



M P O C

Nutrition, Dietary Guidelines and Food Labeling: Their Potential Impact on Oils and Fats Trade

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A large yellow banner is suspended across the deck of a white ship. The banner features the text 'SAVE OUR FOREST STOP PALMOIL GREENPEACE' in bold, black, sans-serif capital letters. The ship's structure, including railings, ladders, and various equipment, is visible in the background. The banner is held up by ropes and pulleys, with a person visible on the deck to the right. The ship's hull has some red lettering, including 'SMOKING' and 'SAFETY RST'.

**SAVE OUR
FOREST
STOP
PALMOIL
GREENPEACE**

SMOKING

SAFETY

RST

DEADLY PALM OIL IN YOUR SHOPPING TROLLEY



CSPO Palm Fat: The only SUSTAINABLE INGREDIENT IN A CADBURY CHOCOLATE

Cocoa
Powder

Palm Fat
(CSPO)



Sugar

Milk Solids

Permitted Food Additives
and Colorants

Quality Triangle of Edible Fats and Oils

Frying Fats
Polymers
Free Fatty Acids
Polar Materials
Volatile Products

Essential Fatty Acids
Omega 3 Fatty Acids
Trans Fatty Acids
Saturated Fatty Acids
Conjugated Linoleic Acid
Phyosterol Fortified
Spreads

Oxidative Stability

Nutrition

**Edible
Fats & Oils**

Spreads
Baking Shortenings
Specialty Lipids

Functionality

Melting Point
Lubricity
Solid Fat
Moisture Barrier
Creaming Ability

Lui, Inform, (1999)

Nutritional issues associated with the saturated fat content of palm oil used to be the source of the 1980s anti-palm oil campaign

We managed to ward this off successfully through science but the Saturated fat issues have an opportunity of re-emergence

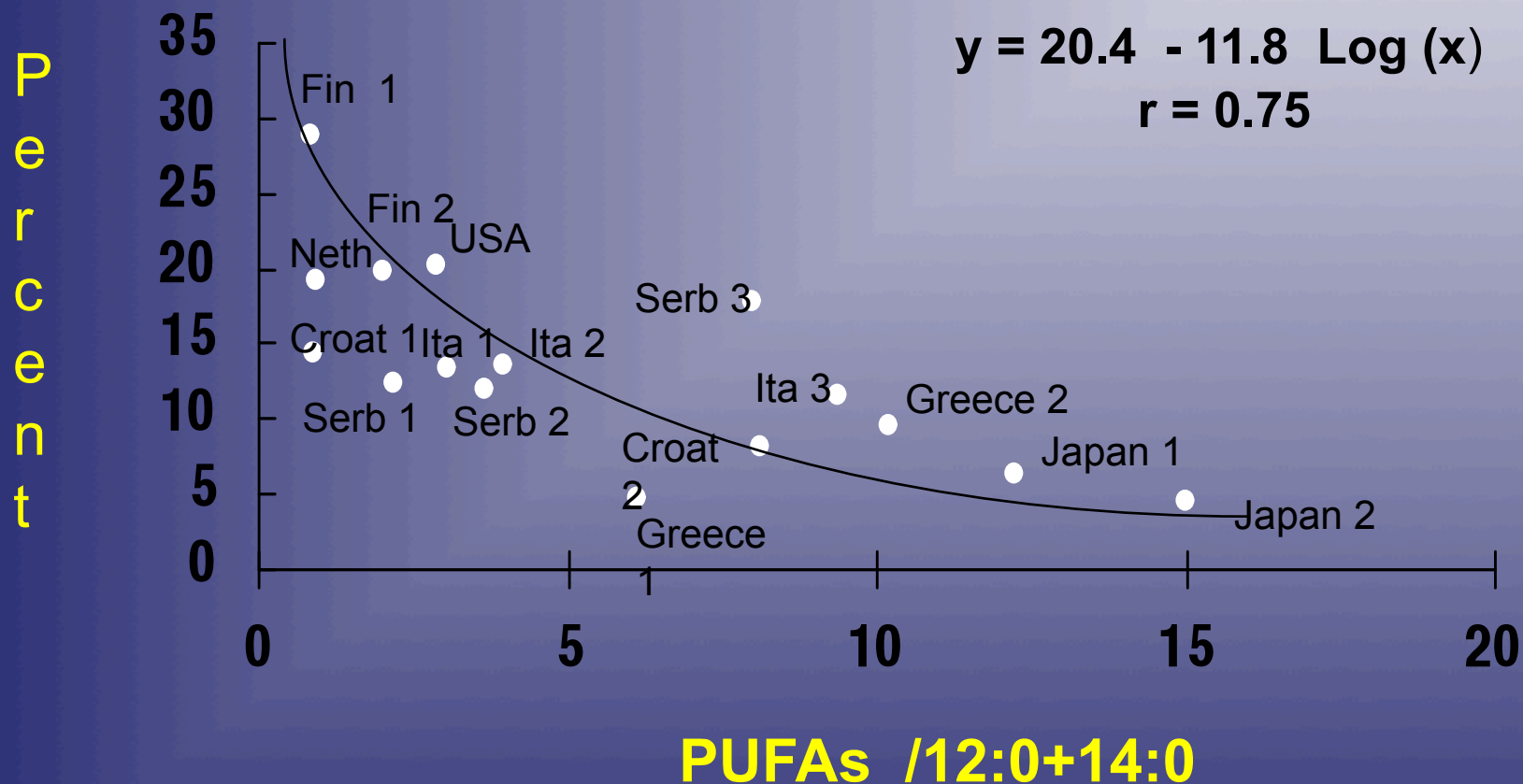
Current Dietary Guidelines (Global and National) including WHO, FAO, American Heart, etc.

Food Labeling and Nutritional Claims associated with fats and fatty acids including Codex Alimentarius

These have potential impacts on global oils and fats trade. Let us examine some threats to the palm oil trade!

