Commentary

IODINE CONTENT IN FAST FOODS: COMPARISON BETWEEN TWO FAST-FOOD CHAINS IN THE UNITED STATES

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INTRODUCTION

Adequate iodine intake is important in pregnant and lactating women for normal fetal and neonatal neurodevelopment (1). Although severe iodine deficiency was eliminated in the United States after introduction of iodized salt, there was approximately a 50% decrease in the median urinary iodine excretion from the 1970s to the present (2-4). Iodized salt is likely a major source of iodine in US diets, although its use has never been mandated. Other major iodine sources in the United States are dairy products, seafood, and breads made with use of iodate dough conditioners (5).

METHODS

Because of the high consumption of fast foods in the United States, the iodine content in foods from various fast-food chains was assessed. Only Burger King reported consistent use of iodized salt, whereas others, including McDonald's, Wendy's, and Taco Bell, did not. We compared the iodine content of food items from Burger King and McDonald's to assess whether the use of iodized salt in food preparation results in differences in fast-food iodine content.

Two restaurants for each venue in the Boston, Massachusetts, area were selected at random, and 2 items per category from each restaurant were tested. The iodine content of 7 comparable items was measured spectrophotometrically by the method of Benotti et al (6).

RESULTS

Despite the difference in the use of iodized salt in food preparation, the iodine content appeared to be similar between comparable items from Burger King and McDonald's (Table 1). One exception was Burger King's chicken sandwich, the iodine content of which was elevated because of the high iodine content in the bread from iodate used as a dough conditioner; the mean iodine contents were 159 μg and 11 μg in the bread and chicken patty, respectively. As expected, items containing milk and fish had the highest iodine contents.

CONCLUSION

Iodine intake from fast-food items, a major source of nutrition for many Americans, may be low unless milk shakes, iodinated bread, or fish is consumed.

ACKNOWLEDGMENT

This material was presented as a poster at the 19th Annual Meeting and Clinical Congress of the American Association of Clinical Endocrinologists; April 21 to 25, 2010; Boston, Massachusetts.

DISCLOSURE

The authors have no multiplicity of interest to disclose.

Submitted for publication June 17, 2010
Accepted for publication June 29, 2010
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Published as a Rapid Electronic Article in Press at http://www. endocrine practice.org on July 14, 2010. DOI: 10.4158/EP10180.CO

Table 1
Iodine and Salt Content in Burger King and McDonald's Food Items

Item	Iodine value (μg/g)		Iodine value in the whole item (μg)[a]		Salt content of the whole item (g)[b]	
	Burger King	McDonald's	Burger King	McDonald's	Burger King	McDonald's
Hamburger	0.09	0.09	25.80	16.73	1.24	1.04
Chicken sandwich	0.74	0.04	163.58	6.50	1.39	1.03
Fish sandwich	0.25	0.49	58.58	69.87	1.37	0.64
Kids' meal hamburger	0.04	0.05	3.86	4.35	NA	NA
Chicken nugget	0.03	0.05	2.08	2.98	0.31	0.4
French fries	0.03	0.03	4.25	2.72	NA	0.16
Vanilla milk shake[c]	0.42 μg/mL	0.46 μg/mL	147.82	163.70	NA	0.14

[a] The iodine value in the whole item was calculated by multiplying the measured iodine value by the mean weight of the whole item, which was measured before homogenization.
[b] The salt content of each item was obtained from nutrition tables available at Burger King's and McDonald's official Web sites. NA = not available.
[c] Measurements for vanilla milk shake are in mL, and the iodine value is thus measured in μg/mL.

REFERENCES

1. **de Escobar DM, Obregón MJ, del Rey FE.** Maternal thyroid hormones early in pregnancy and fetal brain development. *Best Pract Res Clin Endocrinol Metab*. 2004;18: 225-248.
2. **Hollowell JG, Staehling NW, Hannon WH, et al.** Iodine nutrition in the United States: trends and public health implications; iodine excretion data from National Health and Nutrition Examination Surveys I and III (1971-1974 and 1988-1994). *J Clin Endocrinol Metab*. 1998;83:3401-3408.
3. **Caldwell KL, Jones R, Hollowell JG.** Urinary iodine concentration: United States National Health and Nutrition Examination Survey 2001-2002. *Thyroid*. 2005;15:692-699.
4. **Caldwell KL, Miller GA, Wang RY, Jain RB, Jones RL.** Iodine status of the U.S. population, National Health and Nutrition Examination Survey 2003-2004. *Thyroid*. 2008; 18:1207-1214.
5. **Pearce EN, Pino S, He X, Bazrafshan HR, Lee SL, Braverman LE.** Sources of dietary iodine: bread, cows' milk, and infant formula in the Boston area. *J Clin Endocrinol Metab*. 2004;89:3421-3424.
6. **Benotti J, Benotti N, Pino S, Gardyna H.** Determination of total iodine in urine, stool, diets, and tissue. *Clin Chem*. 1965;11:932-936.