

CHALLENGES OF MONITORING THE SODIUM LEVEL OF FOODS CONSUMED IN THE U.S.

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ABSTRACT

Background: Dietary sodium has been identified as a contributing factor in the development of hypertension. Many companies are reformulating their products in efforts to reduce dietary sodium intake. The USDA-ARS Nutrient Data Laboratory (NDL) began monitoring the sodium level of foods in collaboration with other federal agencies in 2010. **Objective:** The objective of this study is to report approaches and challenges encountered during efforts to monitor the sodium content of the U.S. food supply. **Description:** Sentinel foods (primary indicators to assess sodium changes in the food supply) were identified. Sodium levels of those 125 foods plus an additional 1200 foods that support the What We Eat in America, NHANES are being monitored through either analysis via the USDA National Food and Nutrient Analysis Program (NFNAP) or industry sources. Several challenges ensued. Market share information for some packaged foods and many restaurant foods was not readily available or up-to-date, making it difficult to determine which brands to examine. Commercial product formulations and restaurant item ingredients were highly variable, and those nutrient data were not easily obtained. When data were not accessible via analyses, industry contacts, or company web sites, companies were contacted or nutrient values were captured from Nutrition Facts Panels (NFP) in local retail stores. Sodium values on company web sites often differed from those listed on actual packages. For example, online saline crackers NFP had 150 mg/16g serving whereas the in-store NFP had 190 mg/16g serving. Label values were sometimes much higher than recent NFNAP analytical values (e.g., 393 mg/100g mixed nuts label versus 265 mg/100g analytical), possibly an overcompensation due to FDA labeling regulations for sodium. **Conclusion:** NDL food specialists met challenges at each step in the process – identifying foods to track, conducting extensive market checks, planning NFNAP sampling, and obtaining reliable label values – but solutions were developed to provide timely, reliable nutrient information to monitor the sodium level of foods. [Research was partially supported by CDC-USDA Agreement 60-1235-0-185]

INTRODUCTION

Food manufacturers, foodservice operators, and restaurant owners are being urged to decrease the sodium levels in their products as part of a public health effort to lower sodium consumption and reduce the risk of cardiovascular disease and stroke in the U.S. population. The USDA Nutrient Data Laboratory (NDL), in collaboration with the USDA Food Surveys Research Group (FSRG), USDHHS Centers for Disease Control and Food and Drug Administration, is monitoring changes in sodium and other key nutrients that may occur as a result of this effort. The process, accompanying challenges, and actions taken to resolve these challenges are described.

MONITORING STEPS AND DECISIONS

1. Selecting foods to monitor

- Criteria: commercially packaged and restaurant foods with added sodium; sodium content; consumption data; and potential for reduction
- Sentinel foods: subset of 125 food items, primary indicators to assess sodium changes in food supply
- Other food items: additional 1200 commercially packaged and restaurant foods which support What We Eat in America (WWEIA), NHANES

2. Selecting nutrients to monitor:

- In addition to sodium, monitor potassium, total and saturated fat, total sugar, and total dietary fiber to capture other potential nutrient changes resulting from reformulations

3. Analyzing nutrients in foods

- Analyze sentinel foods every 4-8 years, depending on priority level developed by NDL and budget
- Determine brands to sample, designed to achieve 75-80% of total market share
- Employ National Food and Nutrient Analysis Program procedures (Haytowitz et al. 2008)

4. Reviewing Nutrition Facts Panel (NFP)

- Review annually for sentinel foods, biennially for other foods
- Review sodium content of brands associated with 75-80% of the total market share
- Primary source of nutrient information: company web sites
- Cutoff to change value in SR: 5-10% difference in sodium between previous SR value and current NFP value

- Disseminating data:** Report findings to public via NDL web site. Update values in USDA National Nutrient Database for Standard Reference (SR) and Food and Nutrient Database for Dietary Studies (FNDDS).

REFERENCES

Haytowitz DB, Pehrsson PR, Holden JM. The National Food and Nutrient Analysis Program: A decade of progress. *Journal of Food Composition and Analysis* 2008; 21(Supp. 1):S94-S102.

Sodium monitoring challenges and their resolutions

Challenge	Resolution
Selecting foods and nutrients to monitor	
The different agencies involved needed to identify one set of criteria for selecting the list of foods to monitor.	Criteria for selection were determined by FSRG in close co-operation with NDL.
Other nutrient levels may change resulting from reformulations to reduce sodium levels. Which nutrients should be monitored?	Potassium, total and saturated fat, total sugar, and total dietary fiber are nutrients of public health concern which could be affected by compensations for sodium reduction, so all are being monitored.
Analyzing nutrients in foods	
Market share data not available for all foods (e.g., capers, chow mein noodles). Also, data used are from 2009 and may not represent 2012-13 market.	Selected major national brands when no data was available. Utilized additional resources such as trade associations and trade publications.
Product sampled was recently reformulated and both old and new were inadvertently picked up for analysis (Figure 1).	Analyzed both but in separate composites, to be aggregated together since both on market at same time as consumed by survey respondents.
Restaurant foods	<ul style="list-style-type: none"> No nutrition information available from many restaurants, so unable to determine sodium level and track changes without analysis. Difficult to compare different years because specific establishments are not same each year the food item is sampled. Weight of serving portion not provided on company web site.
Reviewing Nutrition Facts Panel (NFP)	
Store brand in market share database did not specify the store name.	Primarily used Safeway brand NFP's to represent store brand, based on NFNAP sampling strategy.
<ul style="list-style-type: none"> Sodium value on NFP differed from online label information (Figure 2). Unable to find some labels online; some online sources not kept up-to-date (Figure 3). 	<ul style="list-style-type: none"> Contacted company and/or checked NFP in local retail stores.
Previous value was analytical, new label value is lower than previous label value, but much higher than current analytical value (Figure 4).	<ul style="list-style-type: none"> Keep analytical value if less than 3 years old. Consider informing company about discrepancy so consumers will be better informed by NFP's.

Figure 1. Example how sodium value on package NFP differs on the same product from the same store at the same time



Picked up from store in NY, Dec 2012
 Sodium 360 mg/76 g (1/6 slice)
 Distributor is Hillshire Farms



Picked up from same store in NY, Dec 2012
 Sodium 220 mg/76 g (1/6 slice)
 Distributor is Sara Lee

Figure 2. Examples how sodium value on package NFP can differ from online label

Figure 3. Samples of company web site messages regarding their online label nutrient information

"Product formulations may change. For current nutrition facts and ingredient line information check product packaging."

"This is a representation of the nutrition label. The actual nutrition label on the product may vary slightly."

Figure 4. Example of sodium value from NFP in 2012 lower than 2010 yet higher than 2010 NFNAP analytical results

	2010 NFNAP analytical results (mg/100 g)	2010 label sodium (mg/100 g equivalent)	2012 label sodium (mg/100 g equivalent)
Mixed nuts, top brand	265	393	321

CONCLUSIONS

- Monitoring nutrient in the dynamic and expansive U.S. food supply is challenging.
- Nutrient Data Lab food specialists have overcome a number of challenges encountered during the sodium monitoring process, enabling them to provide timely, reliable nutrient information.
- The data are being shared with collaborators and the public.