SEVEN COUNTRIES STUDY

25yr CHD MORTALITY vs.. DIETARY FATTY ACIDS



Kromhout et al.. Prevent. Med. 24:308,1995

Fats, Oils, and Sweets

Use sparingly

**Milk, Yogurt,
and Cheese Group**

2-3 servings

Vegetable Group

3-5 servings

KEY

● Fat (naturally occurring and added)

▼ Sugars (added)

These symbols show fats, oils, and added sugars in foods.

**Meat, Poultry, Fish, Dry Beans,
Eggs, and Nuts Group**

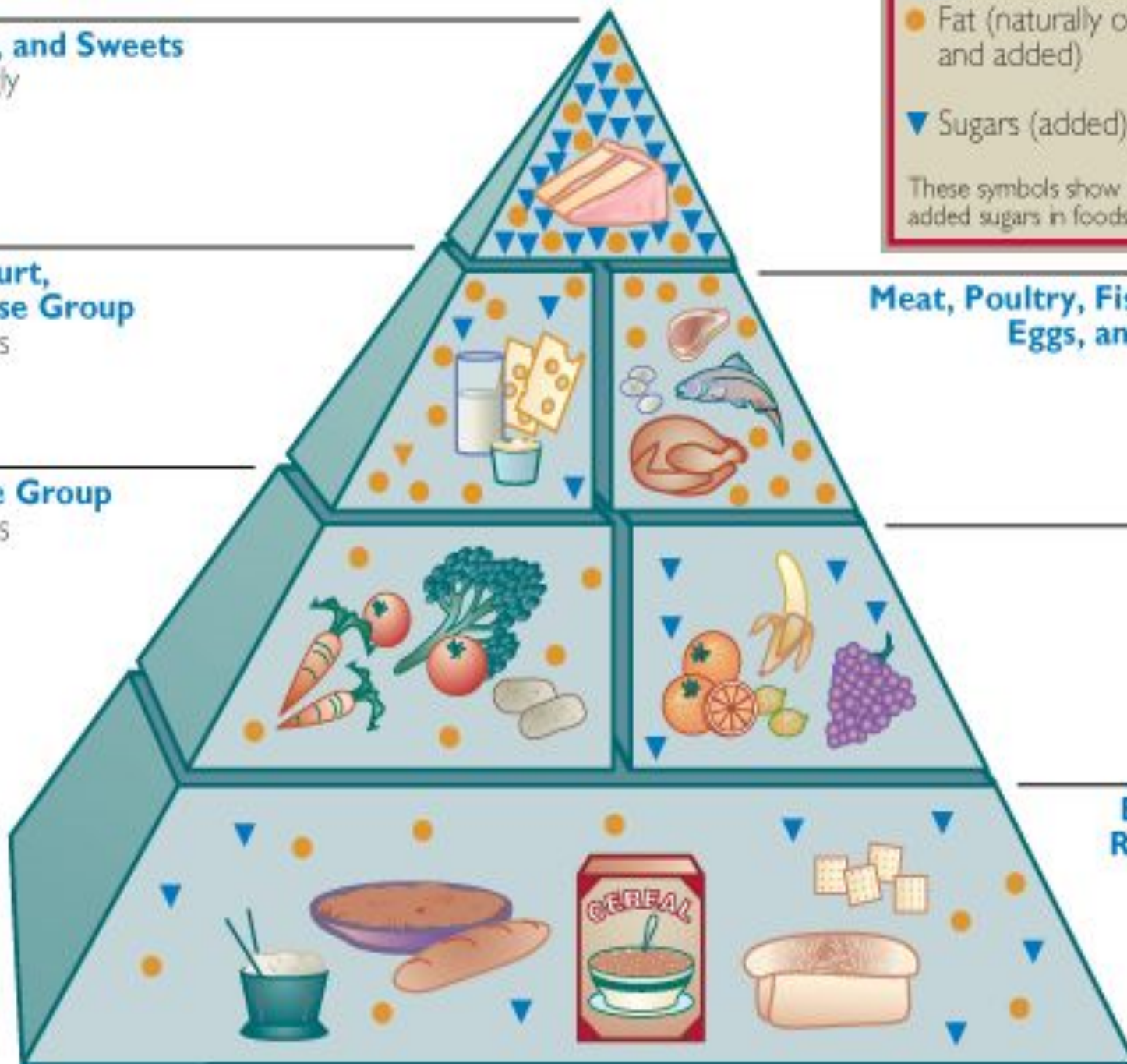
2-3 servings

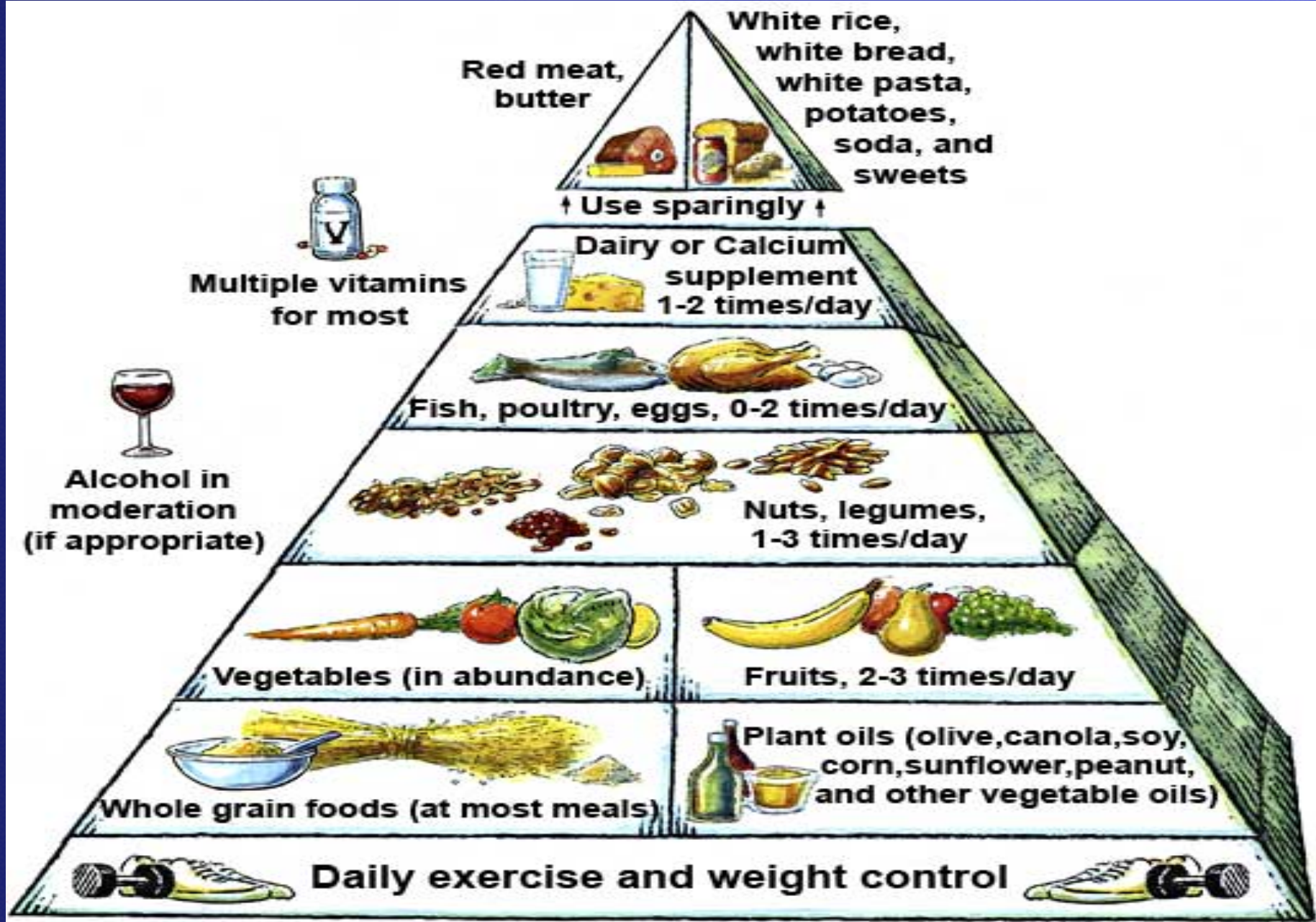
Fruit Group

2-4 servings

**Bread, Cereal,
Rice, and Pasta
Group**

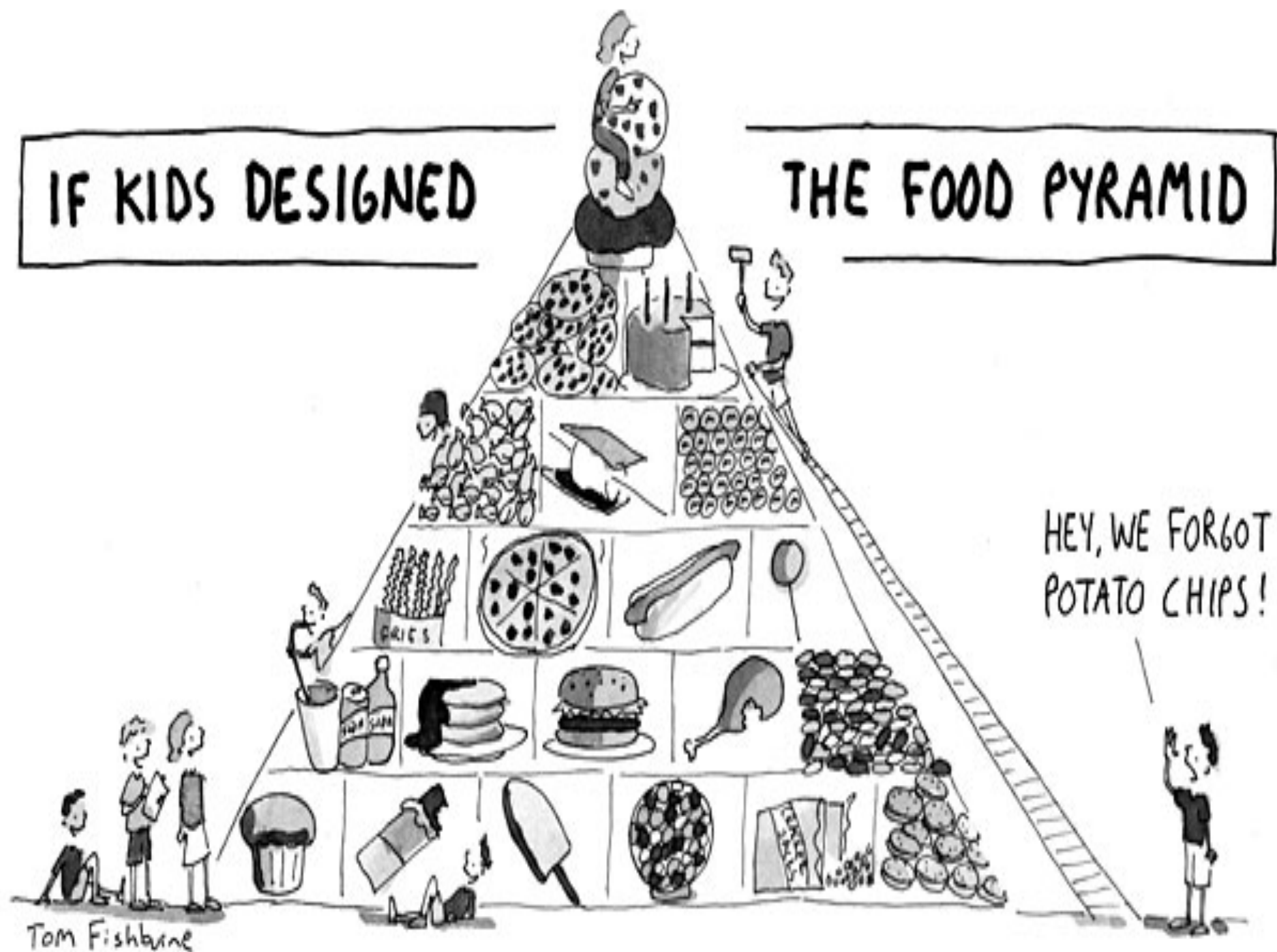
6-11 servings





IF KIDS DESIGNED

THE FOOD PYRAMID



HEY, WE FORGOT
POTATO CHIPS!

