
NUTRIENT-RICH FOODS: PACKING MORE POWER ON YOUR PLATE

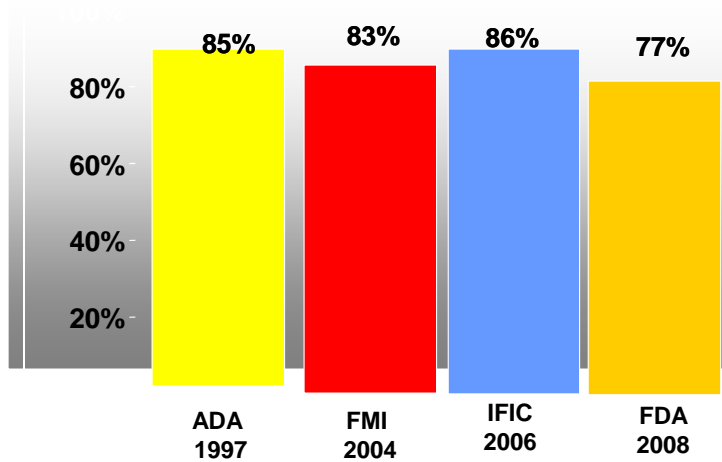
By
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Overview

- Introduction
 - Review Government Recommendations Regarding Nutrient Density
 - Address Research Questions Posed in ADA's Practice Paper on Nutrient Density
 - Understand Nutrition Profiling
 - Articulate Government actions regarding FOP
 - Interpret Consumer Research on Nutrient Density
 - Provide Nutrient-Dense/Nutrient-Rich Foods Applications for Consumers
 - Summary and Conclusions
-

Introduction: Nutrition Is High on the Grocery List

People Read Food Labels



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Food Label Use is Increasing



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Nutrition Matters

Eight in 10 shoppers
(85%) are concerned
about the nutritional
content of their food ... up
from 46% in 2000

Nearly 66% of shoppers
think their diet could be
healthier at home, while
77% think it could be
healthier at restaurants

FMI U.S. Grocery Shopping Trends

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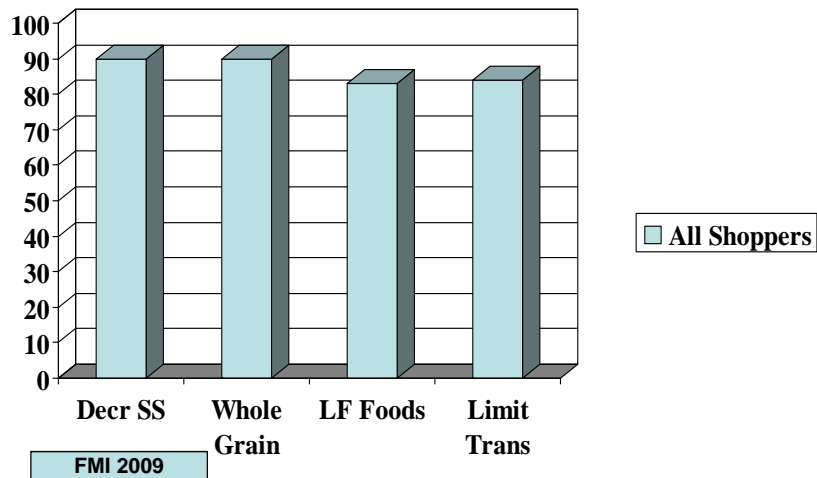
Weighty Matters

- 70% of Shoppers Are Concerned About Their Weight
- Shoppers Look for:
 - Calories (75%)
 - Total fat (69%)
 - Sugar (61%)
 - Sodium (56%)
 - Sat fat (56%)
 - Fiber (44%)

(IFIC Food & Health Survey 2009)

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Families Pursue Healthy Eating Strategies



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Obesity Continues to Drive Change

www.DietaryGuidelines.gov

Saturated Fat 1.5g
Trans Fat 1g
Cholesterol 1g
Sodium 0mg
Potassium 120mg
Total 115mg

SMART CHOICES PROGRAM
GUIDING FOOD CHOICES

120 CALORIES PER SERVING
9 SERVINGS PER PACKAGE

Food Marketing to Children and Youth

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On-Pack Labeling Systems Abound in 2009

fruits & veggies more matters.

Partnering with MyPyramid Corporate Challenge

SMART CHOICES PROGRAM
GUIDING FOOD CHOICES

American Heart Association
Products displaying the heart-check mark meet American Heart Association food criteria for saturated fat and cholesterol for healthy people over age 2.

approved bestlife thebestlife.com

Nutrient Rich Foods Coalition
www.NutrientRichFoods.org

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Retailers Are Responding



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Government Recommendations Regarding Nutrient Density

Government Recommendations

- *2005/2010 Dietary Guidelines for Americans*
- *MyPyramid*
- *Major Changes in the Food Label*

