

Recent Trends in Ready-To-Eat Breakfast Cereals in the U.S.



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Objectives



- Examine data in USDA National Nutrient Database for Standard Reference (SR) for trends in ready-to-eat (r-t-e) breakfast cereals
- Determine type and extent of manufacturers' reformulations of r-t-e cereals in response to public health concerns

Public Health Concerns

- **Diet-related chronic diseases**
 - Cardiovascular disease (37% of population)
 - Hypertension (34% of U.S. adults)
 - Diabetes (about 100 million Americans diabetic or pre-diabetic)
 - Many types of cancer (about 41% diagnosed during lifetime)
- **Dietary Guidelines for Americans, 2010**
 - Make half your grains whole
 - Cut back on foods high in solid fats, added sugars, and salt

Background

- **WWEIA, NHANES 2007-08**
 - 32% of individuals reported consuming breakfast cereals
 - Breakfast cereals contribute 2% of sodium intake, 3% of sugar intake, and 7% of fiber intake
- **Trends reported***
 - Fiber – 38% of hot and cold U.S. cereals launched in 2010 claimed elevated fiber content
 - Cinnamon was “flavor of the year” in 2010
 - Chocolate for breakfast
 - Honey as a sugar substitute

*Prepared Foods, March 2011 and
FoodProcessing.com July 2011

Mintel Survey

- Mintel, market research company, conducted consumer survey
- Survey respondents who eat breakfast cereal:
 - About 45% claim eating high-fiber cereal helps manage hunger and weight control
 - About 20% give other health reasons for consuming cereal, such as reducing heart disease risk and controlling blood sugar
 - Claim top attributes for cereal are:
 - ✦ Taste, Price, Familiarity, Fiber content, and Sugar content

Foodprocessing.com, 2011

International Food Information Council 2011 Food & Health Survey

- Dietary Guidelines-related actions – 50% cutting back on foods/drinks with added sugars/sweeteners (n=1,000)
- 73% trying to limit some type of carbohydrate, 56% of which are sugars
- 26% of respondents who purchase reduced sodium products (n=601) select r-t-e cereal as reduced or lower sodium choices
- 39% purchase r-t-e cereal on a regular basis because they're fortified or contain added beneficial components

Top-Selling R-T-E Cereal Companies

Brand	Market Share*
Kellogg	33%
General Mills	29%
Private Label	13%
Post	11%
Quaker	7%

*Based on unit sales from August 2010-August 2011

Milling and Baking News,
October 4, 2011

Health and Nutrition Initiatives

Kellogg

- Increase fiber
- Reduce sugar
- Reduce sodium

Kelloggs 2010 Corporate Responsibility Report

General Mills

- Increase whole grain
- Reduce sugar
- Reduce sodium

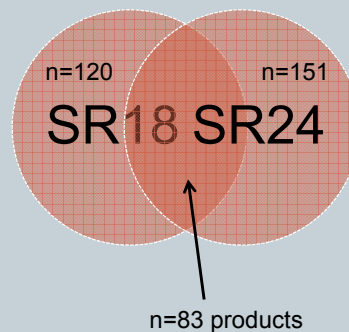
General Mills October 2011 News Release

NDL Methods

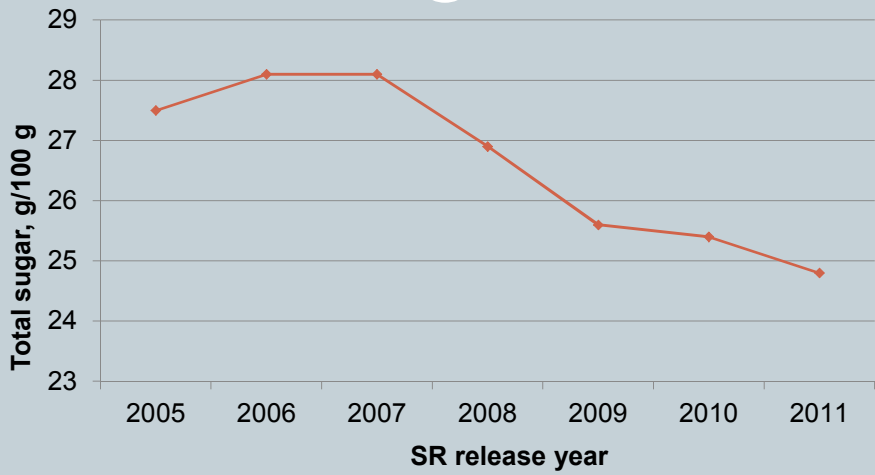
- Manufacturers supplied nutrient data yearly
- Limited this study to Kellogg and General Mills
- Examined total sugar, total dietary fiber, and sodium levels in r-t-e cereals from SR18 (2005) through SR24 (2011)
- Unpaired Student's t-tests performed to compare SR18 (n=120 products) with SR24 (n=151 products)

