
The Synergy Between Dietary Assessment and Food Composition Data

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September 19, 2006

Nutrient Composition Table



Dietary Evaluation

Dietary Assessment (Food & Supplement Intake)

Nutrient and Food Group Intake

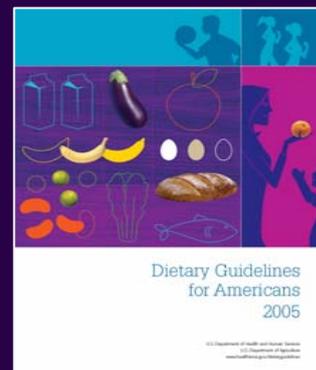
The 2005 Dietary Guidelines (DG) Recommendations for JohnDoe on 4/11/2005

Click directly on the 😊 😐 😞 emoticon (face) for more detailed dietary information.

Dietary Guidelines Recommendations	Emoticon	Number of cup/oz. Eaten	Number of cup/oz. Recomm.
Grain	😊	5.7 oz equivalent	6 oz equivalent
Vegetable	😊	2 cup equivalent	2.5 cup equivalent
Fruit	😊	0.8 cup equivalent	2 cup equivalent
Milk	😊	2 cup equivalent	3 cup equivalent
Meat and Beans	😊	5.2 oz equivalent	5.5 oz equivalent

Dietary Guidelines Recommendations	Emoticon	Amount Eaten	Recommendation
Total Fat	😞	45.9% of total calories	20% to 35%
Saturated Fat	😞	14.6% of total calories	less than 11%
Cholesterol	😊	258 mg	less than 300 mg
Sodium	😞	7406 mg	less than 2300 mg
Oils	•	•	•
Discretionary calories (solid fats, added sugars, and alcohol)	•	•	•

Food Group Servings Composition



Evolving features of food composition tables that can improve dietary assessment

- Rapidly expanding information on nutrient and non-nutrient components of foods
- Wider choices of units
- More options for food-level intakes
- Better regional food composition data
- Increasing availability of supplement composition data

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Food Composition Table at CRCH

- Now contains data for 120 nutrients and other food components
- Used primarily for studies of diet and cancer
- Nutrients are available for researchers only if data are relatively complete and of high quality

Sources of food composition data

- USDA Standard Reference Database
- Tables from other countries
- Peer-reviewed publications
- Our own analyses

Examples of new food components – Glycemic Index

- GI and glycemic load are of interest in evaluating carbohydrate absorption
- Extensive table published in Am J Clin Nutr (2002;76:5-56)
- We added GI to each food item and calculated GL as $GI * CHO \text{ g}/100 \text{ g}$
- Paper being prepared for JFCA

Examples of new food components – Lignans

- Phytoestrogens are of interest in cancer research
- Two were added to the CRCH table:
 - Secoisolariciresinol (SEC)
 - Matairesinol (MAT)
- Sources: Published values plus imputations based on dietary fiber content
- Paper is in press at JFCA

Examples of new food components – Flavonoids

- Flavonoids may be important components of fruits and vegetables
- We added several to our FCT:
 - Flavonols (kämpferol, quercetin, myricetin)
 - Flavones (apigenin, luteolin)
 - Flavanones (hesperetin, naringenin)
 - Anthocyanidins
- Sources: our own analyses (Franke et al. JFCA 2004;17:1-35) and published values.

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Folate units have changed

- DRIs assume different availabilities for:
 - Folate taken as a supplement
 - Folate added to foods
 - Folate naturally in foods

New Concept: Dietary Folate Equivalents

1 μg DFE:

= 0.5 μg folic acid from supplements

= 0.6 μg folic acid from fortified food

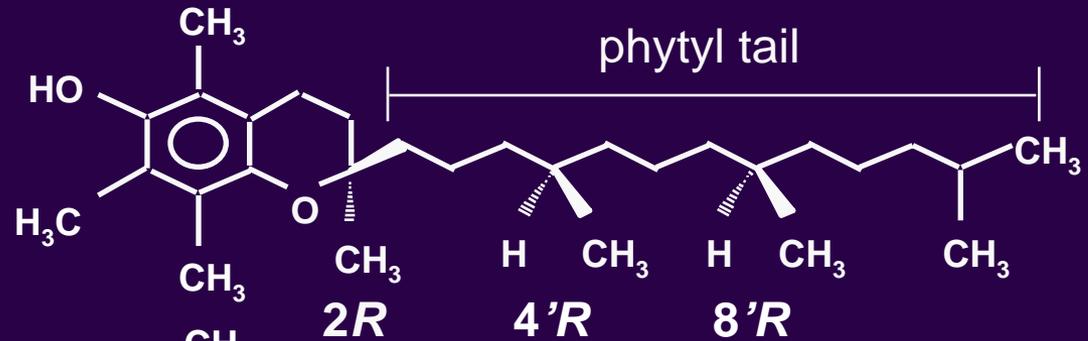
= 1.0 μg naturally present folate in food