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Amount Per Serving	
Calories 45	Calories from Fat 20
% Daily Value*	
Total Fat 2g	3%
Saturated Fat 1g	5%
Polyunsaturated Fat 0g	
Monounsaturated Fat 1g	
Cholesterol 10mg	3%
Sodium 260mg	11%
Total Carbohydrate 2g	1%
Dietary Fiber 0g	0%
Sugars 2g	
Protein 4g	
Vitamin A 4%	Vitamin C 0%
Calcium 20%	Iron 0%
Riboflavin 4%	Phosphorous 15%

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:

	Calories	2,000	2,500
Total Fat	Less than	65g	80g
Sat Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

Calories per gram:
Fat 9 • Carbohydrate 4 • Protein 4

Dietary Guidelines for Americans 2005

MyPyramid.gov
STEPS TO A HEALTHIER YOU

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Americans Are Overweight Yet Undernourished

Americans Not Meeting DRIs

- 95%: Vitamin E
- 78%: Folate
- 76%: Calcium
- 72%: Magnesium
- 48%: Vitamin A
- 46%: Vitamin C
- 38%: Zinc
- 32%: Iron
- 24%: Vitamin B12

Source: Based on the RDA, Continuing Survey of Food Intake by Individuals (CSFII) 1994-1996, 1998

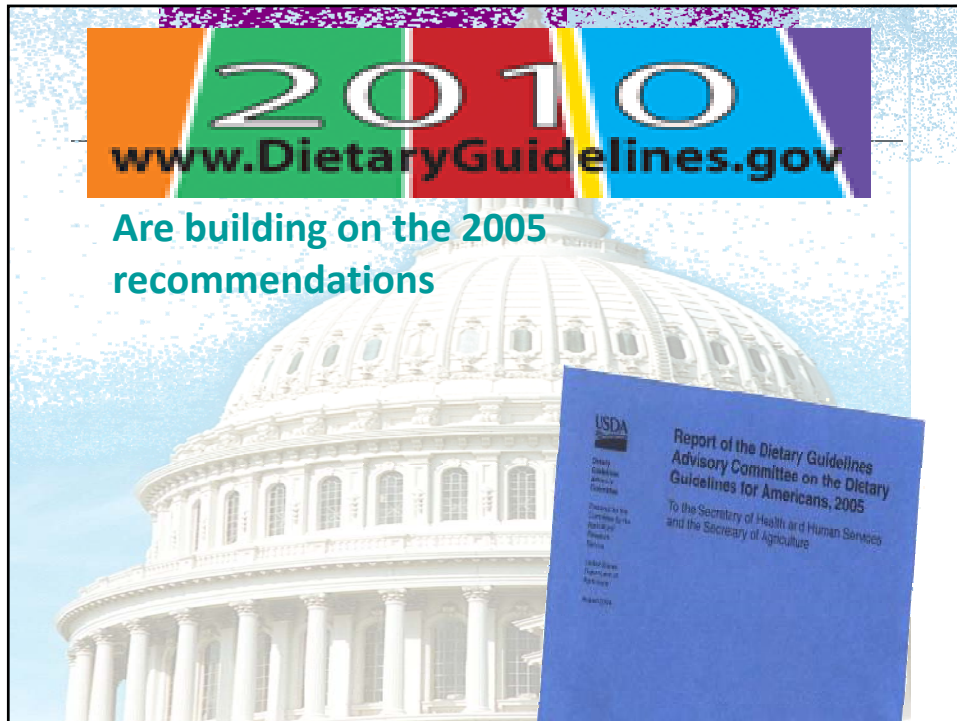
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2005 DGAC Recommendations

The 2005 DGAC identified nutrient density as a key concept, stressing the need to:

- Develop a scientific definition of nutrient density of foods
 - Convey the concept of nutrient density to the consumer
 - Assist consumers in making wise food choices
-

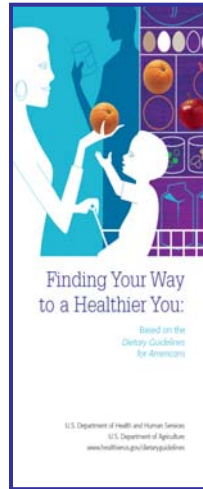
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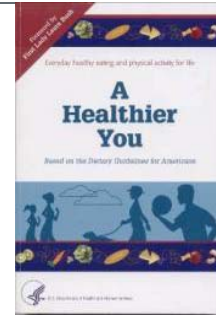
Definition of Nutrient Density

Nutrient-dense foods are those foods that provide substantial amounts of vitamins and minerals (micronutrients) and relatively few calories. Foods that are low in nutrient density are foods that supply calories but relatively small amounts of micronutrients, sometimes none at all
(2005 Dietary Guidelines for Americans)

Key Messages to Get Back to Sound Nutrition



- **Get the most nutrition out of your calories**
- **Make smart food choices from every food group**
- **Maximize your nutrients – make calories count for you**



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Purpose of NLEA

- To help consumers select foods to build healthy diets
- To eliminate consumer confusion
- To encourage product innovation

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Nutrition Labeling Changes

- Calorie Labeling
- Daily Values Updated
- Symbols on Food Packages/Nutrition Profiling



