Dairy Fat: The Cream of The Crop

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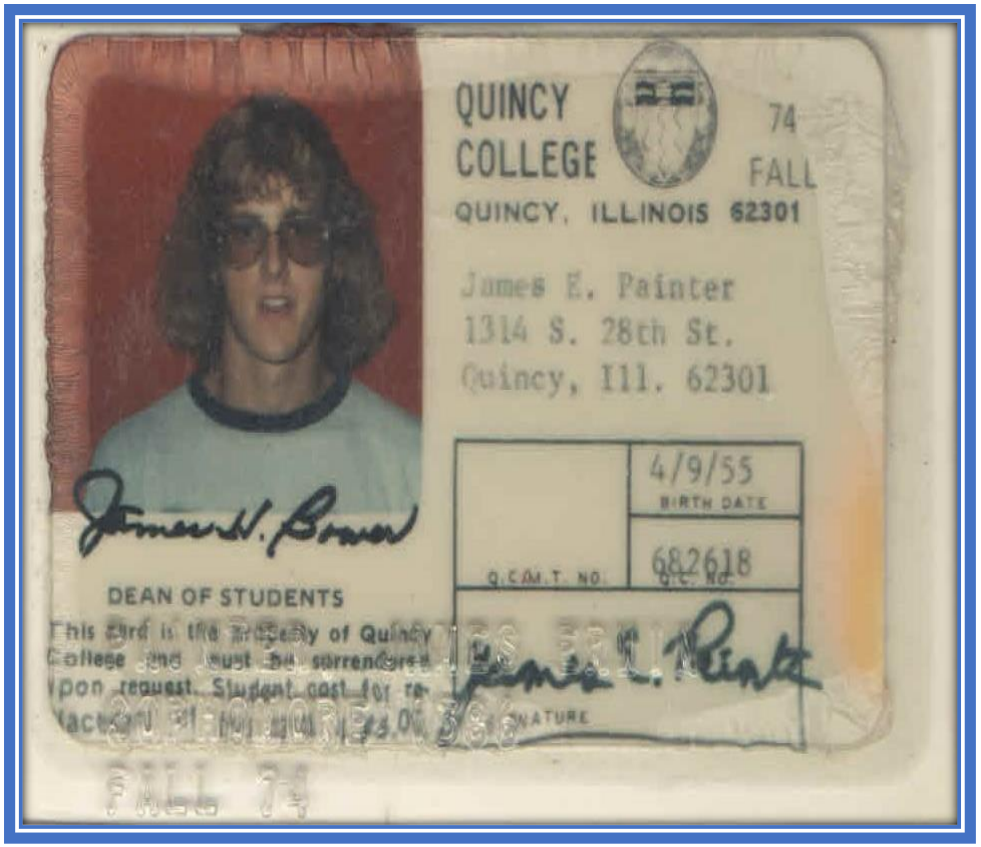
Speaker Disclosure

- **Board Member/Advisory Panel/Consultant**
- **Present**
  - Chic-fil-A, Sun-Maid Raisins, National Dairy Council, Tree Top Apples, Bush's Beans, United Sorghum Checkoff Board, Sugarwise.
- **Past**
  - American Heart Association Eat Well Task Force, California Raisin Marketing Board, Wonderful Pistachios, White Wave Foods, Davidson's Safest Choice Eggs
- **Honoraria**
  - Honorarium underwritten by
  - Dietitians of Canada, Exxon Mobil, Frito Lay, Midwest Dairy Council, Pennsylvania Nutrition Network, California Raisin Marketing Board, Alaska Tanker Company, Dairy Max, Texas AND, California AND, Florida AND, MINK, NY AND, South Carolina AND, Iowa AND, Nebraska AND, Manitoba Dairy Farmers, Dairy Farmers of Canada, Davidsons Safest Choice Eggs, National Dairy Council, New Products Conference, the Flavor Experience, BNP Media, and Cooper Vision.

Speaker Credentials



Criticisms of Dairy

Although high in nutrients, dairy has been criticized for being:

1. High in total dietary fat
2. High in cholesterol
3. High in saturated fat

- Which were all mistakenly associated with heart disease
- Why dairy fat is good for you?

1. Reduce Total Dietary Fat

Total dietary fat is no longer relevant,
so don’t focus on it.

History of the Total Fat Dietary Guidelines

1980

Avoid Too Much Fat,

1985

Americans. But for the U.S. population as a whole, it is sensible to reduce daily consumption of fat. This suggestion is

1990

A diet low in fat makes it easier for you to include the variety of foods you need for nutrients without exceeding your calorie needs because fat contains over twice the calories of an equal amount of carbohydrates or protein.

1995

Foods high in fat should be used sparingly

2000

Keep total fat intake moderate

2005

Keep total fat intake between 20 to 35 percent of calories, with most fats coming from sources of polyunsaturated and monounsaturated fatty acids, such as fish, nuts, and vegetable oils.