NDL Methods, continued

- Compared values from SR18 to values from SR24 using paired t-test
- Compared the two companies for changes in sugar, fiber, and sodium using MANOVA
- Examined ingredients for new and common trends

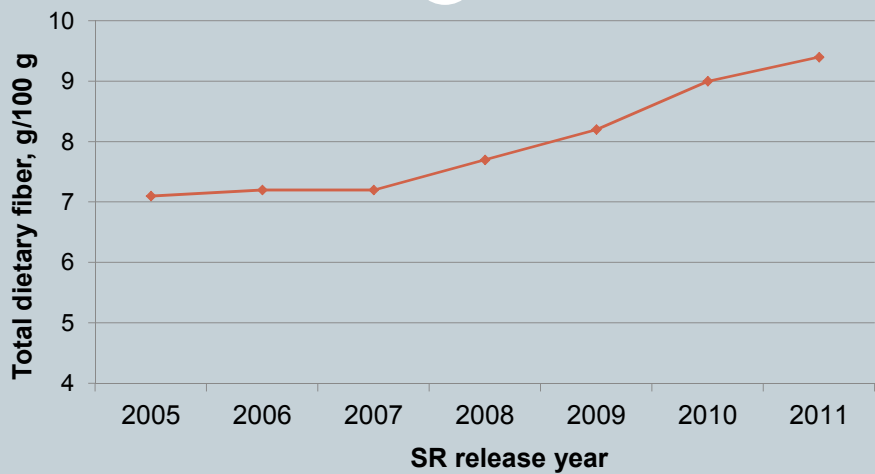


Trend for Total Sugar in R-T-E Breakfast Cereals*



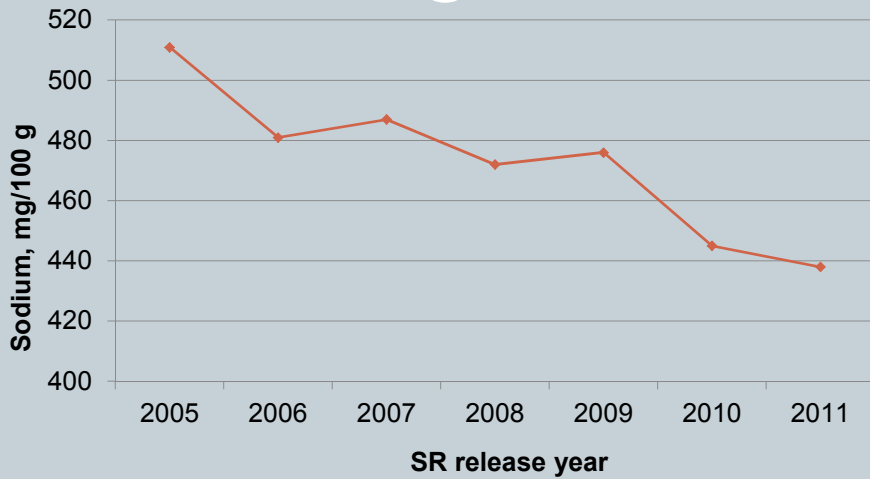
*Mean values for General Mills and Kellogg cereals within USDA nutrient database

Trend for Total Dietary Fiber in R-T-E Breakfast Cereals*



* Mean values for General Mills and Kellogg cereals within USDA nutrient database

Trend for Sodium in R-T-E Breakfast Cereals*



*Mean values for General Mills and Kellogg cereals within USDA nutrient database

Comparison of Subset of Cereals Within SR18 and SR24

Descriptive statistics of breakfast cereals (n = 83)			
	Mean per 100 g	SD	Range
Sugar, g: SR18	26.8	13.5	0 – 56
Sugar, g: SR24	24.7	11.7	0 – 56
Fiber, g: SR18	8.0	9.5	0 - 50
Fiber, g: SR24	9.1	8.9	0.2 – 50
Sodium, mg: SR18	523	254	1 – 959
Sodium, mg: SR24	464	216	1 – 889