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Possible Changes in Calorie Information

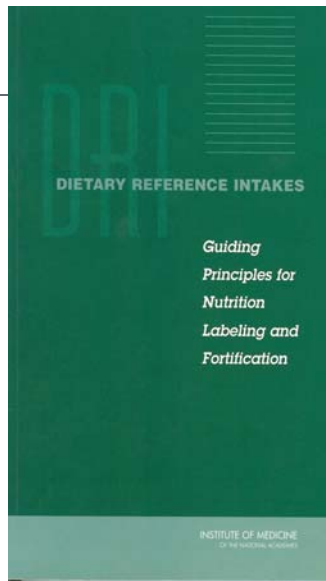
Nutrition Facts	
Serving Size 1/2 muffin (57g) Servings Per Container 2	
Amount Per Serving	
Calories 220	Calories from Fat 100
% Daily Value*	
Total Fat 11g	17%
Saturated Fat 3g	15%
Trans Fat 4g	
Cholesterol 40mg	13%
Sodium 200mg	8%
Total Carbohydrate 24g	8%
Dietary Fiber 1g	4%
Sugars 17g	
Protein 3g	
Vitamin A 0%	Vitamin C 4%
Calcium 2%	Iron 4%

Current Label

Nutrition Facts	
Serving Size 1/2 muffin (57g) Servings Per Container 2	
Amount Per Serving	
Calories 220	11%
Total Fat 11g	17%
Saturated Fat 3g	15%
Trans Fat 4g	
Cholesterol 40mg	13%
Sodium 200mg	8%
Total Carbohydrate 24g	8%
Dietary Fiber 1g	4%
Sugars 17g	
Protein 3g	
Vitamin A 0%	Vitamin C 4%
Calcium 2%	Iron 4%

Larger font size for calories.
New %DV for calories.
Eliminate "Calories from Fat" line.

- Update Daily Values for the food label



Global Nutrition Profiling Reform



FDA Public Hearing on Use of Symbols to Communicate Nutrition Information, Consideration of Consumer Studies and Nutritional Criteria

- Addressed proliferation of profiles
- Drove standardization



Nutrition Highlights

Calories	Total Fat	Sodium	Sugars	Vitamin A	Vitamin C
120	1g	210mg	10g	500IU	6g
6%	2%	9%	*	10%	10%

Amount and % Daily Value per serving

ADA's Practice Paper on Nutrient Density

from the association
ADA REPORTS

Practice Paper of the American Dietetic Association: Nutrient Density: Meeting Nutrient Goals within Calorie Needs

Practice Papers are evaluative summaries of scientific and/or evidence-based topics. They are meant to provide key opportunities for critical reasoning on timely topics and quality improvement in dietetics practice and to include peer-reviewed perspectives from content practitioners and other experts.

How does a practice topic become a Practice Paper? Proposals may be generated by any member of the American Dietetic Association via submission of a topic identification proposal, which may be obtained by contacting ADA headquarters at 800/899-4535 or pp@adainet.org. The Association Position Committee oversees the development of Practice Papers and welcomes proposals from members.

Although nutrient density is a core nutrition concept of the *Dietary Guidelines for Americans 2005* (hereafter referred to as the *Dietary Guidelines*) (1), there is currently no scientifically valid definition for either *nutrient density* or *nutrient-dense food*. The purpose of this American Dietetic Association (ADA) Practice Paper are to summarize the current understanding of nutrient density, provide a brief history of approaches to assessing the nutrient quality of foods, identify issues related to the development of a more precise definition of nutrient-dense foods, and provide guidance to dietetics practitioners for using the current concept of nutrient density to improve the food choices of patients, students, clients, and consumers.

NUTRIENT DENSITY IN THE DIETARY GUIDELINES
The *Dietary Guidelines* is an essential tool for registered dietitians (RDs) and
0002-8223/07/10705-0018\$22.00/0
doi: 10.1016/j.jada.2007.03.020

other nutrition educators who provide dietary guidance and assistance to patients, students, clients, and consumers. The *Dietary Guidelines* also serves as the US federal policy on nutrition and provide the nutrition guidance that government agencies must adhere to when developing nutrition education programs and materials for the public. Previous editions of the *Dietary Guidelines* have provided guidance on selecting foods within food groups to meet nutrient needs within calorie needs; however, the 2005 *Dietary Guidelines* refer specifically to nutrient density and provide a definition in terms of nutrient relative to calories (1).

Nutrient-dense foods are those foods that provide substantial amounts of vitamins and minerals (macroelements) and relatively few calories. Foods that are low in nutrient density are foods that supply calories but relatively small amounts of macroelements, sometimes none at all.

The importance placed on the relationship of nutrient to calorie content of foods is further emphasized in Appendix B1 through B9 of the *Dietary Guidelines*, which provide information on foods that are sources of nutrients that are low in US diets (vitamins A, C, and E; potassium; iron; calcium; magnesium), and dietary fiber along with calorie content per typical serving portion to emphasize the nutrient density concept. The *Dietary Guidelines* encourage the consumption of nutrient-dense foods within and among the major food groups by providing the key recommendation to "consume a variety of nutrient-dense foods and beverages within and among the basic food

*For purposes of this Practice Paper, the word *foods* encompasses both foods and beverages.

groups while choosing foods that limit the intake of saturated and trans fats, cholesterol, added sugars, salt, and alcohol" (1).