2010

The types of fatty acids consumed are more important in influencing the risk of cardiovascular disease than is the total amount of fat in the diet. Animal

2015

Reducing total fat (replacing total fat with overall carbohydrates) does not lower CVD risk

Where Fat Went Wrong

Dr. Ancel Keys, Seven Countries Study

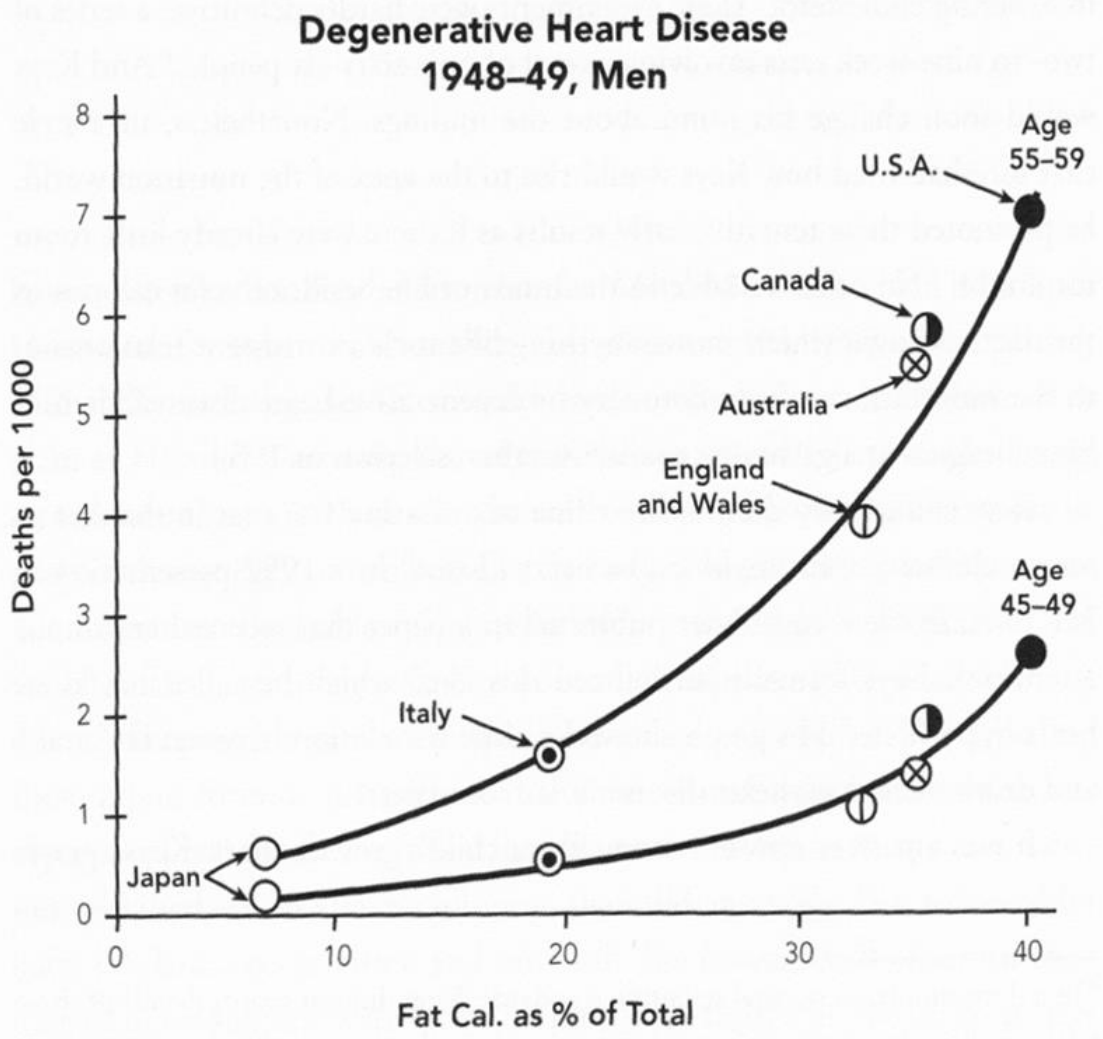
- 1961 - Keys persuaded AHA to release the first set of guidelines targeting saturated fat.
- 1970 - Congressional hearings based on low-fat, anti-saturated fat campaign.
- Many scientists opposed it.

