



## Article

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## A chemical analysis of the salt content of sandwiches purchased from independent outlets

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In recent years there has been an increase in eating away from home and sandwiches are popular choices which are often viewed as the healthy option<sup>1–2</sup>. However, foods eaten away from home are characterised as having a high salt content and are generally nutritionally inadequate<sup>3–6</sup>. Diet is widely recognized as a modifiable determinant of health and considering the prevailing problem of non-communicable disease<sup>7</sup> the nutritional quality of food served from independent sandwich outlets is of considerable public health concern. Therefore the present pilot study investigated the salt content of sandwiches purchased from six independent outlets in the UK. A convenience sample of three popular categories of sandwiches (cheese, tuna, and chicken-tikka) were analysed and the results compared against national guidelines. Samples (n = 36) were analysed for sodium by atomic absorption spectrometry and values were converted to salt using a standard conversion factor (2.54)<sup>8</sup>. The calculated salt content of sandwiches (per portion as consumed) from independent outlets was high (Cheese: 3.00 ± 0.97 g, Chicken: 2.88 ± 0.74 g, Tuna: 2.78 ± 0.46 g). In comparison to current guidelines for intake of salt per meal for an adult (1.8 g) these levels equate to over-consumption by an average of 160 %. Regular consumption of sandwiches purchased from independent outlets, particularly in combination with other high salt foods, may contribute to the development of hypertension. Given the popularity of commercially prepared sandwiches, addressing the salt content would have a major public health benefit.

1. Tangari A, Burton S, Howlett E, Cho Y, Thyroff A. (2010) Weighing in on fast food consumption: the effects of meal and calorie disclosures on consumer fast food evaluations. *J Consumer Affairs* 44(3), 431–462.
2. Hwang J, Cranage D. (2010) Customer health perceptions of selected fast-food restaurants according to their nutritional knowledge and health consciousness. *J Foodservice Business Res* 13(2), 68–84.
3. Stender S, Dyerberg J, Astrup A. (2007) Fast food: unfriendly and unhealthy. *Int J Obesity* 31(6), 887–890.
4. Jaworowska A, Blackham T, Stevenson L, Davies IG. (2012) Determination of salt content in hot takeaway meals in the United Kingdom. *Appetite* 59(2), 517–522.
5. Nielsen S, Popkin B. (2003) Patterns and trends in food portion sizes, 1977–1998. *JAMA* 289(4), 450–453.
6. Prentice A, Jebb S. Fast foods, energy density and obesity: a possible mechanistic link. *Obesity Rev* 2003; 4(4), 187–194.
7. World Health Organization. (2010) *Global status report on noncommunicable diseases*. WHO.
8. Food Standard Agency. 2017 UK salt reduction targets. <http://www.food.gov.uk/scotland/scotnut/salt/saltreduction> (accessed 4th May 2014).