

## Abstract

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# Identifying major sources of FODMAPs in the New Zealand diet

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FODMAPs (Fermentable Oligosaccharides Disaccharides Monosaccharides And Polyols) are indigestible, short-chain carbohydrates fermented in the large intestine, causing discomfort in patients with irritable bowel syndrome (IBS). FODMAPs, specifically fructans, galacto-oligosaccharides (GOS), lactose, fructose in excess of glucose, and polyols, are found in fruits, vegetables, grains, milk and their processed products. The aim of this project was to identify the major sources of FODMAPs in the New Zealand diet to guide research into reducing FODMAPs in those major sources. FODMAP data were collected from the New Zealand Food Composition Database<sup>(1)</sup>, in-house data and published sources<sup>(2–5)</sup>. NZ food consumption data were sourced from multiple published sources. Estimated potential dietary intake of FODMAPs in NZ was calculated in grams per capita per annum. Foods and beverages were ranked to ascertain major FODMAP sources within each food group. Without replicated data for individual foods, inferential statistical analysis was not possible. NZ food consumption data on a per capita per annum basis is limited, therefore consumption data were calculated based on serving size and serves per day per capita for some foods. Comprehensive FODMAP data are not available for NZ foods and beverages. In terms of FODMAP data, the New Zealand Food Composition Database<sup>(1)</sup> contains only fructose and glucose data (to calculate excess fructose) and lactose data. The main cereal and grain source of FODMAPs is wheat flour (763–831 g fructan) and the main cereal-based product sources are breads (55–1194 g fructan, up to 121 g excess fructose and 55–159 g GOS) and breakfast cereals (60–525 g fructan, up to 99 g excess fructose, up to 159 g GOS, and 2409 g lactose if consumed with cow's milk). The main fruit source of FODMAPs is apples, providing up to 456 g excess fructose and 68–81 g sorbitol. The main vegetable sources are onion bulb (134–662 g fructan), cauliflower (131 g mannitol) and mushroom (53 g mannitol). Consumption data for garlic were unavailable. Cow's milk is the main source of lactose (4516–5259 g), followed by ice cream (415–937 g), cheeses and butter. The main beverage sources are milk and milk-based café-style coffee (1407–4220 g lactose) and apple-based fruit juices (486–836 g excess fructose). Little data exist for sweeteners and confectionery. Honey and pear juice (containing excess fructose) are sources, as are artificial sweeteners such as erythritol, maltitol and xylitol (i.e. polyols), commonly found in chewing gum, diabetic and low-carb food products. Milk chocolate contributes to lactose consumption. More comprehensive New Zealand food consumption data (on a per capita per annum basis) are required to obtain a more accurate picture of dietary FODMAP intake. Adding oligosaccharide and polyol data to the New Zealand Food Composition Database would be beneficial to provide complete FODMAP data of New Zealand foods.

**Keywords:** wheat; onions; apples; milk

**Ethics Declaration:** Yes

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