Tom Fishburne

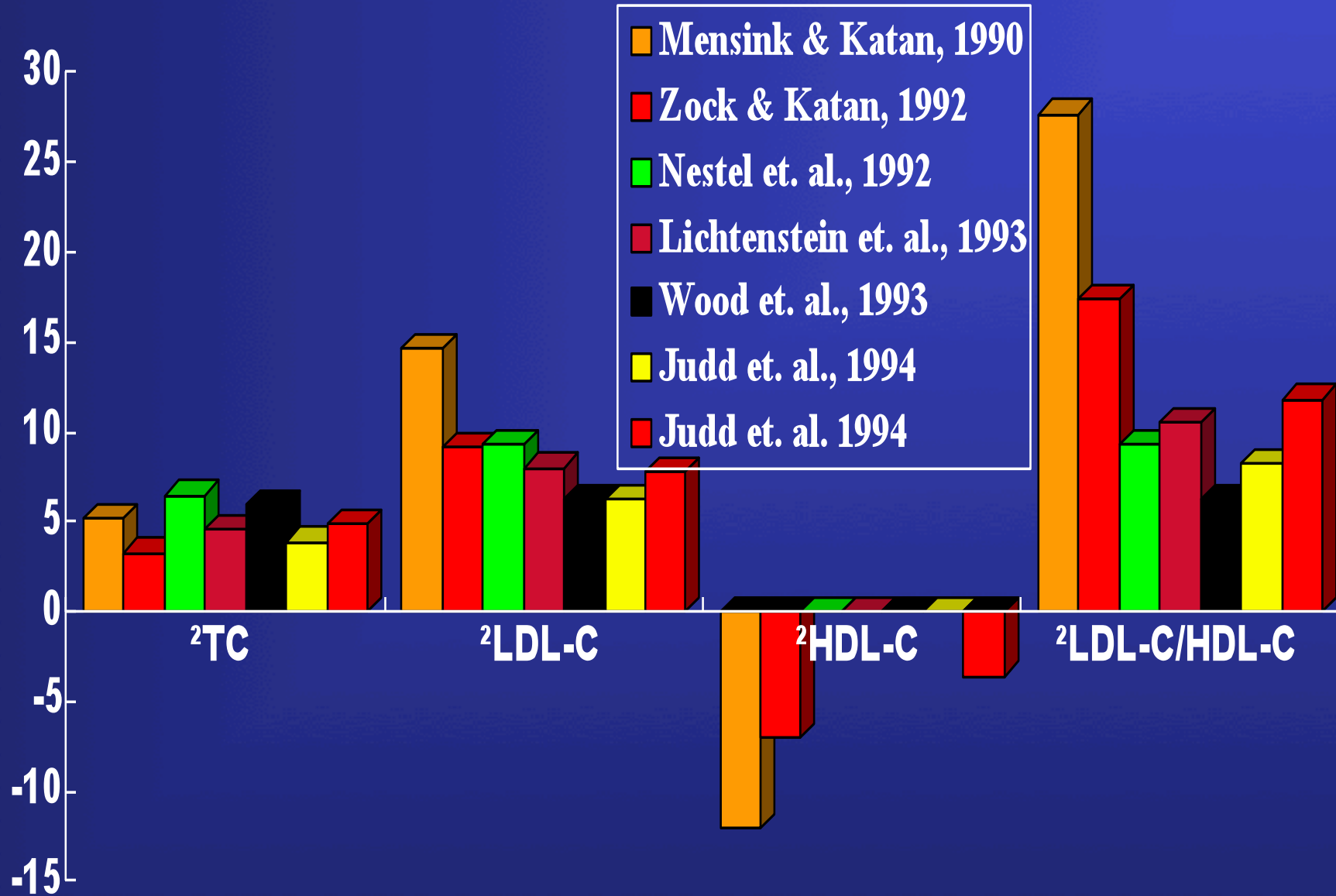


FAST FOODS REACH AFRICA AND ASIA

New Food Pyramid



Trans is Deleterious to Health: Summary of the human data



Nutrition Facts

Serving Size 1 container (227g)

Amount Per Serving

Calories 240 Calories from Fat 25

	% Daily Value*
Total Fat 3g	4 %
Saturated Fat 1.5g	9 %
<i>Trans</i> Fat 0g	
Cholesterol 15mg	5 %
Sodium 140mg	6 %
Total Carbohydrate 46g	15 %
Dietary Fiber Less than 1g	3 %
Sugars 44g	
Protein 9g	
Vitamin A 2 % • Vitamin C 4 %	
Calcium 35 % • Iron 0 %	

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



Nutrition Facts

Serving Size 2 cakes (66g)
Servings Per Container 6

Amount Per Serving
Calories 280 **Calories from Fat 140**

	% Daily Value*	
Total Fat 16g		25%
Saturated Fat 3.5g	←	18%
Trans Fat 4.5g	←	
Cholesterol 10mg	→	3%

Can You Claim a Cholesterol Free Label For Your Cooking Oil?

Cholesterol Free

**Less than 2 mg cholesterol per serving;
5 gram or less total fat per serving;
20% or less total fat on dry weight basis;
2 gram or less saturated fatty acids per
serving; and
6% or less saturated fatty acids on a dry
weight basis.**

Fact is none of the oils and fats will qualify for a cholesterol-free claim

DENMARK'S SATURATED FAT PROPOSED SIN TAX

Bill aims to reduce the overall saturated fat consumption

Imposes a tax of 25 kroner per kilogram of fat.