January 1963

June 2014

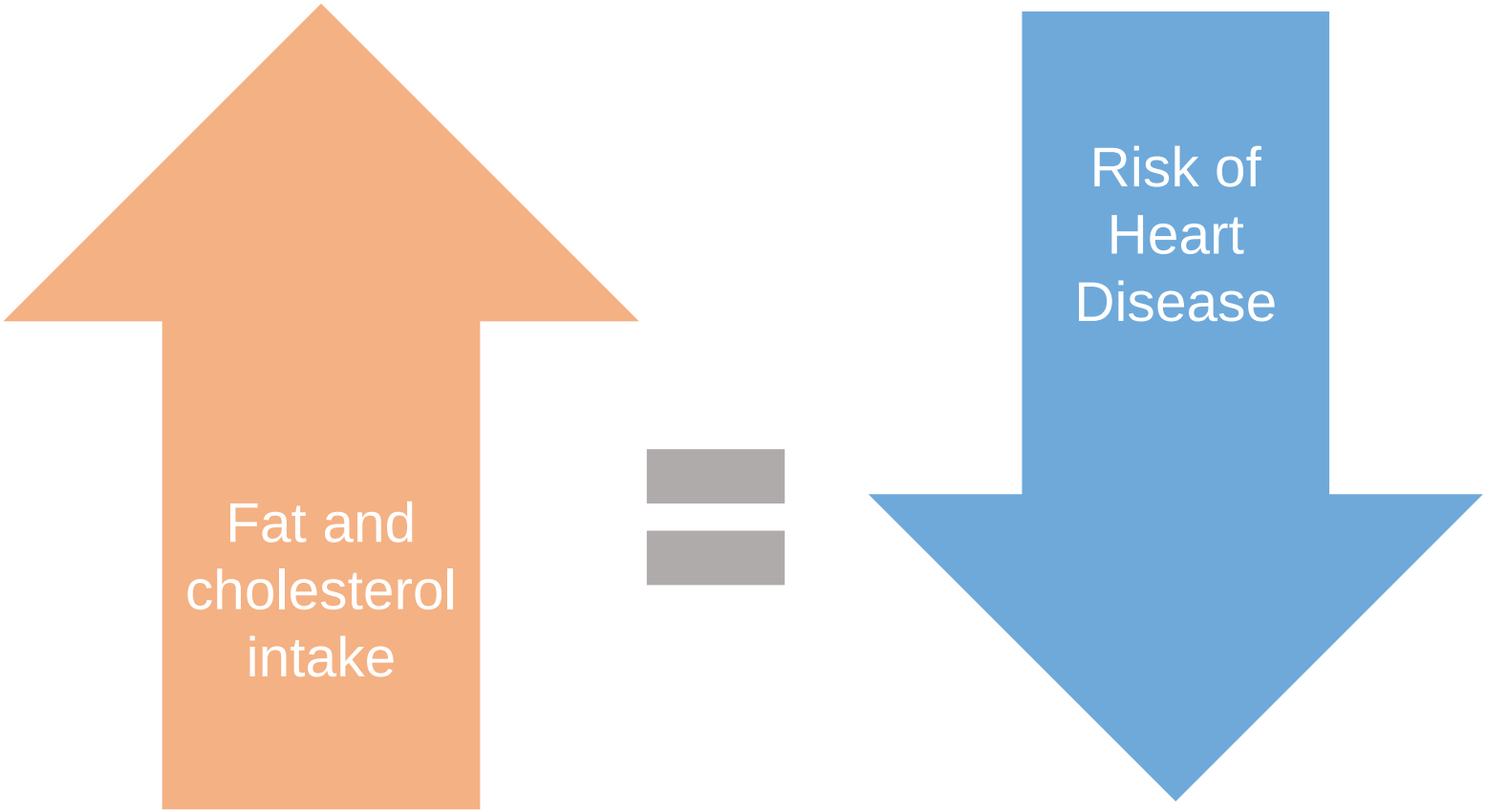
Keys's 1952 Chart:

Fat Calories vs. Deaths from Degenerative Heart Disease



Source: Ancel Keys, "Atherosclerosis: A Problem in Newer Public Health," *Journal of Mt. Sinai Hospital, New York* 20, no. 2 (July–Aug 1953): 134.

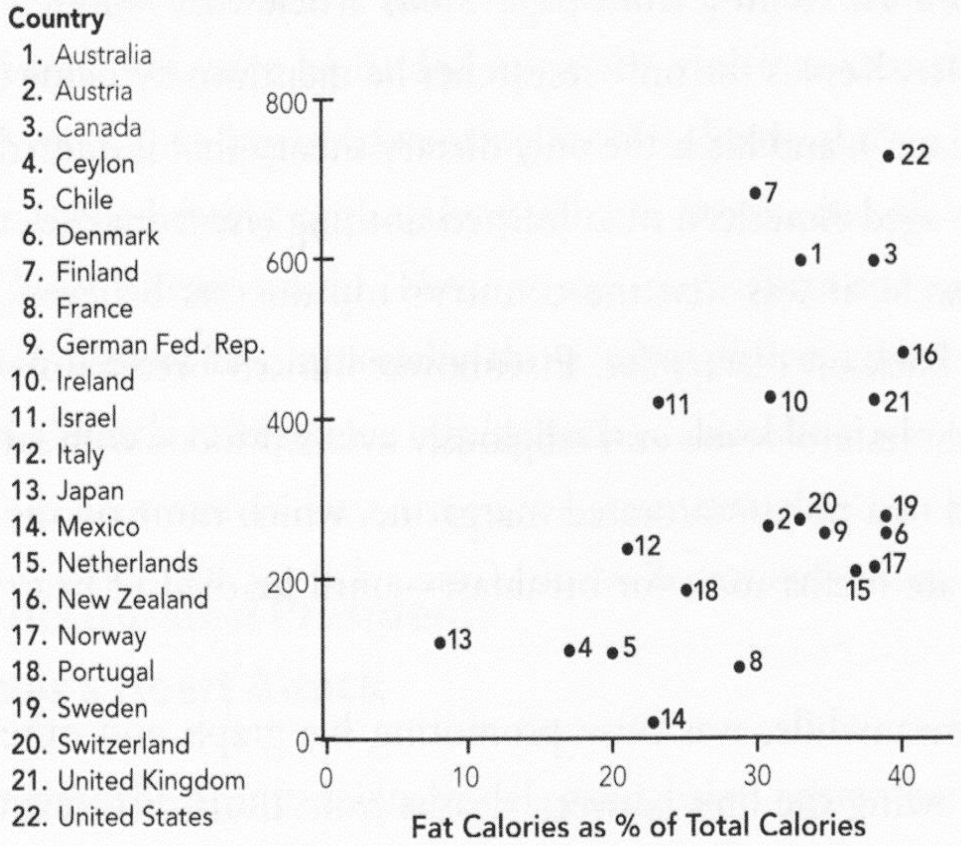
British physician Malcolm Kendrick used the same data available to Keys and discovered that by choosing different countries, you can prove an inverse relationship.



