

# USDA Updates Nutrient Values for Fast Food Pizza

Melissa Nickle, B.S. and Pamela Pehrsson, PhD.

USDA, Agricultural Research Service, Human Nutrition Research Center, Nutrient Data Laboratory, Beltsville, MD



## Introduction

Consumption of foods away from home is over 50% in the U.S., with full-service and fast food restaurants accounting for 77% of all food away from home sales<sup>1</sup>. Sales of fast food pizza have increased from \$28 billion in 2000 to over \$35 billion in 2010 and continues to rise<sup>2</sup>. The USDA Nutrient Data Laboratory (NDL) recognized pizza as a high consumption food and sampled popular types of fast food pizza from the top two national pizza chains in 2003 and again in 2010 as part of their nutrient monitoring program. The two leading fast food pizza chains accounted for over 47% of the market-share based on the sales of the top 50 U.S. pizzerias. Pizza is consistently a primary Key Food in the USDA National Food and Nutrient Analysis Program (NFNAP) because it is a contributor of more than 14 nutrients of public health significance in the American diet, such as total fat, calcium and sodium. Pizza with cheese topping or pepperoni topping are the most popular types of pizza consumed.

## Methods

**Sampling:** During the summer of 2003, sample units of cheese (regular, thick and thin crust) and pepperoni (regular and thick crust) pizzas were collected from the top two national fast food pizza chains in each of 12 statistically selected locations in the 48 conterminous states. The fast food pizza chain locations were identified using a multistage, stratified sampling plan developed for the National Food and Nutrient Analysis Program (NFNAP)<sup>3</sup>. Samples of both leading brands were again collected in October 2010. Sample units of the same types of fast food pizzas were collected from the pizza chains in the same statistically selected locations.

**Analyses:** The sample units in 2003 were analyzed by individual locations except for thin crust cheese (both brands), thick crust cheese (brand B) and thick crust pepperoni (brand B). These were randomly grouped into 4 subgroups of 3 locations each and composited for analysis. In 2010, sample units were randomly grouped by brand into 6 subgroups of 2 each and composited to create a final analytical sample. All samples were composited according to previously developed protocols for NFNAP. Values for proximates, vitamins, minerals and fatty acids were determined by NDL-approved commercial laboratories using validated AOAC methodology. Serving size weights on individual sample units were determined prior to compositing.

**Quality Control:** Analytical quality assurance was monitored through the use of appropriate standard reference materials (SRM) and in-house control materials.

**Statistics:** Nutrient values were statistically evaluated using Wilcoxon Rank Sum Test  $p < 0.05$  and Sigma-Plot to compare similar pizzas from different years.



Figure 1a. Sodium Content by Crust Type in Cheese Pizza from 2003 vs. 2010 (100g)

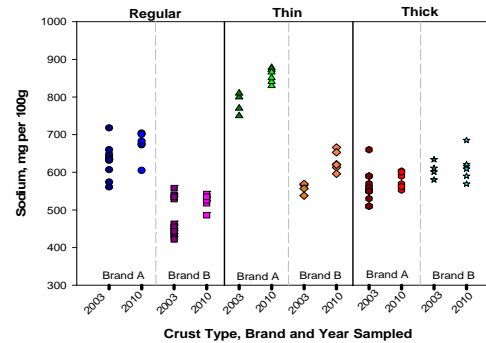


Figure 2a. Iron Content by Crust Type in Cheese Pizza from 2003 vs. 2010 (100g)

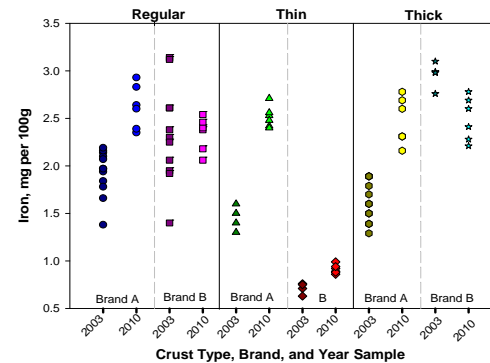


Figure 3a. Potassium Content by Crust Type in Cheese Pizza from 2003 vs. 2010 (100g)

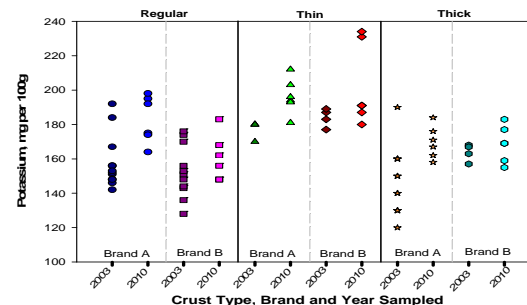


Figure 1b. Sodium Content by Crust Type in Pepperoni Pizza from 2003 vs. 2010 (100g)

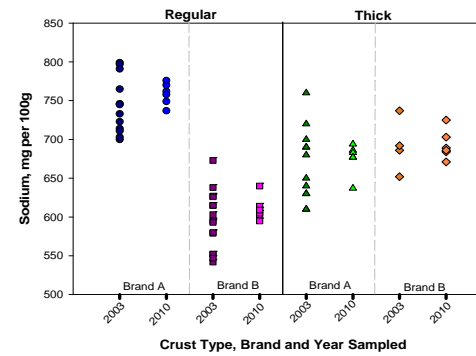


Figure 2b. Iron Content by Crust Type in Pepperoni Pizza from 2003 vs. 2010 (100g)