Objective : is an attempt to further increase health and longevity in the Danish population

Not supported by sound scientific principles.

Even the Danish Dairy Board and a number of Danish Associations are not in favor of this legislation.

Not in keeping with European Food Safety Authority (EFSA)

Dietary Reference Values for Fat Consumption

Domestically sourced meat and dairy products containing saturated fats exempted & makes this discriminatory against foreign products such as palm oil.

THE US 2010 Nutrition Dietary Guidelines

Reducing Saturates to <7% Energy

- Less than 7 percent energy from SAFA, if attained, should have a significant public health impact.
- As an interim step toward this < 7 % goal, all individuals should immediately consume less than 10 % energy as saturated fats.
- This impact would not only be limited to a reduction in heart disease and stroke, but also in Type II Diabetes

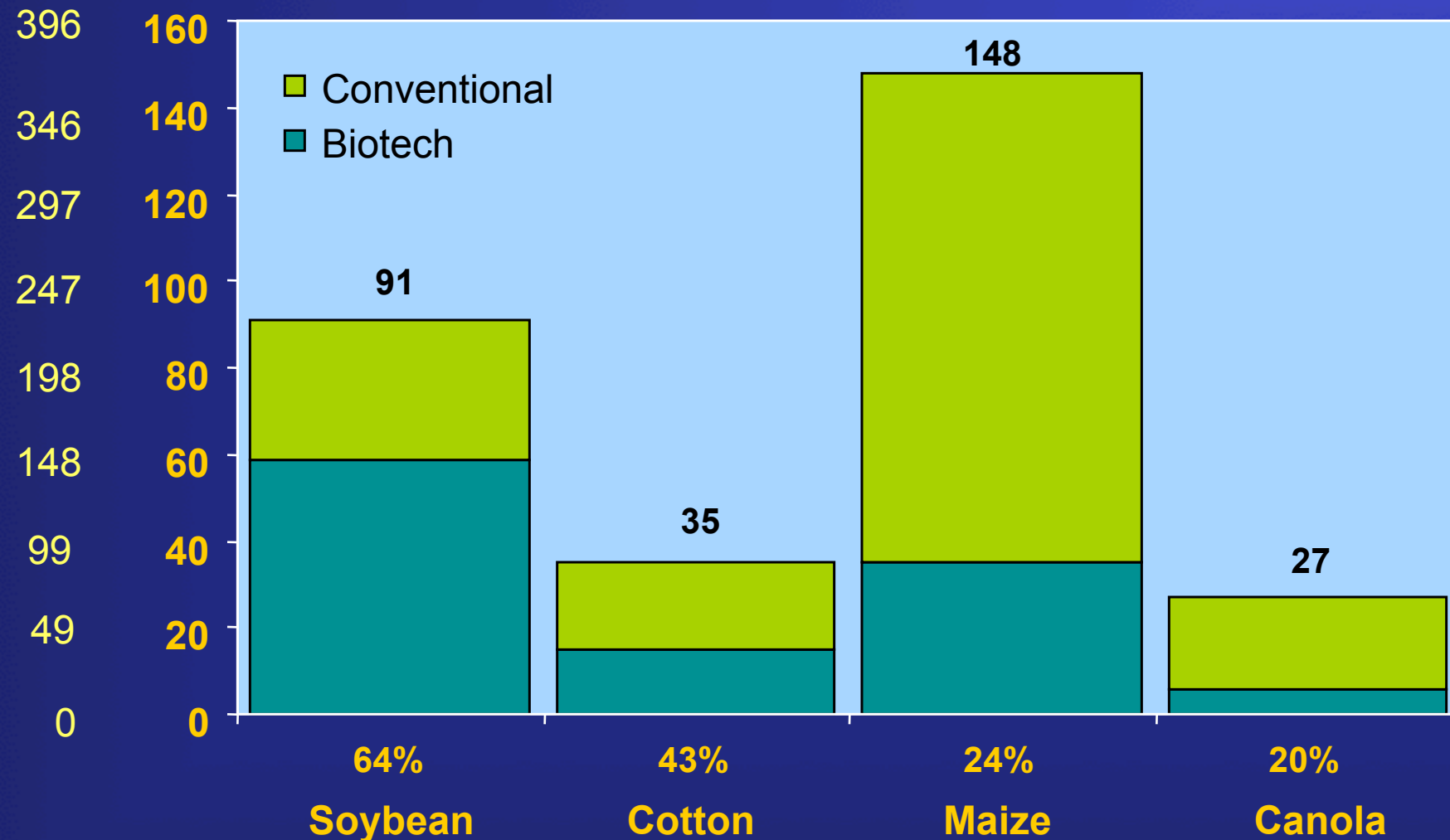
Stearic Acid Rich-Fats: Neutral to Cholesterol Low Impact on CHD and Type II Diabetes

Since stearic acid is not known to raise LDL cholesterol, stearic acid not be categorized with known —cholesterol-raising fats, which include C12, C14, C16 SFA and *trans* fatty acids.

Foods that are high in stearic acid, such as dark chocolate and shea nut oil, need not be considered as problematic as foods high in other SFA or *trans* fatty acids