Comparison of Subset of Cereals Within SR18 and SR24

Paired analysis comparing nutrient values between SR18 and SR24

	Mean Difference (SE)	% Change	p - value
Total Sugar	-2.0 (0.5)	7.6	<0.0001
Total Dietary Fiber	1.1 (0.2)	13.4	<0.0001
Sodium	-58 (13)	11.2	<0.0001

Red font denotes a decrease

Paired t-test, SAS 9.2

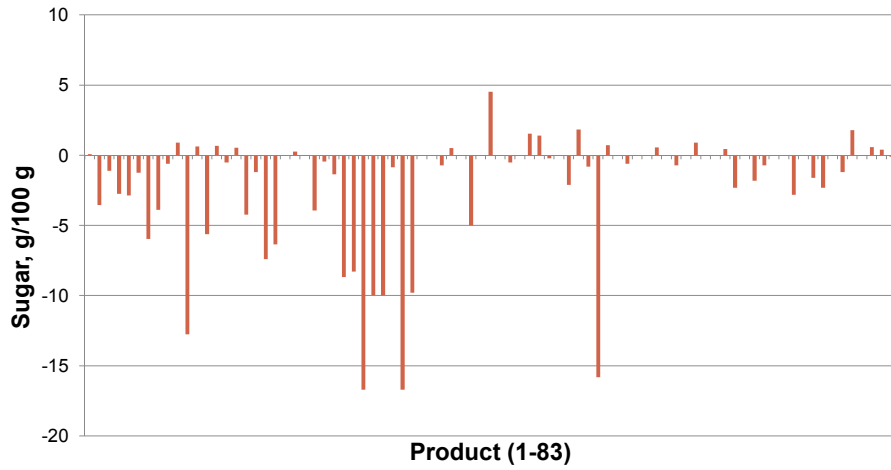
Detailed Comparison of R-T-E Cereals Between SR18 and SR24

Frequency and proportion of products that increased/decreased in nutrient value, and range of those values

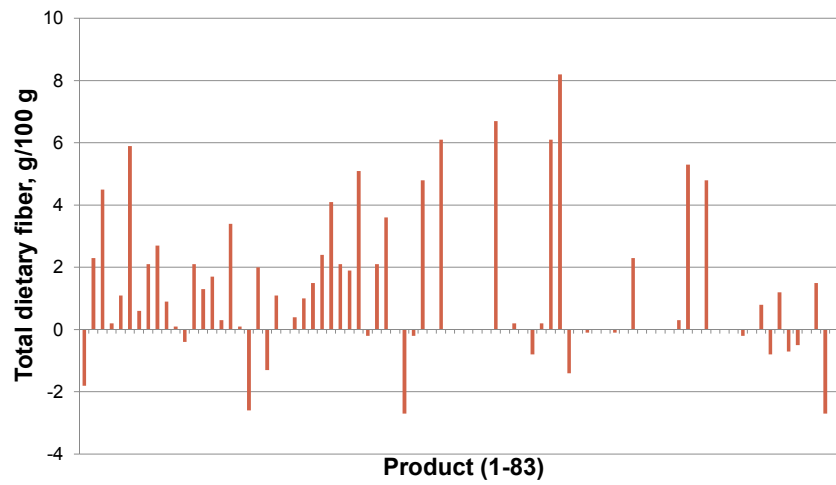
	Range, per 100 g	n (%)
Sugar: No Change	0 g	22 (26.5)
Sugar: Decreased	0.1 to 16.7 g	43 (51.8)
Sugar: Increased	0.1 to 4.5 g	18 (21.7)
Fiber: No Change	0 g	25 (30.1)
Fiber: Decreased	0.1 to 2.7 g	16 (19.3)
Fiber: Increased	0.1 to 8.2 g	42 (50.6)
Sodium: No Change	0 mg	22 (26.5)
Sodium: Decreased	1 to 655 mg	48 (57.8)
Sodium: Increased	1 to 250 mg	13 (15.7)