Appendices A1 and A2 of the *Dietary Guidelines*, which present the *Dietary Approach to Stop Hypertension* (DASH) and the US Department of Agriculture's (USDA's) food patterns, respectively, encourage consumption of vegetables and fruits and identify the nutrient-dense foods within the other food groups by emphasizing fat-free and low-fat milk and milk products, lean meats, skinless poultry, and legumes; and whole-grain and enriched-grain products. Thus, the 2005 *Dietary Guidelines*:

- offer a basic definition for nutrient-dense foods on a nutrient-to-calorie basis;
- indicate that nutrient-dense foods should be selected within and among food groups to help ensure that nutrient needs are met while maintaining calorie needs; and
- provide examples of nutrient-dense foods within the DASH and USDA food group patterns.

SUPPORT FOR THE NUTRIENT DENSITY CONCEPT

Although the concept of nutrient density has been used by RDs for many years, its emphasis as a core concept in the 2005 *Dietary Guidelines* is attributable to the increasing rate of obesity and the shortfalls in some nutrients in US diets. The concern that American diets are becoming increasingly energy-rich but nutrient-poor (1) has focused attention on the nutrient content of individual foods relative to the energy they provide. The *Dietary Guidelines Advisory Committee* (DGAC) Report (2) and the *Dietary Guidelines* confirm that many Americans are overweight or obese,

Questions related to the 2005 DGAC Definition

What is substantial? What is low?

What nutrients should be included in the definition of nutrient density?

Should nutrient-dense foods be in their lowest fat form and have no added sugar?

Should nutrient density be defined by food group?

Should nutrient density be defined differently for naturally nutrient-dense foods vs fortified foods?

<p>from the association ADA REPORTS</p>	
<p>Practice Paper of the American Dietetic Association: Nutrient Density: Meeting Nutrient Goals within Calorie Needs</p> <p><i>Practice Papers are evaluative summaries of scientific and/or evidence-based topics. They are meant to provide key opportunities for critical reasoning on timely topics and quality improvement in dietetics practice and to include peer-reviewed perspectives from content practitioners and other experts.</i></p> <p><i>How does a practice topic become a Practice Paper? Proposals may be generated by any member of the American Dietetic Association via submission of a topic identification proposal, which may be obtained by contacting ADA headquarters at 800/899-4838 or pp@adareport.org. The Association Position Committee oversees the development of Practice Papers and welcomes proposals from members.</i></p> <p>Although nutrient density is a core nutrition concept of the Dietary Guidelines for Americans 2005 (hereafter referred to as the Dietary Guidelines) (1), there is currently no scientifically valid definition for either nutrient density or nutrient-dense food. 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Previous editions of the Dietary Guidelines have provided guidance on selecting foods within food groups to meet nutrient needs within calorie needs; however, the 2005 Dietary Guidelines refer specifically to nutrient density and provide a definition in terms of nutrient relative to calories (1):</p> <p>Nutrient-dense foods are those foods that provide substantial amounts of vitamins and minerals (micronutrients) and relatively few calories. Foods that are low in nutrient density are foods that supply calories but relatively small amounts of micronutrients, sometimes none at all.</p> <p>The importance placed on the relationship of nutrient to calorie content of foods is further emphasized in Appendix B1 through B9 of the Dietary Guidelines, which provide information on foods that are sources of nutrients that are low in US diets (vitamins A, C, and E; potassium; iron; calcium; magnesium), and dietary fibers along with calorie content per typical serving portion to emphasize the nutrient density concept. 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Thus, the 2005 Dietary Guidelines:</p> <ul style="list-style-type: none"> • offer a basic definition for nutrient-dense foods on a nutrient-to-calorie basis; • indicate that nutrient-dense foods should be selected within and among food groups to help ensure that nutrient needs are met while maintaining calorie needs; and • provide examples of nutrient-dense foods within the DASH and USDA food group patterns. <p>SUPPORT FOR THE NUTRIENT DENSITY CONCEPT</p> <p>Although the concept of nutrient density has been used by RDs for many years, its emphasis as a core concept in the 2005 Dietary Guidelines is attributable to the increasing rate of obesity and the shortfalls in some nutrients in US diets. The concern that American diets are becoming increasingly energy-rich but nutrient-poor (1) has focused attention on the nutrient content of individual foods relative to the energy they provide. The Dietary Guidelines Advisory Committee (DLGAC) Report (2) and the Dietary Guidelines confirm that many Americans are overweight or obese,</p>	<p>"Research needs include ...</p> <p>A more specific definition for nutrient-dense foods</p> <p>Verification of whether the nutrient density approach is feasible, economical, culturally sensitive and relevant</p> <p>Verification of whether the nutrient density approach helps consumers to change their behaviors so that they select the foods they need and reach or maintain healthful body weights"</p>
<p>800 Journal of the AMERICAN DIETETIC ASSOCIATION © 2007 by the American Dietetic Association</p>	<p>27</p>

What Is Nutrition Profiling?