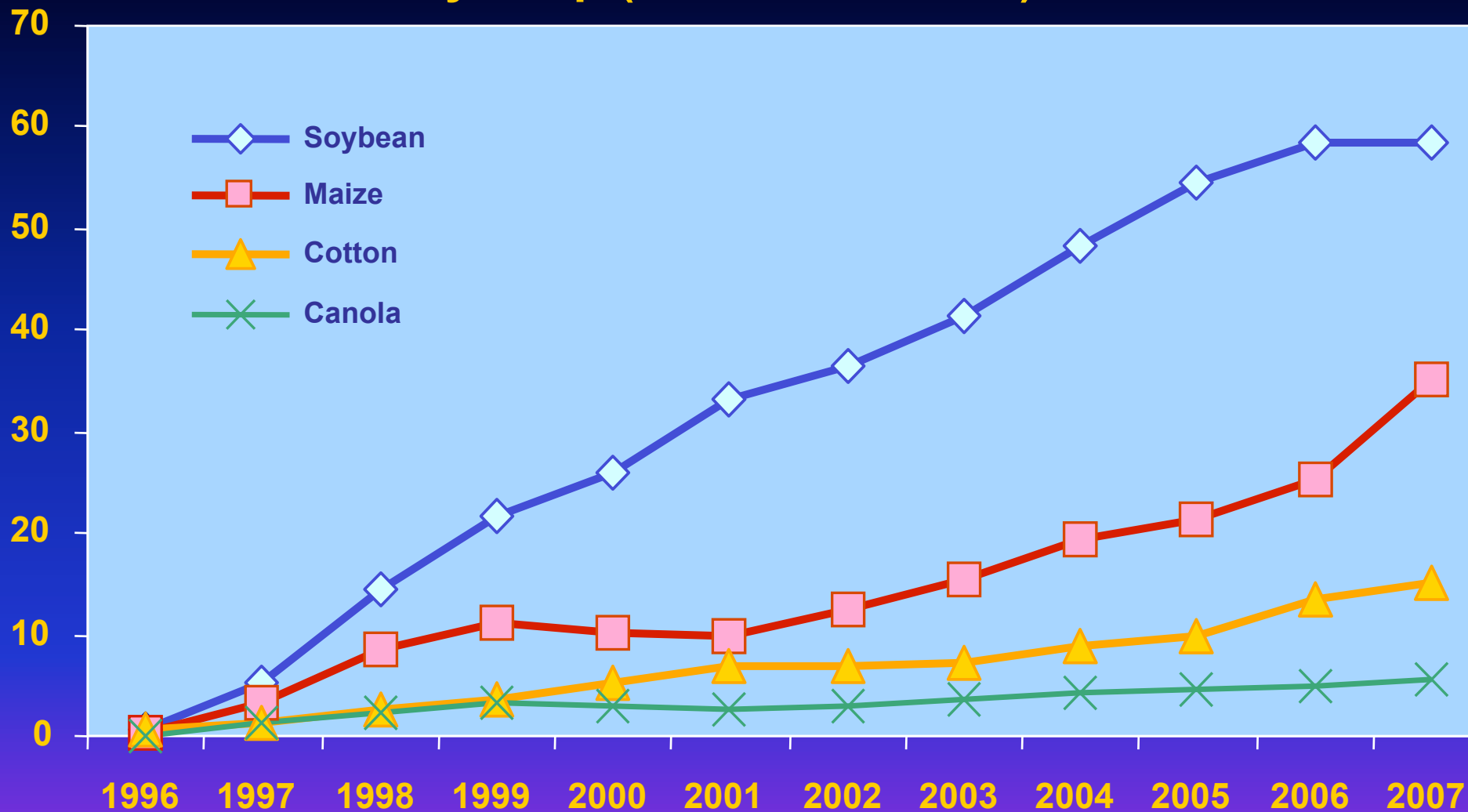
Global Adoption Rates (%) for Principal Biotech Crops (Million Hectares) 2007

M Acres



Source: Clive James, 2008

Global Area of Biotech Crops By Crop (Million Hectares)



ISAAA, 2008

FDA'S Labeling Guidelines

- ❖ Food derived from new crops (GM included) that differs in composition, nutritional profile, safety must be specially labeled
- ❖ If new crops are equivalent in composition, nutritional profile, safety – not required for special labeling

GM Soy Targets Changes in FAC To Meet Post-Trans Era Needs

	Oleic	Linoleic	Linolenic	Total Sats
High-Oleic	80	3	3	12
Low-Linolenic	25	56	3	15
High Stearate	19	35	8	38 (18:0 ~30%)
Commodity	23	50	7	15

- **Fatty acid content (%) of various soybean oil varieties**

Process Innovations Towards Trans Free Formulations

Product	Description	Applications
IE Novalipid	Fully Hyd SBO, cottonseed oil IE with native SBO for hard fats	Bakery Products
Benefat Salatrim	Low energy TG blend by IE of short chain FA and C18: 0 from hyd fat	Reduced calorie baked products, confectionery biscuit fillings
Neobee MLT-B	Shortening from IE MCT, tristearic and fully hyd SBO	Baking, margarine, coating fats, salad oils

Nutrition & Metabolism



Research

Open Access

Stearic acid-rich interesterified fat and trans-rich fat raise the LDL/HDL ratio and plasma glucose relative to palm olein in humans