DRIs are expressed in DFE

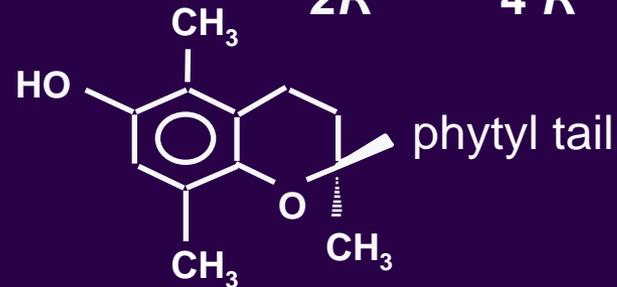
Tocopherols that have vitamin E activity have also changed

Naturally Occurring Tocopherols

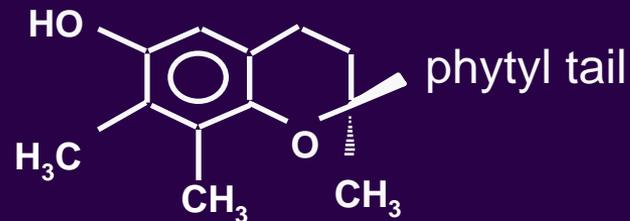
α -tocopherol



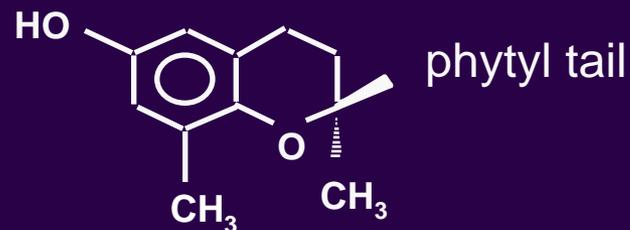
β -tocopherol



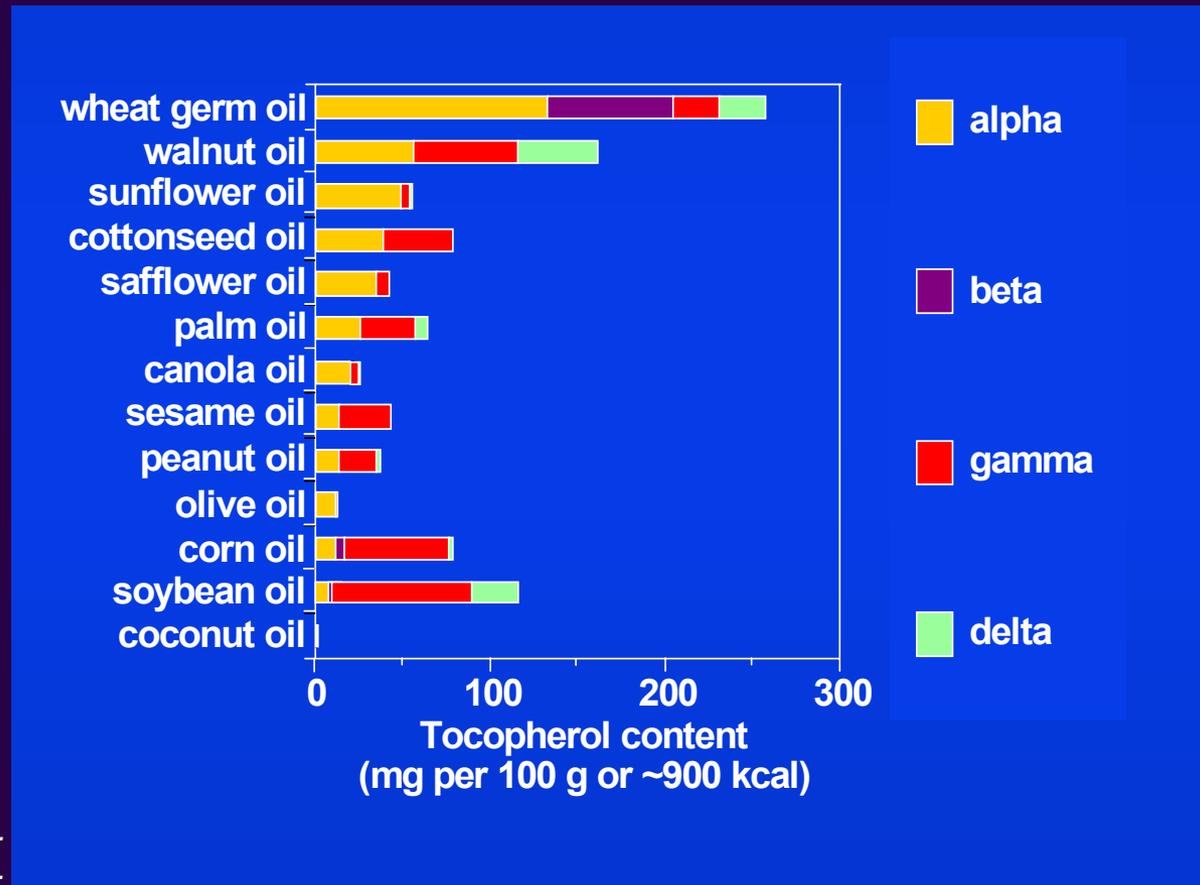
γ -tocopherol



δ -tocopherol



Various Vitamin E Forms in Edible Vegetable Oils



and Eitenmiller, *Tocopherols and
trientols in key foods in the U.S. diet.*
Nutrition, Lipids, Health, and Disease.
327-342, 1995

Evaluation of vitamin E intake