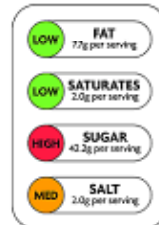
What Is Nutrient Profiling?

- Nutrient profiling is the *science of ranking or classifying foods based on their nutrient composition*
- Each food is assigned a unique score that reflects its nutrient quality

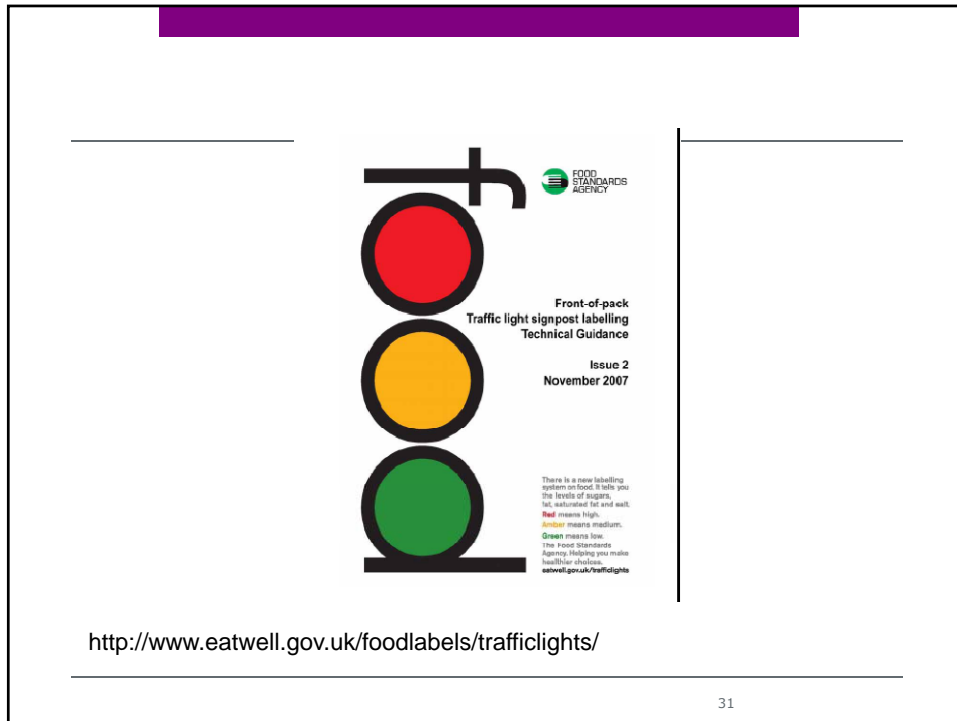
(UK Food Standards Agency, FSA)

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Key Players in Nutrition Profiling



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FOOD STANDARDS AGENCY

**Front-of-pack
Traffic light signpost labelling
Technical Guidance**

**Issue 2
November 2007**

There is a new labelling system on food. It tells you the levels of sugars, fat, saturated fat and salt.
Red means high.
Amber means medium.
Green means low.
 The Food Standards Agency Helping you make healthier choices.
[eatwell.gov.uk/trafficlights](http://www.eatwell.gov.uk/trafficlights)

<http://www.eatwell.gov.uk/foodlabels/trafficlights/>

UK

FOOD STANDARDS AGENCY

	Per serving	GDA
FAT	7.7g	70g
SATURATES	2.0g	20g
SUGAR	42.4g	90g
SALT	2.0g	6g

■ HIGH ■ MEDIUM ■ LOW

eatwell.gov.uk

Nutrition Highlights

Calories 120	Total Fat 1g	Sodium 210mg	Sugars 10g	Vitamin A 500IU	Vitamin C 6g
6%	2%	9%	+	10%	10%

Amount and % Daily Value per serving

Nutrient Profiling Criteria

- Objective
- Simple
- Balanced
- Validated
- Transparent
- Consumer-driven

Drewnowski, Fulgoni. Nutr Rev 2008. Nutrient Profiling Criteria

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What Actions Are Being Taken by Government?