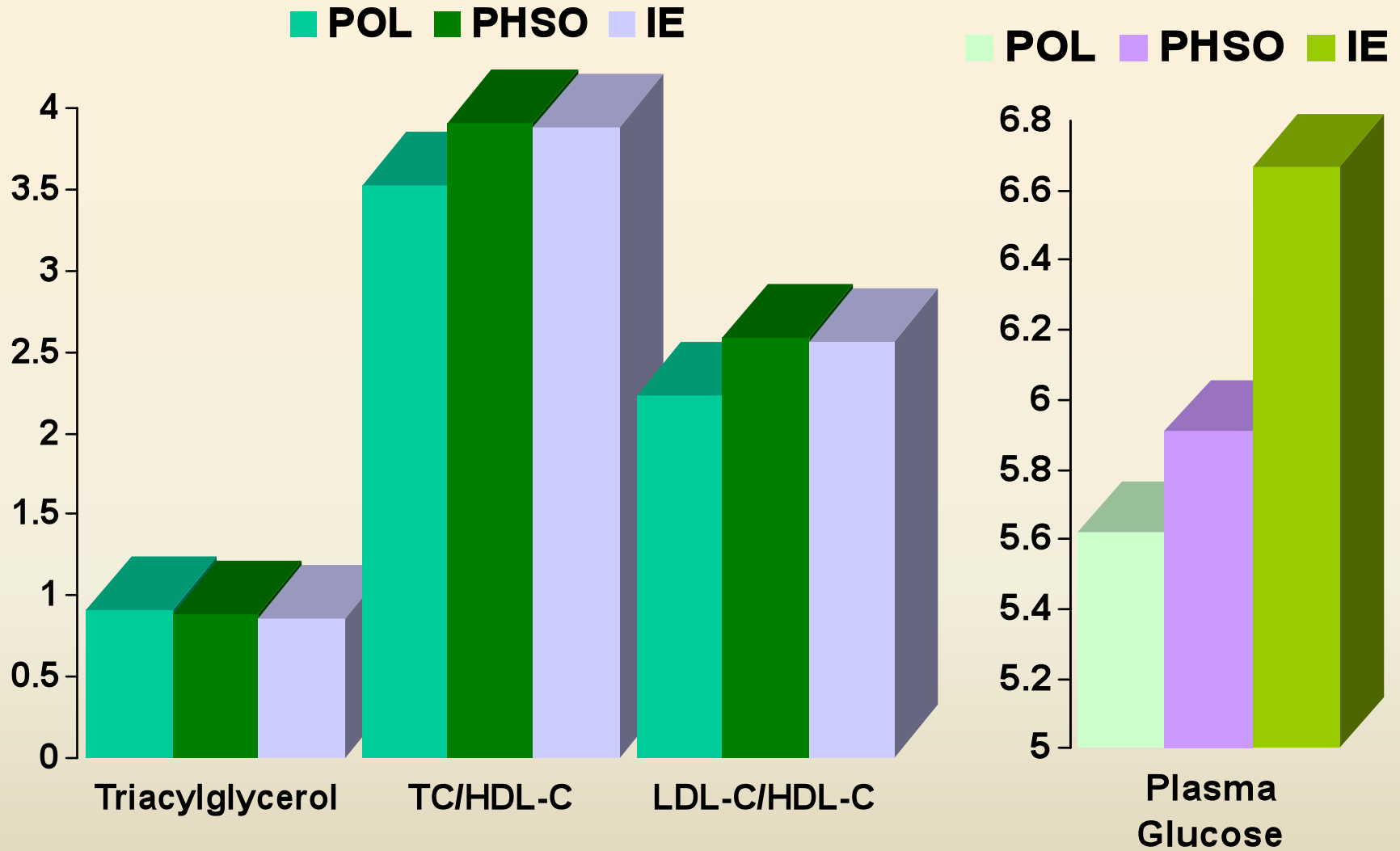
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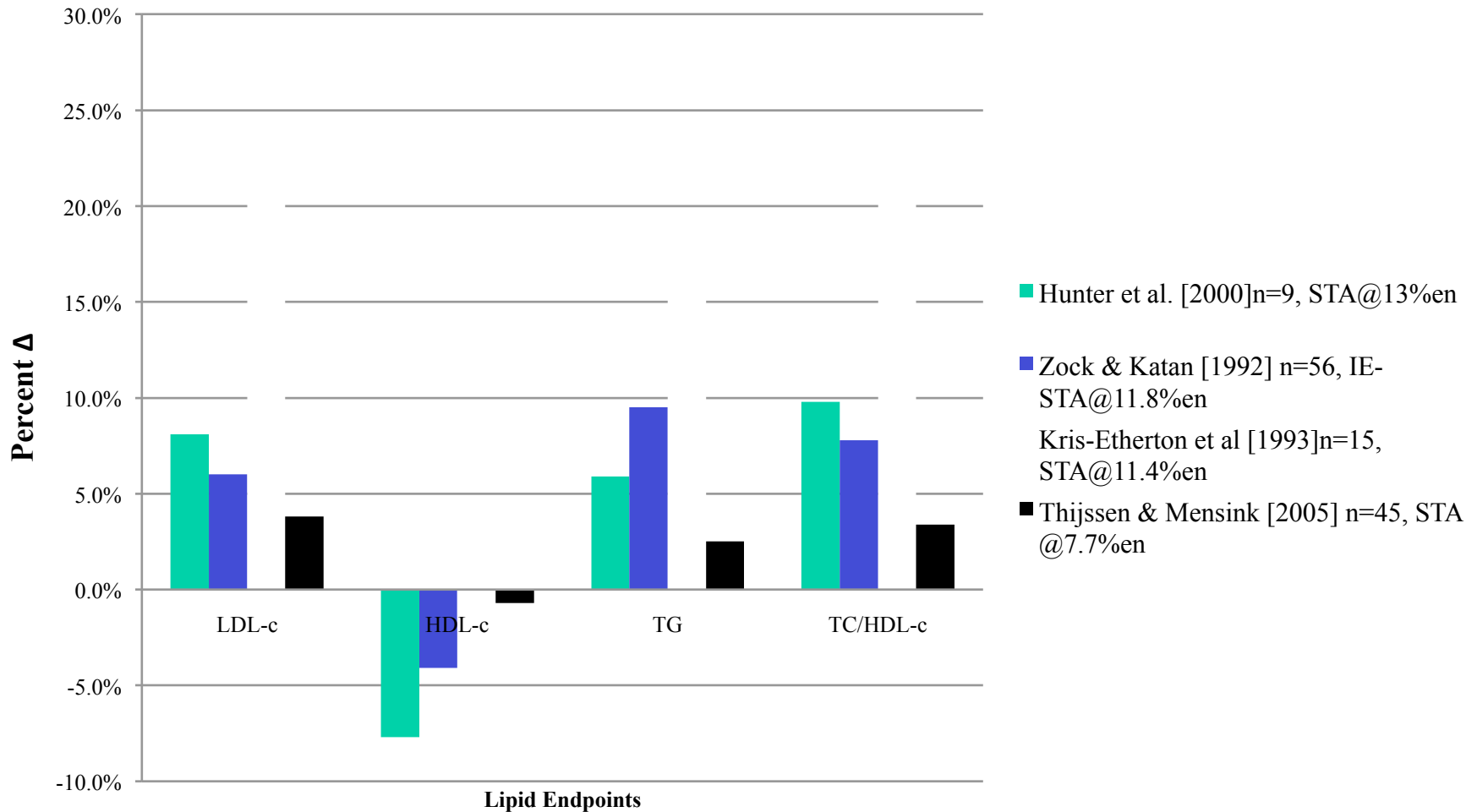
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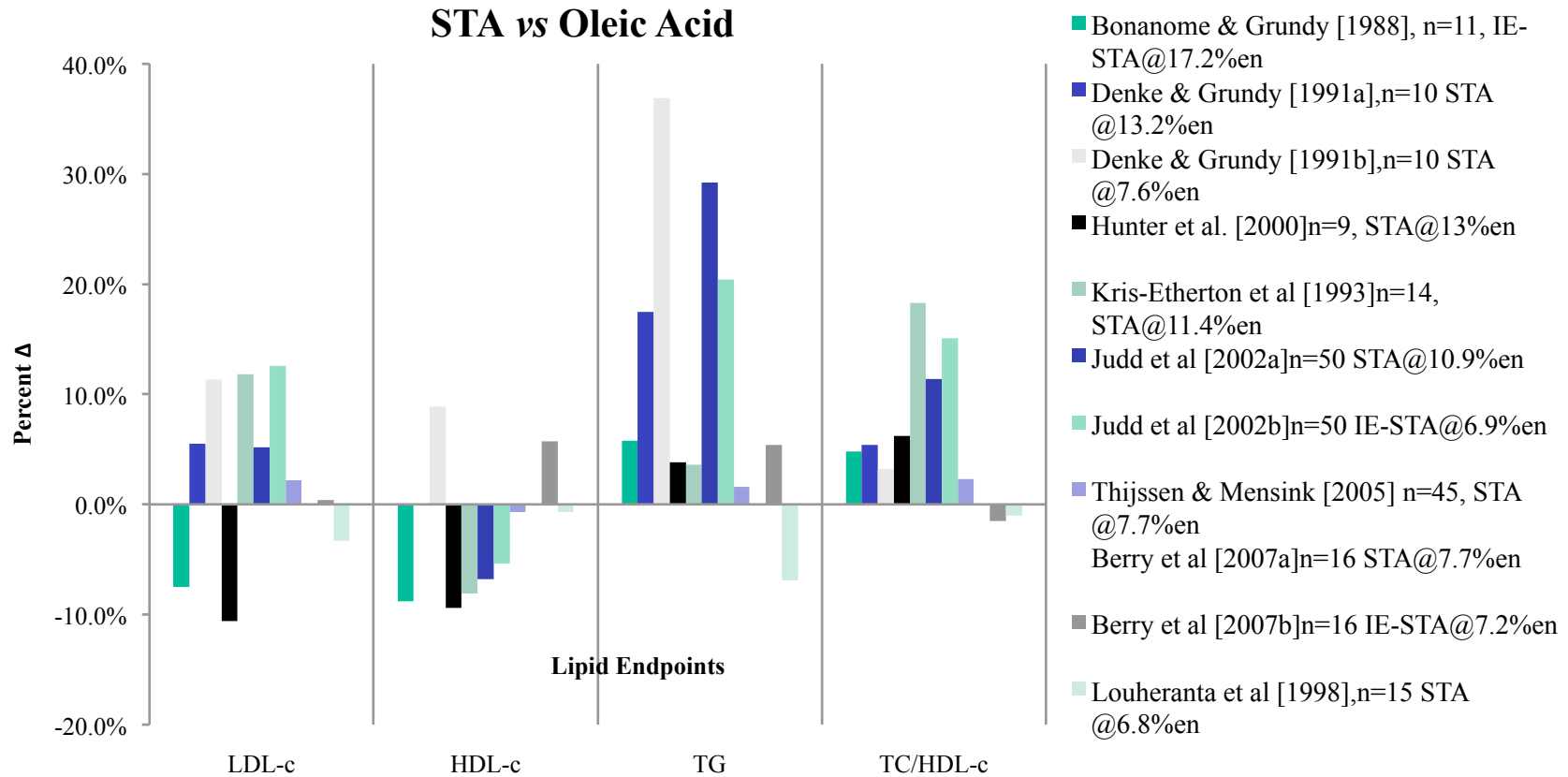
Fully Hydrogenated IE Stearic-Rich Fat Elevates Plasma Lipids and Glucose in Humans



