

Gluten in “gluten-free” food from food outlets in Melbourne: a cross-sectional study

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Medical treatment of coeliac disease includes a lifelong strictly gluten-free diet and is compromised by exposure to even small (milligram) amounts of gluten.¹ Patients often report being accidentally exposed to gluten when dining out, but this has not been formally assessed in Australia. Understanding how often gluten is present in “gluten-free” food offered by food businesses, and the reasons why this occurs, are medically important, with implications for the food industry and its regulation.

We randomly selected 127 food businesses in the City of Melbourne council area that advertised gluten-free options. This was undertaken as part of the City of Melbourne food sampling program, required by the *Food Act 1984* (Vic). Environmental health officers (EHOs) conducted unannounced site visits and procured at least one food item declared to be gluten-free. Analysis of gluten content (Ridascreen Gliadin R5 ELISA) identified that 14 of 158 samples (9%) contained detectable gluten (Box), and were therefore not compliant with the Food Standards Australia New Zealand (FSANZ) definition of gluten-free.² Nine of the 14 samples (6% overall) contained more than 20 parts per million (ppm) gluten, regarded as the upper threshold for safe gluten intake in Europe and the United States. One business provided wheat-based foods

(> 80 ppm gluten) despite a gluten-free meal being requested, reflecting the lack of understanding reported by many people with coeliac disease.

Rates of non-compliance had improved since our earlier audits (2014: 28 of 138 [20%]; $P = 0.005$; 2015: 22 of 151 [15%]; $P = 0.12$). The improvement may be the result of greater scrutiny by EHOs (one-third of the businesses in this study had previously been audited) and education (Coeliac Australia promoted its *Gluten Free Standard for the Food Service Sector*³ during 2015). Indeed, four of five venues of one burger chain were non-compliant in 2014, but all were fully compliant in 2015 and 2016. The increasing community demand for gluten-free food⁴ may also be a driver of increased awareness among food service staff of the importance of avoiding gluten contamination.⁵

A survey was undertaken at each business by the EHO to determine factors associated with non-compliance. Business details and knowledge and implementation of gluten-free standards (including food labelling, preparation and display, and staff training) were assessed in a multivariate analysis. Only 10% of food service staff had good knowledge of the FSANZ code, and were particularly ignorant about spelt,

“Gluten-free” food items found to be non-compliant with guideline for gluten-free foods, Melbourne, 2016, with recent compliance history (2014, 2015) of the supplying businesses

Food item	Gluten content (ppm)	Environmental health officer follow-up	Earlier audits
Chicken burger, BLT burger	each > 80	Telephone call	2014 (compliant)
Roasted vegetable salad	> 80	Letter, re-visit	None
Banana bread*	> 80	Re-visit (re-tested food compliant)	None
Salt and pepper squid	> 80	Letter	2014 (compliant), 2015 (not compliant: nachos, > 80 ppm)
Rice paper rolls	51	Letter, re-visit	2015 (not compliant: pork noodle salad, > 80 ppm)
Calamari	39	Letter	None
Mixed thali	38	Telephone call	None
Chicken risotto	29	Letter	None
Carrot loaf	9.4	Letter	2014, 2015 (not compliant: dahl pie, > 80 ppm; chocolate brownie, 5.0 ppm)
Banana bread	9.3	Re-visit (business has stopped using outsourced product)	2014 (compliant)
Paella	8.9	Letter	None
Banana bread*	8.3	Re-visit (re-tested food compliant)	None
Gluten-free pasta	5.2	Letter	None

* Food was from the same chain, but from different venues. ♦

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Podcast with Jason Tye-Din is available at <https://www.mja.com.au/podcasts>

consistent with European reports.^{5,6} The odds of compliance were reduced by 75% if the food business did not provide staff training (odds ratio [OR], 0.25; 95% confidence interval [CI], 0.08–0.79) but was sevenfold higher in franchised food outlets (OR, 7.65; 95% CI, 1.21–48.4). Franchise businesses may be more likely to have standardised procedures for food handling and to provide staff training.

Our cross-sectional study found that gluten can be present in “gluten-free” foods offered by Melbourne food businesses, sometimes at clinically significant levels. Improving training and knowledge about appropriate gluten-free food practices is

probably the single most important step in ensuring the safe delivery of gluten-free food, particularly for people with coeliac disease, whose health depends upon it.

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Competing interests: Jason Tye-Din is a co-inventor on patents pertaining to applications of gluten peptides in therapeutics, diagnostics, and non-toxic gluten; he is a shareholder in Nexpep and a consultant to ImmusanT (USA).

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