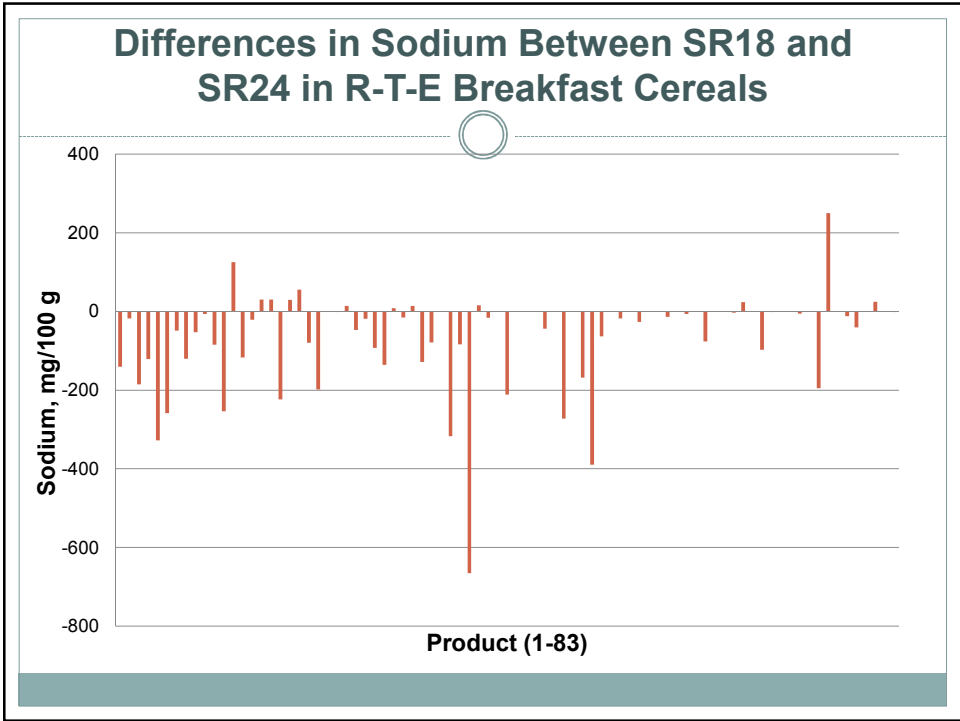
Red font denotes a decrease

Differences in Sugar Between SR18 and SR24 in R-T-E Breakfast Cereals



Differences in Dietary Fiber Between SR18 and SR24 in R-T-E Breakfast Cereals





Trends in Sugar, Fiber, and Sodium, by Company

Descriptive statistics of breakfast cereals (per 100 g)				
	Company X (n=38, %=45.8)		Company Y (n=45, %=54.2)	
	Mean	SD	Mean	SD
Sugar, g: SR18	28.6	13.8	25.2	13.2
Sugar, g: SR24	24.8	10.8	24.7	12.5
Fiber, g: SR18	6.1	7.9	9.6	10.4
Fiber, g: SR24	7.5	7.1	10.4	10.1
Sodium, mg: SR18	652	173	413	261
Sodium, mg: SR24	560	150	383	231

MANOVA, SAS 9.2

Trends in Sugar, Fiber, and Sodium, by Company

Comparison of changes in sugar, fiber, and sodium in companies X and Y, from SR18 to SR24, p-values

	Total Sugar	Total Dietary Fiber	Sodium
Difference in change between companies X and Y	0.5307	0.1162	<0.0001
Rate of change (slope)	0.0003	0.2386	0.0178

MANOVA, SAS 9.2

Ingredient Trends

	Number of cereals where ingredient is reported (percent of total) in SR24	
Ingredient	Company X (n=59)	Company Y (n=93)
Corn bran	20 (34%)	14 (15%)
Soluble corn fiber	1 (2%)	8 (9%)
Oat fiber	0	23 (25%)
Inulin or chicory root fiber	3 (5%)	7 (8%)
“Whole grain”	59 (100%)	60 (65%)
Cinnamon	15 (25%)	19 (20%)
Chocolate/cocoa	7 (12%)	8 (9%)
Berries*	12 (20%)	15 (16%)
Honey	13 (22%)	33 (35%)

*Includes actual berries, not just berry flavor

Summary

- Trends in data indicate manufacturers are making positive changes in nutrient composition of r-t-e breakfast cereals. From 2005 to 2011:
 - Decreases in sugar levels were significant for the subset of same products, but not significant for the larger data set
 - Fiber levels increased significantly
 - Sodium levels significantly decreased
 - More whole grain and fiber ingredients are included
- NDL will continue to track these trends through annual updates to SR, using the important contributions of data from cereal manufacturers

Acknowledgements

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