Stearic Acid vs Linoleic Acid



Increases LDL-C
Increases TG
Decreases HDL-C
Increases TC/HDL-C



11 studies comparing STA with 18:1; 3 used IE-STA

- Overwhelming decrease in HDL-C. [p<0.01 for 2]
- Because of this TC/HDL-C increases significantly or no change. [statistical value not reported]
- Significant increase in TG.[p<0.05 for 1, p<0.01 for 2]

The Palm Factory

TARGETED PRODUCTS

(Genetically engineered)

- ❖ High oleic acid oil ✓
- ❖ High stearic acid oil ✓
- ❖ Biodegradable plastics ✓
- ❖ Lycopene-enriched oil
- ❖ High palmitoleic acid oil
- ❖ High ricinoleic acid oil
- ❖ Fungal-resistant palms ✓



FATTY ACID PROFILES

	Current	Target
❖ Palmitic acid C16:0	44%	8 – 13%
❖ Stearic acid C18:0	<5%	<5%
❖ Oleic acid C18:1	39%	70 – 80%
❖ Linoleic acid C18:2	10%	10%
❖ Iodine value (IV)	55	72

Manufacturing Food Ingredients

Supply Considerations

“Just two fats and oils dominate and dictate processing worldwide, and any discussion of strategies to reduce trans and saturated acids in the food supply must focus on soybean and palm oils.”

- Gary R. List, Lead Scientist, Food and Industrial Oil Research, NCAUR, ARS, USDA, Peoria, IL.
 - » Food Technology **58**:23-31 (2004).

Thank You



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