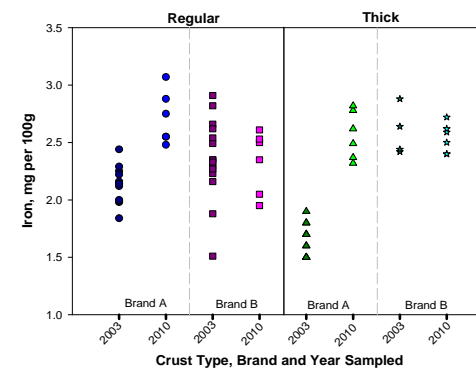
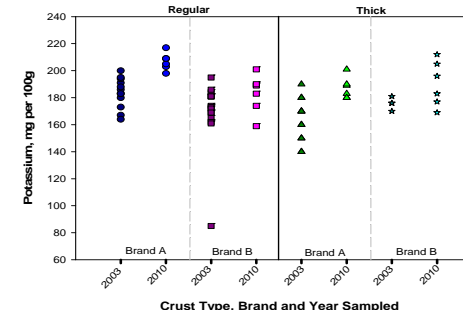


Figure 3b. Potassium Content by Crust Type in Pepperoni Pizza from 2003 vs. 2010 (100g)



## Results

### Sodium – 2010 compared to 2003 (Figs. 1a, 1b):

- No significant changes in cheese pizza, regular and thick crusts, both brands.
- Significantly increased in both brands of cheese pizzas with thin crust: brand A mean increased 783 to 857mg/100g ( $p < 0.014$ ); and brand B mean increased 558 to 628mg/100g ( $p < 0.014$ ).
- No significant change for pepperoni pizza by brand and crust type (regular and thick).

### Iron – 2010 compared to 2003 (Figs. 2a, 2b):

- Significantly increased in brand A cheese pizza, all crusts: regular crust mean increased 1.93 to 2.62mg/100g ( $p < 0.001$ ); thin crust mean increased 1.45 to 2.52mg/100g ( $p < 0.036$ ); and thick crust mean increased 1.6 to 2.48mg/100g ( $p < 0.001$ ).
- Brand B cheese pizza was variable by crust: no significant difference in brand B regular crust; thin crust pizza mean significantly increased ( $p < 0.014$ ) from 0.71 to 0.91mg/100g; and thick crust significantly decreased from mean 2.96 to 2.50mg/100g ( $p < 0.025$ ).
- In pepperoni pizza, iron significantly increased in both types of crust in brand A: regular crust mean for iron increased from 2.13 to 2.71mg/100g ( $p < 0.001$ ); and thick crust mean increased from 1.65 to 2.57mg/100g ( $p < 0.001$ ).

- Brand B did not significantly change in pepperoni pizza for either crust.

### Potassium - 2010 compared to 2003 (Figs. 3a, 3b):

- Means significantly increased in cheese and pepperoni pizzas, all crust types, brand A: cheese, regular crust from 158 to 183mg/100g ( $p < 0.009$ ), thin crust from 178 to 197mg/100g ( $p < 0.013$ ), thick crust from 147 to 170mg/100g ( $p < 0.013$ ); and pepperoni, regular crust from 187 to 207mg/100g ( $p < 0.001$ ) and thick crust from 163 to 187mg/100g ( $p < 0.006$ ).
- No significant difference in brand B cheese and pepperoni pizzas, all crust types.

### Other Nutrients – 2010 compared to 2003:

- No significant differences in calcium, cholesterol, and total sugars for cheese and pepperoni for all crust types and both brands were observed.
- Total fat was not significantly different in both brands of cheese and pepperoni with all crust types except for brand B cheese pizza, thin crust; the mean decreased from 16.8 to 15.1g/100g ( $p < 0.025$ ).

## Conclusion

While sodium in some foods have decreased in 7 years the sodium in fast food pizza has not changed significantly. These observations provide values for nutrient monitoring in several types of high-consumption fast food pizzas and current, accurate data on fast food pizza for USDA databases<sup>4</sup>. As funding permits, more fast food pizzas will be sampled and analyzed for future monitoring, focusing on the nutrients of public health concern.

## References

1. USDA, ERS Food CPI and Expenditures: Food Expenditure Tables. Web site: [http://www.ers.usda.gov/Briefing/CPIFoodAndExpenditures/Data/Expenditures\\_tables/](http://www.ers.usda.gov/Briefing/CPIFoodAndExpenditures/Data/Expenditures_tables/)
2. Barret, L. PMQ 2011 Pizza Power Report. Web site: <http://pmq.com/industryreports.php>
3. Perry CR, Pehrsson PR, and Holden J. A Revised Sampling Plan for Obtaining Food Products for Nutrient Analysis for the USDA National Nutrient Database. 2003. Proceedings of the American Statistical Association, Section on Survey Research Methods [CD-ROM], Alexandria, VA: American Statistical Association, San Francisco, CA.
4. Nutrient Data Laboratory (NDL), Agricultural Research Service, US Department of Agriculture. 2011. USDA National Nutrient Database for Standard Reference, Release No.24. NDL Web site: [http://www.ars.usda.gov/nutrient\\_data](http://www.ars.usda.gov/nutrient_data).