher, Polivy, & Herman, 2009). The *Food and Drug Regulations*, however, allows fat claims on foods without considering the amount of calories in the food.

Considering the strong evidence that low fat claims are associated with weight management by consumers, it is unknown the extent to which foods with fat claims are also lower in calories. Thus, in the present study our aims were to determine: 1) the relative proportion of fat claims among various food categories in the Canadian marketplace; and 2) whether foods with fat claims are lower in calories than comparable foods without fat claims.

2. Methods

2.1. Food Label Information Program

The Food Label Information Program, a database of Canadian food package label information that was developed at the

University of Toronto, was used to compare the fat and calorie levels in products with and without fat claims. The Food Label Information Program 2010 database contains nutrition information for a total of 10487 unique products, representing 75.4% of the grocery retail market share (Canadian Grocer, 2012). Information collected for each product included the Universal Product Code, company, brand, price, container size, nutrient content claims, disease risk reduction claims, front of pack symbols, Nutrition Facts table information, and date and location of purchase.

Food products were collected from 23 distinct predefined food categories (e.g., bakery products) and 153 subcategories (e.g., “crackers, hard bread sticks and melba toast”) as described in Schedule M of the *Food and Drug Regulations* [B.01.001] (Government of Canada, 2015). Schedule M was created in order to define reference amounts (i.e. serving sizes) that must be used as the basis for making a nutrient content claim or a disease risk reduction claim on foods.

Detailed methods regarding data collection, categorization of claims and front-of-pack information, and data validation are described elsewhere (Schermel et al., 2013).

2.2. Fat claim definitions

Only claims authorized by Health Canada and appearing in the Canadian Food Inspection Agency Guide to Food Labelling and Advertising were considered (Canadian Food Inspection Agency, 2014a; Government of Canada, 2003). Fat claims included all those found on food packages in the Food Label Information Program: fat free, reduced in fat, low in fat, lean and extra lean. All of the authorized variations in the wording of these claims were also included (e.g. variations of “fat free” include “0g fat” and “free of fat”).

2.3. Analysis

All food Schedule M categories where 5% or more products carried a fat claim were included in this study ($n = 16$ of 22 categories; 8819 products). Foods were then organized further by Schedule M subcategories to allow comparisons between comparable foods (113 subcategories were identified within the 16 major categories included in this study). Subcategories were excluded from the analysis if less than 10% of products or less than 6 products carried a fat claim ($n = 73$ of 113 subcategories; 3029 products); thus, 40 subcategories and 5790 foods were included in the final analysis. Each subcategory was then checked for outliers by displaying the distribution of calories as a histogram; none were excluded. Calorie calculations based on Atwater factors were used to identify data entry errors, and any differences between calculated and recorded calories of 20% or greater were checked manually against the product label information. Within each subcategory, median, lower quartile and upper quartile calorie (kcal) and fat levels (g) per reference amount (a standard serving size established for each food subcategory, expressed in g or mL, as defined in Schedule M of the *Food and Drug Regulations* (Government of Canada, 2003) were calculated for products with and without fat claims (Appendix 1).

2.4. Nutritional significance

Differences that were both statistically and nutritionally significant are reported in this study. Differences in medians equal to or greater than 25% were used to determine nutritional significance, as that is the minimum difference required for comparative claims such as “reduced” and “lower” in the *Food and Drug Regulations* (Government of Canada, 2003) and is greater than the 20%

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