Bowden, J., & Sinatra, S. (2012). *The Great Cholesterol Myth*. Beverly, MA: Fair Winds Press.

Yerushalmy and Hilleboe: Data from Twenty-Two Countries

Mortality from Arteriosclerotic and Degenerative Heart Disease and Percent of Total Calories from Fat – Males age 55–59, 1950



Source: Yerushalmy, J. and Herman E. Hilleboe, "Fat in the Diet and Mortality from Heart Disease: A Methodologic Note," *New York State Journal of Medicine* 57, no. 14 (July 1957): 2346.

The Snackwell's Phenomenon

Food companies rushed to create low-fat versions of all foods and market them as heart-healthy.

Review | Journal of INTERNAL MEDICINE

doi: 10.1111/j.1365-2796.2012.02553.x

Dietary fats and coronary heart disease

■ W. C. Willett

From the Department of Nutrition, Harvard School of Public Health, Boston, MA, USA

Abstract. Willett WC (Harvard School of Public Health, Boston, MA, USA). Dietary fats and coronary heart disease (Review). *J Intern Med* 2012; **272**: 13–24

The relation[illegible] using [illegible]ding controlled feeding [illegible] with surrogate end-points such as plasma lipids, limited randomized trials and large cohort studies. All lines of evidence indicate that specific dietary fatty acids play important roles in the cause and the prevention of CHD, but total fat as a percent of energy is unimportant. *Trans* fatty acids from partially hydrogenated vegetable oils have clear adverse effects and should be eliminated. Modest reductions in CHD rates by further decreases in saturated fat are possible if saturated fat is replaced by a combination of poly- and monounsaturated fat, and th[illegible]lyunsaturated fat[illegible]ttle or no [illegible]placed by carbohydrate. Because both N-6 and N-3 polyunsaturated fatty acids are essential and reduce risk of heart disease, the ratio of N-6 to N-3 is not useful and can be misleading. In practice, reducing red meat and dairy products in a food supply and increasing intakes of nuts, fish, soy products and nonhydrogenated vegetable oils will improve the mix of fatty acids and have a markedly beneficial effect on rates of CHD.

Keywords: coronary heart disease, trans fat, saturated fat, polyunsaturated fat, monounsaturated fat, blood cholesterol.

But total fat as a percent of energy is unimportant....

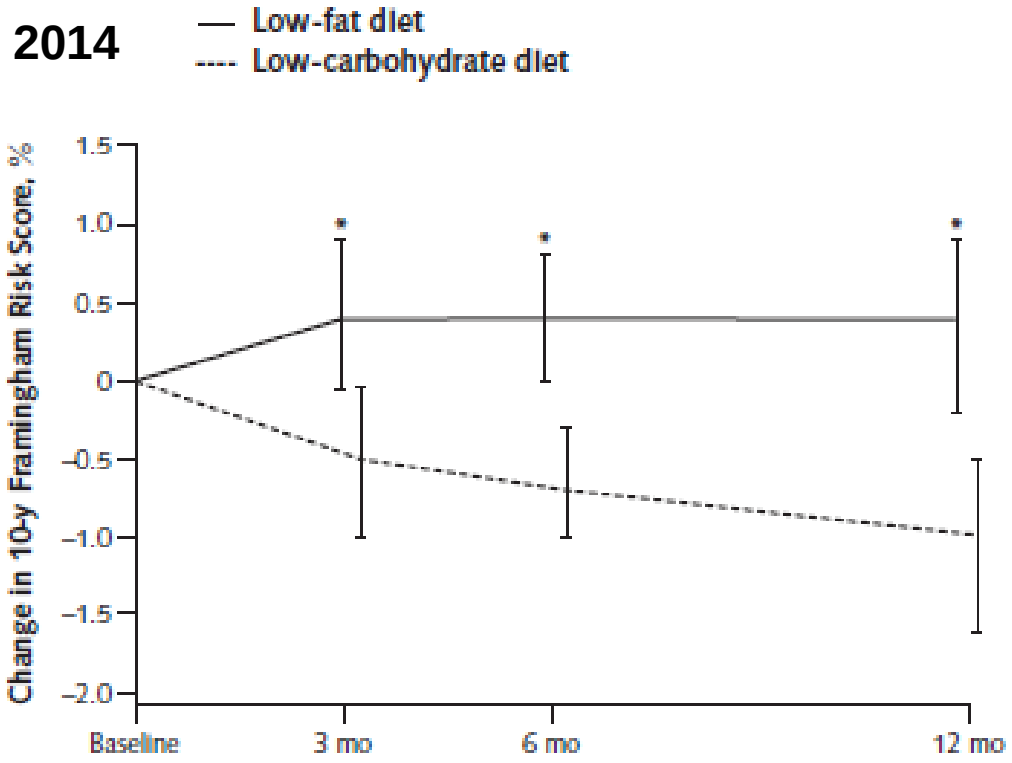
Annals of Internal Medicine | ORIGINAL RESEARCH

Effects of Low-Carbohydrate and Low-Fat Diets

A Randomized Trial

Lydia A. Bazzano, MD, PhD, MPH*; Tian Hu, MD, MS*; Kristi Reynolds, PhD; Lu Yao, MD, MS; Calynn Bunol, MS, RD, LDN; Yanxi Liu, MS; Chung-Shiuan Chen, MS; Michael J. Klag, MD, MPH; Paul K. Whelton, MD, MSc, MB; and Jiang He, MD, PhD