Examination of Front-of-Package Nutrition Rating Systems and Symbols

- Identify FOP systems being used
- Consider the purpose and merits of FOP systems
- Evaluate the scientific basis of criteria
- Consider advantages and disadvantages
- Plan Phase II
- Expect report in 2010
- 2nd meeting 4/9/10

(Supported by FDA and CDC and probably USDA)

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New Front-of-Package Labeling Initiative

- Request for Comments, Fall 2007
- Letter to Smart Choices Program, August 2009
- Guidance on Front-of-Pack Symbols/Logos, October 2009
- Letter to Industry, October 2009
- Background on POP Labeling, October 2009
- Consumer Studies Ongoing
- Warning Letters, March 2010

<http://www.fda.gov>

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Study on Existing Schemes: 3 Schemes + 2 Controls

Nutrition Tips
Each Serving (1cup) Contains

LOW Total Fat 2g

LOW Sat. Fat 0

MED Sodium 250mg

HIGH Sugar 15g

Calories 240

Nutrition Highlights

Calories 120, Total Fat 1g, Sodium 210mg, Sugar 10g, Saturated Fat 0g, Total Carb 6g

Amount and % Daily Value per serving

SMART CHOICES PROGRAM
GUIDING FOOD CHOICES

270 CALORIES PER SERVING | 2.5 SERVINGS PER PACKAGE

Nutrition Facts
Serving Size 1/2 Cup
Serving Per Container 4

Amount Per Serving

Calories 250 Calories from Fat 120

% Daily Value*

Total Fat 13g 20%
Saturated Fat 9g 40%
Trans Fat 0g
Cholesterol 26mg 12%
Sodium 55mg 2%
Total Carbohydrate 30g 12%
Dietary Fiber 2g 8%
Sugars 23g
Protein 4g

INGREDIENTS: CREAM, SKIM MILK, LIQUID SUGAR, WATER, EGG YOLLS, BROWN SUGAR, MILK FAT, PEANUT OIL, SUGAR, BUTTER, SALT, CARBACEAN, VANILLA EXTRACT.

No FOP labeling

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Target Study: 9 Schemes + 2 Controls

Nutrition Tips
Amount Per Serving

Calories 240

Total Fat 2g Low
Saturated Fat 0g Low
Sugar 12g High
Sodium 250mg Med

Nutrition Tips
Amount Per Serving

Calories 240

Total Fat 2g Low
Saturated Fat 0g Low
Sugar 12g High
Sodium 250mg Med

Nutrition Tips
Amount Per Serving

Calories 240 Daily Value

Total Fat 5% Low
Saturated Fat 4% Low
Sugar 25% High
Sodium 15% Med

Nutrition Tips
Each Serving (1cup) Contains

LOW Total Fat 2g

LOW Sat. Fat 0

MED Sodium 250mg

HIGH Sugar 15g

Calories 240

Nutrition Tips
Each Serving (1cup) Contains

LOW Total Fat 2g

LOW Sat. Fat 0

MED Sodium 250mg

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Calories 240

Nutrition Facts
Serving Size 1/2 Cup
Serving Per Container 4

Amount Per Serving

Calories 250 Calories from Fat 120

% Daily Value*

Total Fat 13g 20%
Saturated Fat 9g 40%
Trans Fat 0g
Cholesterol 26mg 12%
Sodium 55mg 2%
Total Carbohydrate 30g 12%
Dietary Fiber 2g 8%
Sugars 23g
Protein 4g

INGREDIENTS: CREAM, SKIM MILK, LIQUID SUGAR, WATER, EGG YOLLS, BROWN SUGAR, MILK FAT, PEANUT OIL, SUGAR, BUTTER, SALT, CARBACEAN, VANILLA EXTRACT.

Calorie Count
240
Calories Per Serving
1440
Calories Per Package

Calorie Count
240
Calories Per Serving
6
Servings Per Package

Nutrition Rating
★ ★ ★ ★ ★ 2
240 Calories Per Serving

Healthy
240 Calories Per Serving 6 Servings Per Container

No FOP labeling

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ADA's Position on FOP

- Accounts for overall nutrient profile of the food
- Specifies calorie content
- Is consistent with the DGA & MyPyramid
- Encourages consumers to use Nutrition Facts
- Is consumer tested
- Is truthful and not misleading, follows CFR regulations

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Consumer Research on Nutrient Density

Ways to Assess Nutrient Density

Nutritional Quality Index (NQI)	Hansen 1976
Calories-for-Nutrient Score (CFN)	LaChance 1986
Recommended/Restricted Ratio (RRR)	Scheidt 2004
Naturally Nutrient Rich (NNR) Index	Drewnowski 2005
Nutrient Rich Food Quality Index	Drewnowski 2007

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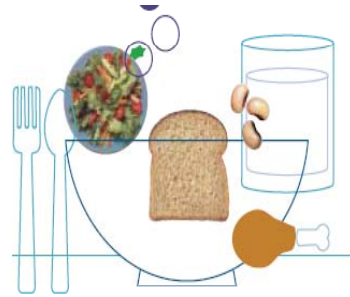
Definition of Nutrient Density

- *How would you define nutrient density?*
- *What would you consider a nutrient-dense food?*

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Interest in Nutrient Density

1/3 of shoppers are very interested in obtaining maximum nutrition from every calorie. Importantly, another 1/3 are somewhat interested (Gilbert 2005)

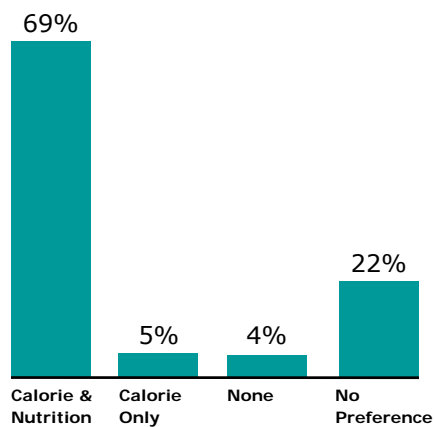


Get the most nutrition out of your calories.

