Comparison of sodium values for selected processed foods and baked products

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Abstract

Concerted efforts are being made to reduce the amount of sodium in our food supply. These efforts especially affect processed foods and baked products. The USDA Nutrient Data Laboratory (NDL) reports nutrient data for many of these foods in the USDA National Nutrient Database for Standard Reference (SR). NDL is tracking data trends in sodium and other nutrients of public health concern. Major contributors of sodium were analyzed prior to 2005 and more recently in 2010 and 2011 through the National Food and Nutrient Analysis Program (NFNAP). Items include frozen bean and cheese burritos, canned chili con carne with beans, and canned pasta with sauce, among others. A limited sampling of burritos analyzed in 1999 showed a value of 412 mg/100 g of sodium in the product; data from 2010 show a reduction to 351 ± 5.5 mg/100 g of sodium. Chili con carne with beans showed a slight but insignificant increase with initial data in 1997 at 424 mg/100 g compared to a 2010 value of 449 ± 6.5 mg. Canned pasta with sauce shows a significant ($p < .05$) decrease in sodium levels from 344 ± 7.8 mg/100g to 272 ± 17.2 mg/100 g of sodium. Some of these differences reflect different brands used in analysis. While it is still too early to gain a full picture of the trends in sodium values, these preliminary values show a reduction in some areas. Nutrient values in the SR were updated in 2010-2011 to reflect new data.

Objectives

- To analyze sodium values in selected processed foods and baked products to be reported in the USDA National Nutrient Database for Standard Reference (SR)[1]
- To track data trends in sodium for selected high consumption or high sodium processed foods and baked products

Methods

Sampling

- Sampling done through the National Food and Nutrient Analysis Program (NFNAP)
- Sample units were obtained from 12 retail outlets nationwide based on NFNAP's probability- proportional-to- size (PPS) sampling plan[2]
- 2-3 brand-name products representing, where possible, the largest share of the market were sampled as well as multiple store-brand products
- Major contributors of sodium from baked products and processed foods were selected:
  - -blueberry muffin
  - -white bread
  - -chili con carne with beans
  - -frozen pancakes
  - -frozen bean and cheese burrito
  - -canned pasta with sauce

Analytical methodology

- Sodium was analyzed using ICP (AOAC 985.01 + 984.27).

Quality control

- Analytical quality control performed through the use of duplicate sampling with in- house control and certified reference materials[3]

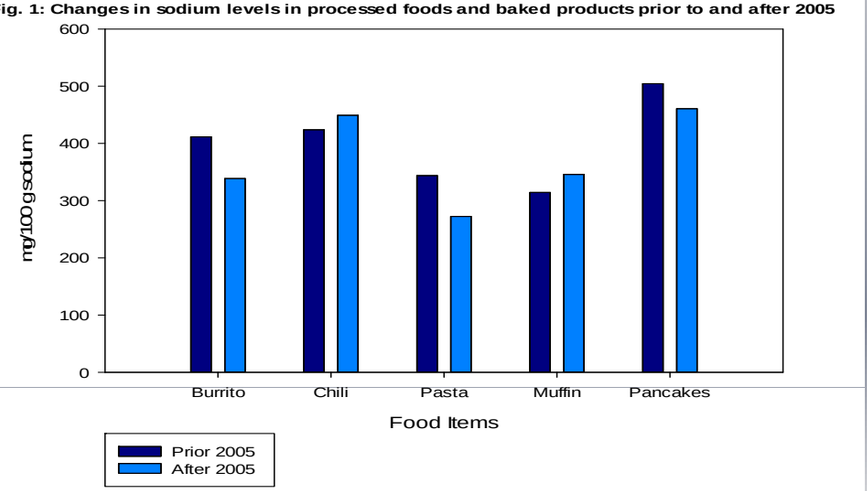
Statistics

- Data evaluated using Mann Whitney U-test with critical value of $p < 0.05$

Table 1: Comparison of sodium in baked products and processed foods

Year	Food item	Sodium mg/100g	n	Range	P-value
	Baked Products				
2002	Blueberry muffin	315	2	281 - 348	0.7139
2012	Blueberry muffin	346	15	258 - 446	
2002	Pancakes	505	2	498 - 511	0.1094
2011	Pancakes	461	6	449 - 474	
1998	White bread	681	8	640 - 719	**<0.0001**
2010	White bread	494	19	410 - 555	
	Processed Foods				
1999	Bean and cheese burrito	412	2	330 - 493	0.5028
2010	Bean and cheese burrito	339	11	251 - 429	
1997	Chili con carne with beans	424	12	360 - 476	0.2203
2010	Chili con carne with beans	449	11	422 - 500	
1999	Canned pasta with sauce	344	6	327 - 378	**0.0380**
2010	Canned pasta with sauce	272	11	192 - 371	

Fig. 1: Changes in sodium levels in processed foods and baked products prior to and after 2005



Results and Discussion

- A limited sampling of burritos showed a decrease in sodium from 412 mg/100 g in 1999 to 351 ± 5.5 mg/100 g in 2010
- Canned pasta with sauce decreased from 344 ± 7.8 mg/100 g of sodium to 272 ± 17.2 mg/100 g of sodium
- The decrease in canned pasta with sauce was significant ($p = 0.0380$) as was the decrease in white bread ($p < 0.0001$)
- Frozen pancakes also showed a decrease
- Small increases occurred in canned chili con carne with beans and blueberry muffins

Conclusion

- Some changes may have occurred as a result of brand difference or the time period between sampling
- It is still too early in the sodium reduction process to gain a full picture of trends, but preliminary examination shows a reduction in some areas
- These updates and additions to SR were released in USDA's SR-25 this year
- Considerations for the future include further analysis consistently among brands and continued tracking of sodium values to determine trending

References

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