2014



At 12 months

Low-carbohydrate diet
42% calories from fat

Low-fat diet
30.8% calories from fat

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 APRIL 4, 2013 VOL. 368 NO. 14

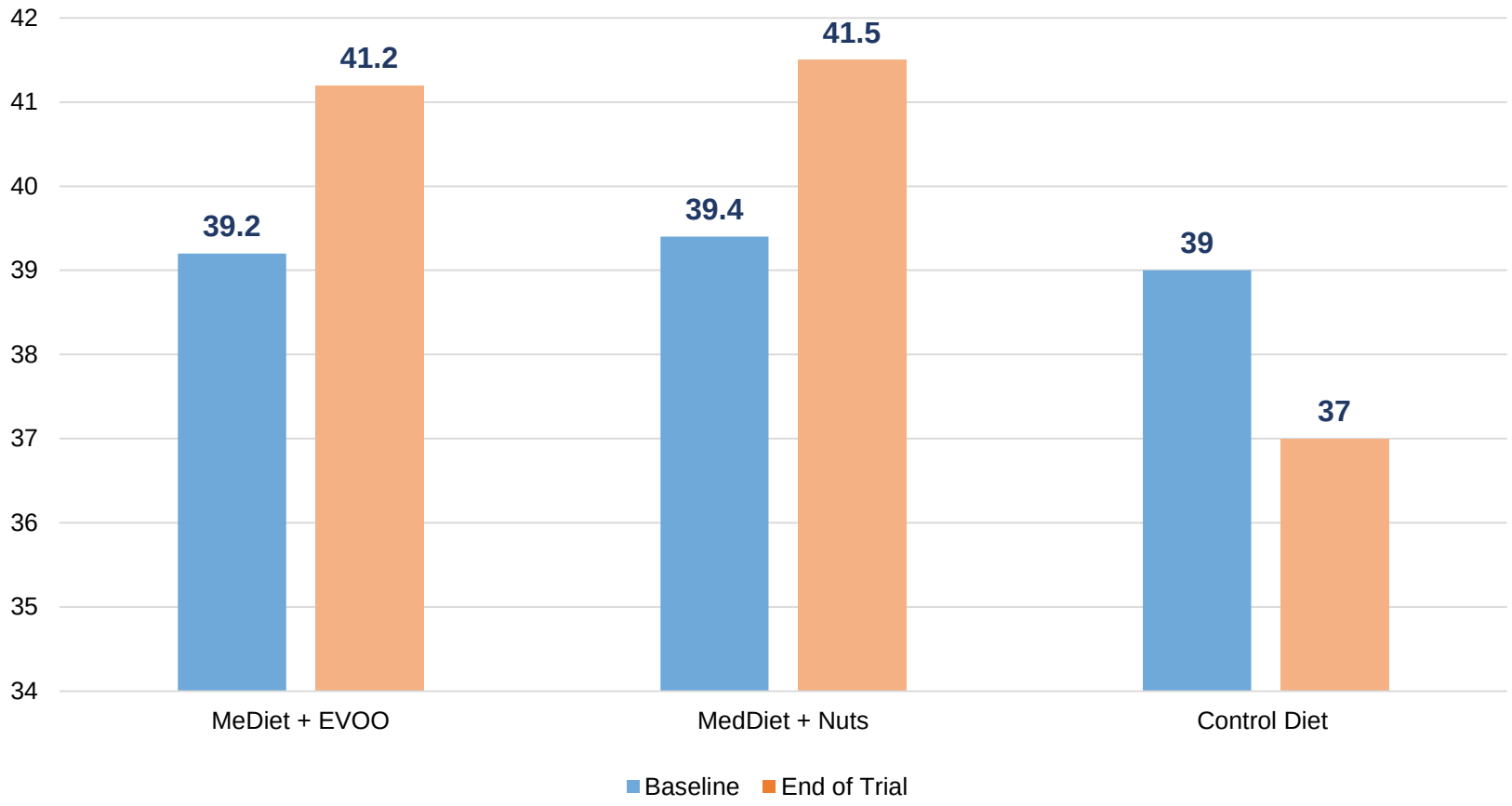
Primary Prevention of Cardiovascular Disease with a Mediterranean Diet

Ramón Estruch, M.D., Ph.D., Emilio Ros, M.D., Ph.D., Jordi Salas-Salvadó, M.D., Ph.D., Maria-Isabel Covas, D.Pharm., Ph.D., Dolores Corella, D.Pharm., Ph.D., Fernando Arós, M.D., Ph.D., Enrique Gómez-Gracia, M.D., Ph.D., Valentina Ruiz-Gutiérrez, Ph.D., Miquel Fiol, M.D., Ph.D., José Lapetra, M.D., Ph.D., Rosa Maria Lamuela-Raventos, D.Pharm., Ph.D., Lluís Serra-Majem, M.D., Ph.D., Xavier Pintó, M.D., Ph.D., Josep Basora, M.D., Ph.D., Miguel Angel Muñoz, M.D., Ph.D., José V. Sorlí, M.D., Ph.D., José Alfredo Martínez, D.Pharm, M.D., Ph.D., and Miguel Angel Martínez-González, M.D., Ph.D., for the PREDIMED Study Investigators*