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Consumers Use the Package to Choose Nutritious Foods

69%: A package front that includes calorie and nutrient call-outs would be most effective in helping consumers choose nutritious foods



Shugoll Research, June 2005

Shugoll Research, May 2005

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Consumer Research Overview

Phase I:
Research and
Synthesis

Phase II:
Concept
Development
and Design

Phase III:
Validation,
Refinement and
Prototyping

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Consumer Research

- Conducted focus groups and survey research
- Talked to consumers about nutrient density and what it means to them
 - To determine which messages consumers prefer
 - To understand the best way to communicate nutrient density concepts



StrategyOne, January 2005

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Key Consumer Insights

- Consumers want to get more nutrients in their diets
- Consumers
 - Want tools
 - Are overwhelmed with food choices
 - Tend to give up when they're pressed for time
- Consumers equate the term "dense" with heavy or stupid

"I don't know how to shop for nutrient-dense foods"
-- Consumer, Denver



StrategyOne, January 2005

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Messages Must Empower

- *Take Small Steps for a Healthier You: Get more nutrition out of your calories by choosing the most nutritionally rich foods from each food group each day*

**"Take small steps, so someone might not be overwhelmed ...
They can do a little bit at a time"**
-- Consumer, Denver

Shugoll Research, May 2005

Economic, 2007

Tips Must Be Specific

- *Live Well! Enjoy:*
 - *Brightly colored fruits*
 - *Deep green, red and orange vegetables*
 - *Whole, fortified and fiber-rich grain foods*
 - *Lean meats*
 - *Nonfat and lowfat milk, yogurt and cheese*



**"It's simple. It just spells it out,
briefly, exactly what you need
to look for"**
-- Consumer, Denver

Shugoll Research, May 2005

Economic, 2007

Consumer Omnibus Survey

- Surveyed 1,019 US adults
- 48% male and 52% female
- Aged 25-64

Ipsos Public Affairs 2008

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Consumer Omnibus Survey: Key Insights

- 54% Americans surveyed agree they are overwhelmed by the information and advice they receive on what to eat and what not to eat
- 66% Americans agree they are more likely to follow advice about nutrition goals for the whole day versus individual foods they should or should not eat

Ipsos Public Affairs 2008

51

Consumer Omnibus Survey: Key Insights

- 77% agree that dietary advice is useful when it helps them understand the total nutrient contribution a food provides
- 61% are interested in learning about both the positive nutrients and nutrients they should limit



Ipsos Public Affairs 2008

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Quantitative Findings

- Consumers like the idea of nutrient-rich foods
- Nearly 8 in 10 consumers say they would use the tool once a week or more
- One-third of consumers say they'd use the tool every day
- Three-fourths of consumers do NOT find the tool confusing

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Nutrition Educator Research

- Found nutrition educators
 - Support an education program that emphasizes what foods consumers should add to their diet rather than what they should delete

“...Thinking of things that can be added can be viewed as a positive approach and I think people respond to this better ... ”

-- RD, Denver

Shugoll Research, May 2005

Economic, 2007

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Nutrition Educator Research

- Utilized research findings insights to create a comprehensive tool kit for health professionals

Shugoll Research, May 2005

Economic, 2007

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Nutrient-Dense/Nutrient-Rich Foods Applications for Consumers

The Nutrient Rich Foods Index



Commentary

Concept of a nutritious food: toward a nutrient density score¹⁻³

Adam Drewnowski

ABSTRACT
The American diet is said to be increasingly energy-rich but nutrient-poor. To help improve the nutrient-to-energy ratio, the 2005 *Dietary Guidelines for Americans* recommend that consumers replace some foods in their diets with more nutrient-dense options. Such dietary guidance presupposes the existence of a nutrient density standard. However, a review of the literature shows that the concept of a nutritious food is not based on any consistent standards or criteria. In many cases, healthful foods are defined by the absence of problematic ingredients—fat, sugar, and sodium—rather than by the presence of any beneficial nutrients they might contain. Past attempts to quantify the nutrient density of foods have been based on a variety of calories-to-nutrient scores, nutrients-per-calorie indexes, and nutrient-to-nutrient ratios. The naturally nutrient rich (NNR) score, which is based on mean percentage daily values (DVs) for 14 nutrients in 2000 kcal food, can be used to assign nutrient density values to foods within and across food groups. Use of the NNR score allows consumers to identify and select nutrient-dense foods while permitting some flexibility where the discretionary calories are concerned.

Energy-dense sweets and fats have long been contrasted, unfavorably, to foods that contained substantial amounts of key nutrients per serving or per unit weight. The terms *energy-dense* and *nutrient-poor* are commonly used to characterize foods perceived as unhealthy and to distinguish them from more nutritious options (8). Disparaging terms such as *junk foods* (13) or *empty calories* (14) are commonly used in antithesis to such descriptors as *healthful*, *packed with nutrients*, *nutrient-dense*, or *nutrient-rich*.