α -tocopherol equivalents were defined in the 1989 RDAs and have been used for expressing vitamin E intakes in the past

α -tocopherol is now the appropriate way to express vitamin E activity, and composition tables should reflect this change

Vitamin E DRI is expressed in mg α -tocopherol

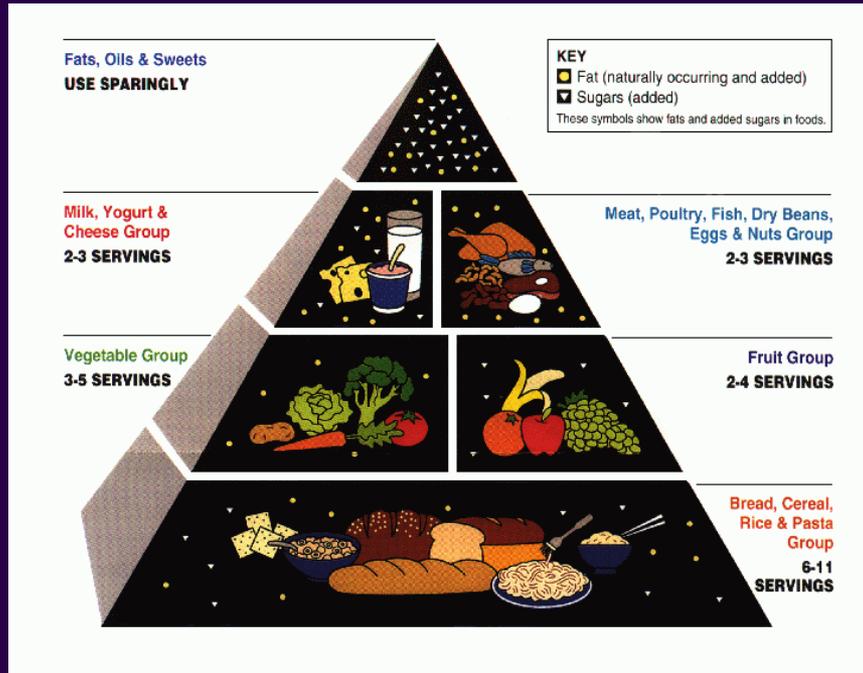
Vitamin A units have also changed

- Formerly: Retinol Equivalents (**RE**),
calculated as retinol plus beta-carotene/6
plus other carotenoids/12
- Now: Retinol Activity Equivalent (**RAE**)
calculated as retinol plus beta-carotene/12
and other carotenoids/24
- DRIs are expressed as μg RAE