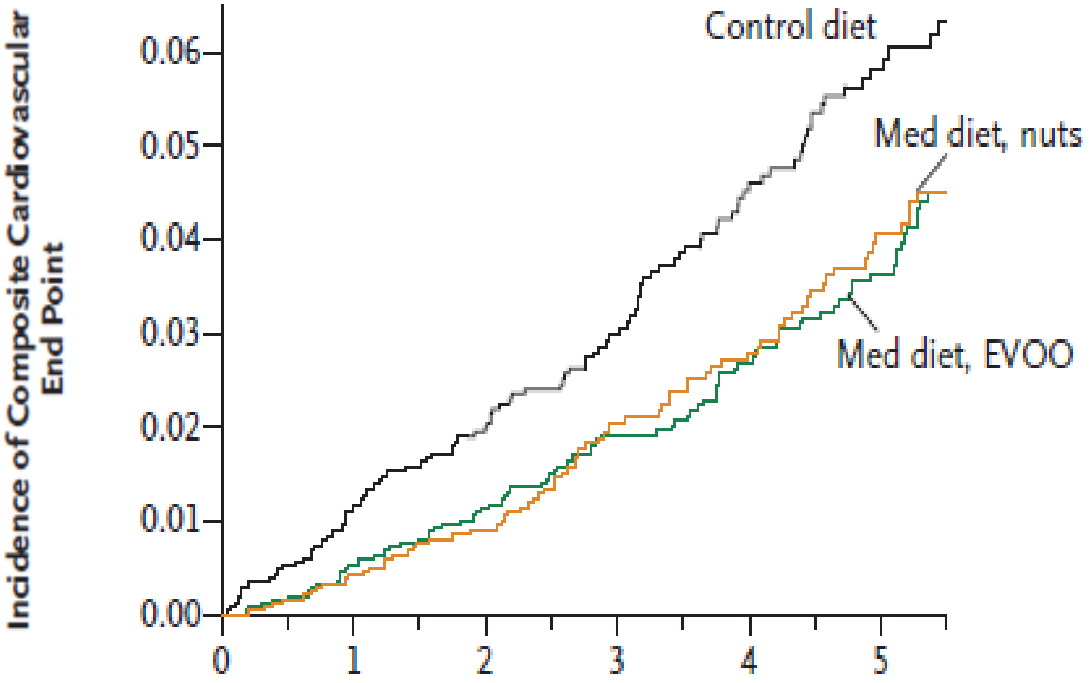
American Heart Association Heart Health Recommendation:

- Follow a Mediterranean-style diet
- Limit total fat to 20-35% of total calories

Intake of Energy



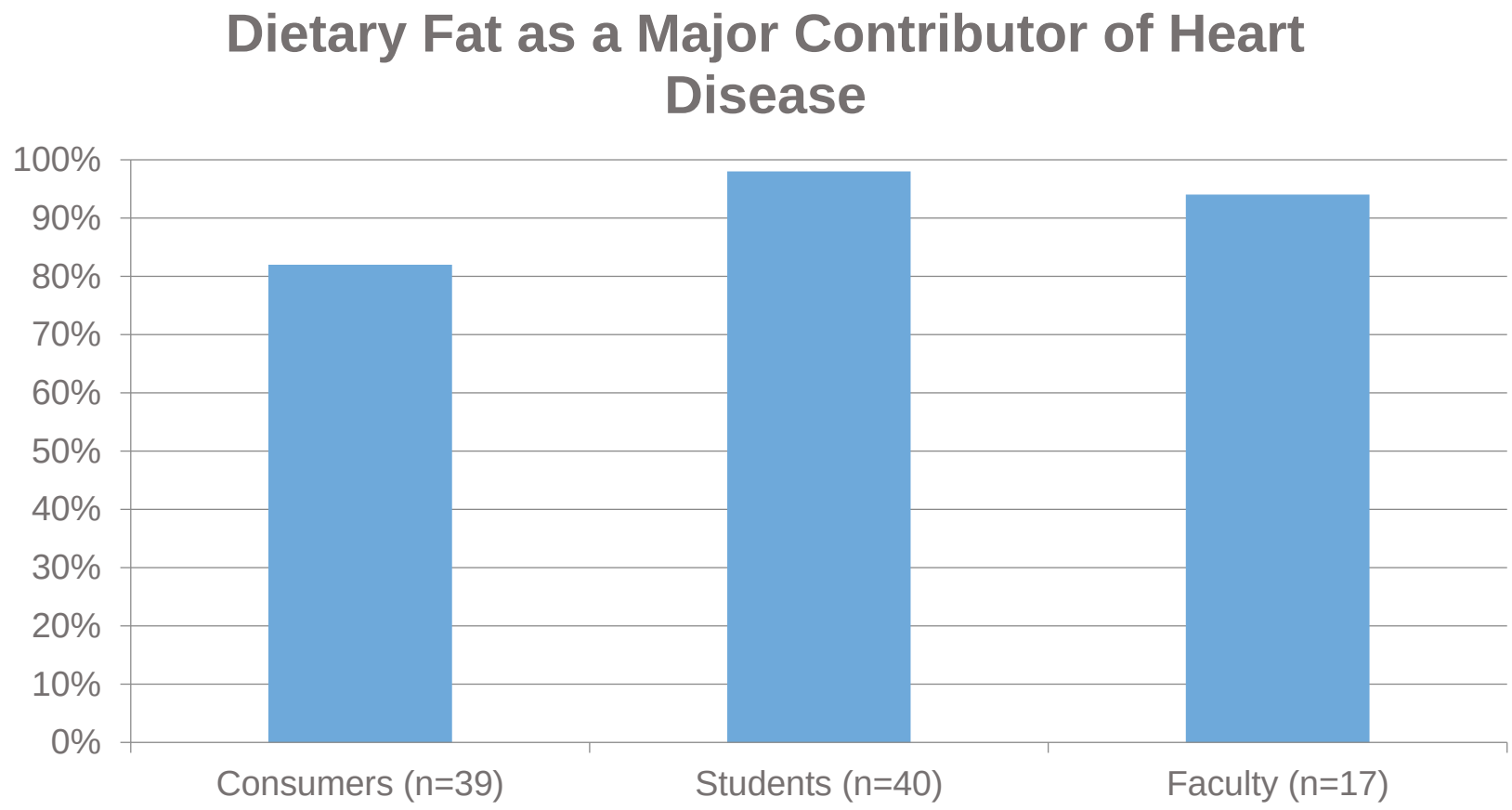
Primary End Point (Acute Myocardial Infarction, Stroke, or Death from Cardiovascular Causes