The problem is that nutrient-dense foods lack a common definition (15, 16). A 1977 review of the literature (15) showed that there were only limited efforts to define the concept of a nutritious food. General statements that such a food should provide “significant amounts of essential nutrients” were not backed by any firm standards or criteria (15). Three decades later, in 2004, there was still no agreement as to the definition of a nutrient-dense food or a healthful beverage (16). The various attempts to define and quantify the nutrient density of foods over the past 30 y are the topic of this report.

Drewnowski: American J Clinical Nutrition 2005;82:721-32

Nutrient Rich Index



- | | |
|-----------------------------|----------------|
| • Regulations: | %DV |
| • Science/Criteria: | Yes |
| • Transparent: | Yes |
| • Review process: | Not applicable |
| • Consistent: | Yes |
| • Tested: | Yes |
| • Education program: | Yes |
| • Evaluated: | Yes |

• <http://www.nutrientrichfoods.org/>

Index Components

- Includes nutrients with a DRI (except added sugars)
- Based on established, authoritative sources
- Capped nutrient contributions to 100% Daily Value
- Validated against USDA's Healthy Eating Index
- Is a scientifically valid definition of nutrient density

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Nutrient Rich Index Components

- Based on 9 nutrients to encourage, 3 nutrients to limit
- Uses "unweighted" scores
- Based reference amount on FDA's Daily Value
- Based on 100 kcal basis
- Created with open-source, transparent databases



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Nutrient Rich Index



- $NRF\ 9.3 = \sum 9_{ENC} (\%DV\ per\ 100\ kcal) - \sum 3_{LIM} (\%DV\ per\ 100\ kcal)$
- ENC = protein, fiber, vitamins A, C and E, calcium, magnesium, iron and potassium
- LIM = SFA, sodium, added sugars
- Scores range from 1-5 in each food group

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Sample Fruit Scores

- | | |
|----------------------------|---|
| • Orange | 5 |
| • Kiwi | 5 |
| • Blueberries | 3 |
| • Avocado | 3 |
| • Strawberries | 5 |
| • Peach slices
in syrup | 1 |
| • Peach | 4 |



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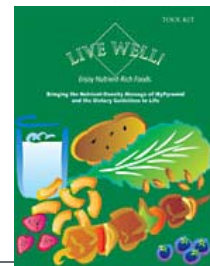
How to Build a Healthy Diet

- Foods balance each other's nutrient content in building a healthy diet
- Each food group brings its own nutrient contributions
- Consider using an approach that incorporates food label and %DV of calories

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How RDs Can Help Consumers

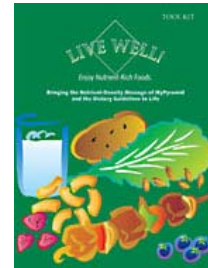
- *MyPyramid* Website
- *MyPyramid* e-catalog
- USDA Food and Nutrition Service Website
- ADA Practice Paper
- Live Well Tool Kit and Resource Kit



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Nutrient Rich Foods Nutrition Profiling

- Nutrient Rich Foods (NRF) Coalition is conducting scientific and market research to refine an approach that focuses on the total nutrient package of a food
 - Emphasizes getting more nutrition from your calories



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Live Well



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Achieve Better Health with Nutrient Rich Foods Resource Guide

Comprehensive background on the science and consumer insights behind the Nutrient Rich Foods approach

Summary and Conclusions

Points to Remember

- All sectors emphasizing obesity-related information
- Profiles proliferating on food labels
- Nutrient density emphasized in some programs
- Research needs to be conducted to validate the definition and communication of nutrient density
- ADA practice paper on nutrient density in May 2007 JADA is a good resource
- Further guidance and/or regulations are likely

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Government Recommendations

- *2005/2010 Dietary Guidelines for Americans*
- *MyPyramid*
- *Major Changes in the Food Label*



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ADA Practice Paper Research Needs: Next Steps

- A more specific definition for nutrient-dense foods
- Consumer testing and validation
- Verification of whether the nutrient density approach helps consumers to
 - Change their behaviors so that they select the foods they need and
 - Reach or maintain healthful body weights

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Key Messages

- Each food group brings unique nutrients to the table
- Foods balance each other's nutrient content in building a healthy diet
- An approach that incorporates %DV of calories may be helpful

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Key Messages

Labeling should help Americans make informed decisions to build better diets



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Key Message

- *Live Well! Enjoy:*
 - *Brightly colored fruits*
 - *Deep green, red and orange vegetables*
 - *Whole, fortified and fiber-rich grain foods*
 - *Lean meats, poultry, fish*
 - *Nonfat and lowfat milk, yogurt and cheese*



Shugoll Research, May 2005

Economic, 2007

Changing the Conversation About Health and Wellness

From nutrient avoidance



To helping Americans build healthier diets

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