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1992 Food Guide Pyramid



2005 MyPyramid





Comparison of Your Intake with MyPyramid Recommendations for **JohnDoe**

Your Pyramid Stats



The 2005 Dietary Guidelines (DG) Recommendations for **JohnDoe** on 4/11/2005

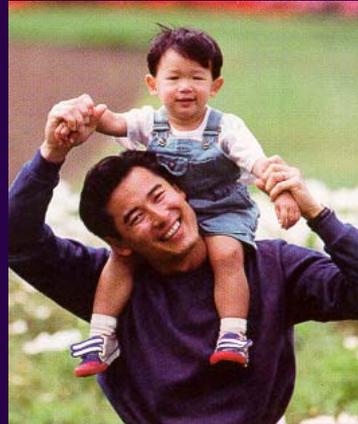
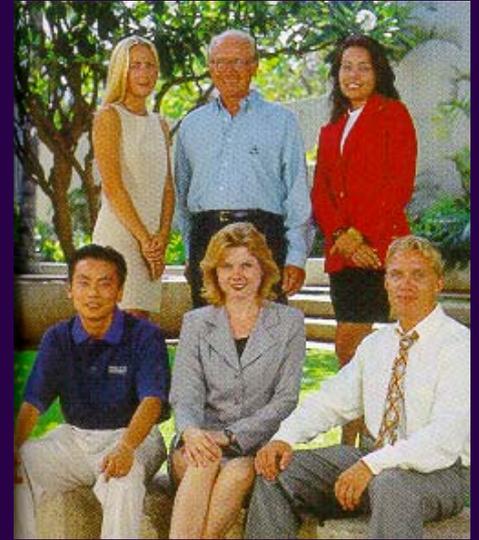
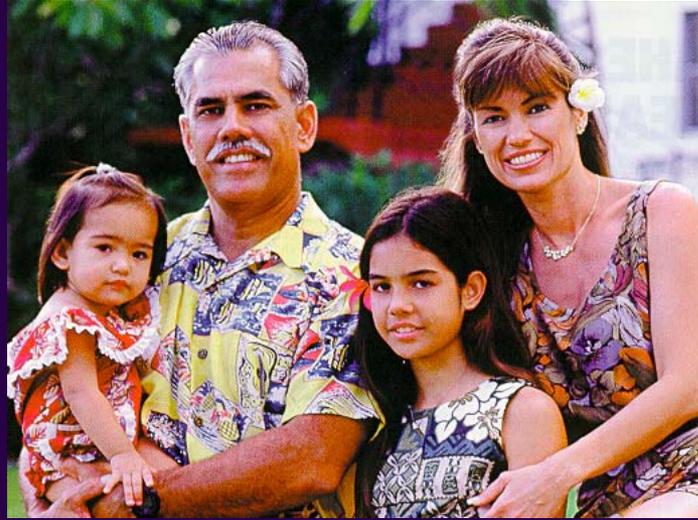
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Sources of regional food composition data

- Databases from other countries
 - See www.fao.org/infoods
- Regional databases
- Publications in J Food Comp Analysis
- Local analytic data
- Nutrition Facts labels

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Capturing Supplement Intake Data is Crucial

- Use is widespread and growing
- Intakes from supplements often exceed intakes from foods
- Yet there have been few comprehensive databases for nutrients in dietary supplements

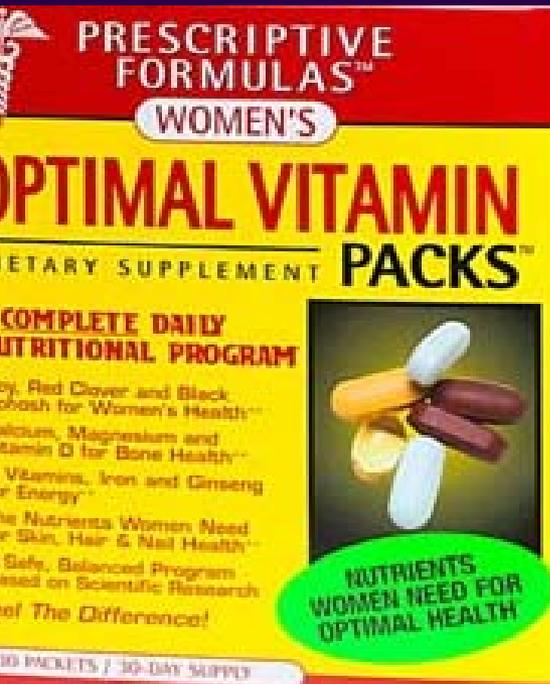
Goal

- Estimate total nutrient intakes
 - Foods
 - Supplements

Currently, most data on supplements comes from the supplement facts label



“Optimal Vitamin Packs”



Each Packet Contains:

1 Caplet

Vitamin C

1 Caplet

Multivitamin

2 Caplets

Calcium & Magnesium

1 Caplet

Multimineral

1 Softgel

Vitamin E

Better data are coming!

- Dietary Supplement Ingredient Database being developed
- Session this afternoon (1 – 2:30 pm) will present several innovative approaches to capturing supplement intakes

The National Nutrient Databank Conference will address most of these topics in more detail

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Public access to food composition data is increasing

- Food and supplement labels have increased awareness of food composition
- Many of the national FCTs are now on the Internet
- Programs to access these data are readily available
- Consumer-friendly dietary assessment software is proliferating

Dietitians as Gatekeepers

- Ensure the quality of the composition data:
 - Appropriate sources of nutrient values
 - Appropriate units of expression
 - Food groups as well as nutrients
 - Complete values
 - Correct foods for the population
- Ensure that composition data are correctly interpreted by health professionals and by the public

Dietary Assessment Methodology is Also Advancing

- Multi-pass methods for recalls
- Propensity questionnaires
- Statistical methods of adjustment
- Many exciting presentations at a recent International Conference on Dietary Assessment Methods

Synergy between methods

Better assessment methods

+

Better food composition data

=

Greatly improved estimates of dietary intakes