No. at Risk

Control diet	2450	2268	2020	1583	1268	946
Med diet, EVOO	2543	2486	2320	1987	1687	1310
Med diet, nuts	2454	2343	2093	1657	1389	1031

2015 Heart Disease Risk Factors Perceptions-Total Dietary Fat



C. Bueno, C.L Stanek, T. L. Brooks, J. E. Painter. **Perceptions on the Dietary Risk Factors of Heart Disease.** Unpublished data

Reduce Total Dietary Fat – Conclusions

- **Total Fat is not associated with Heart Disease**
  - Full-fat dairy may be enjoyed with low-fat dairy.
- **The type of fat is still relevant.**
  - Cream sauces are back when made with whole milk.
  - Whole fatty foods, like nuts, and avocado are in.
  - Cheese is no longer a guilty-pleasure

2. Reduce Dietary Cholesterol

Dietary cholesterol is not as important as once thought and should not be the focus in reducing risk for CVD.

2015 Dietary Guidelines for Americans

Scientific Report of the
2015 Dietary Guidelines Advisory Committee

Advisory Report to the Secretary of Health and Human Services
and the Secretary of Agriculture

Cholesterol. Previously, the Dietary Guidelines for Americans recommended that cholesterol intake be limited to no more than 300 mg/day. The 2015 DGAC will not bring forward this recommendation because available evidence shows no appreciable relationship between consumption of dietary cholesterol and serum cholesterol, consistent with the conclusions of the AHA/ACC report.[2, 35] Cholesterol is not a nutrient of concern for overconsumption.

2015-2020 DGAs for Americans

Dietary Cholesterol

The body uses cholesterol for physiological and structural functions but makes more than enough for these purposes. Therefore, people do not need to obtain cholesterol through foods.

The Key Recommendation from the *2010 Dietary Guidelines* to limit consumption of dietary cholesterol to 300 mg per day is not included in the 2015 edition, but this change does not suggest that dietary cholesterol is no longer important to consider when building healthy eating patterns. As recommended by the IOM,[24] individuals should eat as little dietary cholesterol as possible while consuming a healthy eating pattern. In general, foods that are higher in dietary cholesterol, such as fatty meats and high-fat dairy products, are also higher in saturated fats. The USDA Food Patterns are limited in saturated fats, and because of the commonality of food sources of saturated fats and dietary cholesterol, the Patterns are also low in dietary cholesterol. For example, the Healthy U.S.-Style Eating Pattern contains approximately 100 to 300 mg of cholesterol across the 12 calorie levels. Current average intake of dietary cholesterol among those 1 year and older in the United States is approximately 270 mg per day.

Dietary Reference Intakes

Dietary Reference Intakes (DRIs): Additional Macronutrient Recommendations
Food and Nutrition Board, Institute of Medicine, National Academies

Macronutrient	Recommendation
Dietary cholesterol	As low as possible while consuming a nutritionally adequate diet
Trans fatty acids	As low as possible while consuming a nutritionally adequate diet
Saturated fatty acids	As low as possible while consuming a nutritionally adequate diet
Added sugars	Limit to no more than 25% of total energy

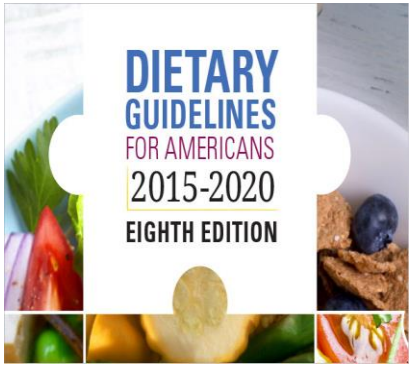
SOURCE: *Dietary Reference Intakes for Energy, Carbohydrate, Fiber, Fat, Fatty Acids, Cholesterol, Protein, and Amino Acids* (2002/2005).

The 3 Deciding Opinions

1. **American Heart Association** – 2014
2. **USDA Dietary Guidelines** – 2015
3. **Most recent meta analysis** – Berger, 2015

All 3 agree there is not enough evidence to make a recommendation against cholesterol.

American Heart Association.
life is why™



Berger, Samantha, et al. "Dietary cholesterol and cardiovascular disease: a systematic review and meta-analysis–3."
The American journal of clinical nutrition 102.2 (2015): 276-294.

Where Did Cholesterol Recommendations Come From?

Studies performed were:

1. Based on flawed animal studies
2. Provided excessive amounts of dietary cholesterol

Cholesterol and Animal Studies

In 1912, Anichkov discovered that feeding cholesterol to rabbits led to atherosclerosis.

Note that:

- **Rabbits are herbivores**
- **They metabolize cholesterol differently**

Konstantinov, I., Mejevoi, N., & Anichkov, N. (2006). Nikolai N. Anichkov and his theory of atherosclerosis. Texas Heart Institute Journal, 33(4), 417-423.

Rabbit Digestion

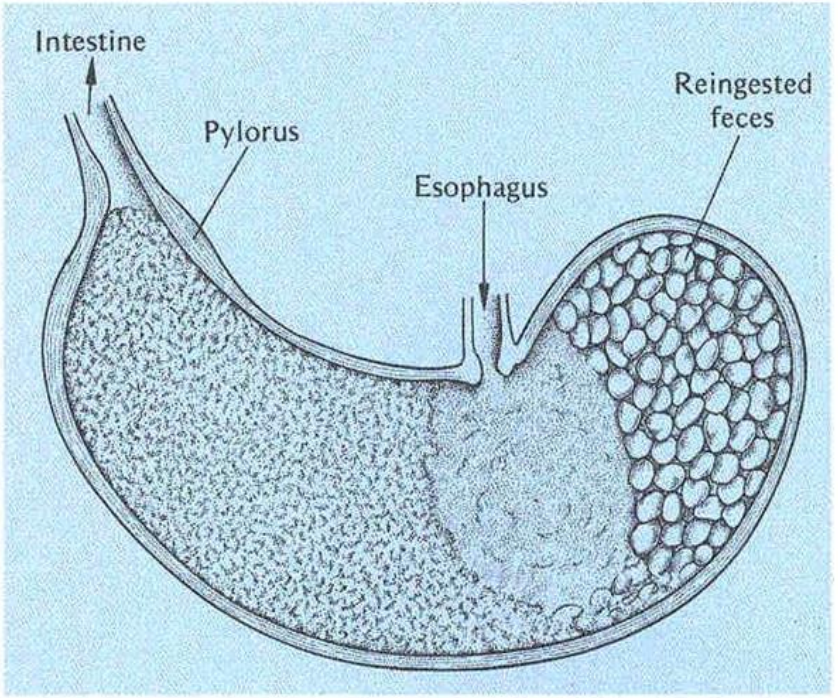


Figure 4.6 In the stomach of the rabbit ingested food is located in the pyloric part (left), which contains digestive glands. Reingested fecal pellets are located in the large fundus (right), where they remain separate from the food material while fermentation continues. [Grassé 1955]

Curr Atheroscler Rep (2010) 12:377–383
DOI 10.1007/s11883-010-0130-7

Revisiting Dietary Cholesterol Recommendations: Does the Evidence Support a Limit of 300 mg/d?

Maria Luz Fernandez · Mariana Calle

Published online: 4 August 2010

Abstract The perceived association between dietary cholesterol (DC) and risk for coronary heart disease (CHD) has resulted in recommendations of no more than 300 mg/d for healthy persons in the United States. These dietary recommendations proposed in the 1960s had little scientific evidence other than the known association between saturated fat and cholesterol and animal studies where cholesterol was fed in amounts far exceeding normal intakes. In contrast, European countries, Asian countries, and Canada do not have an upper limit for DC. Further, current epidemiologic data have clearly demonstrated that

Introduction

The American Heart Association (AHA) recommends no more than 300 mg/d of dietary cholesterol (DC) for healthy persons to prevent increased risk for coronary heart disease (CHD) [1]. These recommendations are mostly based on the presence of both saturated fat and cholesterol in many foods and on data derived from animal studies where supraphysiologic doses of cholesterol, ranging from the equivalent of 1,000 mg to 20,000 mg/d for humans, were fed in order to produce atherosclerosis [2].

2. Reduce Dietary Cholesterol - Conclusion

- **Cholesterol is not the culprit**
- **Full-fat milk and dairy is back**
- **Cream sauces made with eggs like, Hollandaise and Alfredo sauce, should no longer be avoided like the plague.**

3. Reduce Dietary Saturated Fat

- The mix of fatty acids is relevant, but don't focus on that.
- Instead pay attention to the sources of saturated fat.

AHA PRESIDENTIAL ADVISORY

Dietary Fats and Cardiovascular Disease

A Presidential Advisory From the American Heart Association

ABSTRACT: Cardiovascular disease (CVD) is the leading global cause of death, accounting for 17.3 million deaths per year. Preventive treatment that reduces CVD by even a small percentage can substantially reduce, nationally and globally, the number of people who develop CVD and the costs of caring for them. This American Heart Association presidential

Frank M. Sacks, MD, FAHA, Chair
Alice H. Lichtenstein, DSc, FAHA
Jason H.Y. Wu, PhD, MSc

AHA Review Includes "Reducing Saturated Fats"

Dietary Fats and Cardiovascular Disease: A Presidential Advisory From the American Heart Association

Frank M. Sacks, Alice H. Lichtenstein, Jason H.Y. Wu, Lawrence J. Appel, Mark A. Creager, Penny M. Kris-Etherton, Michael Miller, Eric B. Rimm, Lawrence L. Rudel, Jennifer G. Robinson, Neil J. Stone, Linda V. Van Horn
and On behalf of the American Heart Association

June 15, 2017

"Taking into consideration the totality of the scientific evidence, satisfying rigorous criteria for causality, we conclude strongly that lowering intake of saturated fat and replacing it with unsaturated fats, especially polyunsaturated fats, will lower the incidence of CVD."

FATTY ACID COMPOSITION OF FATS AND OILS

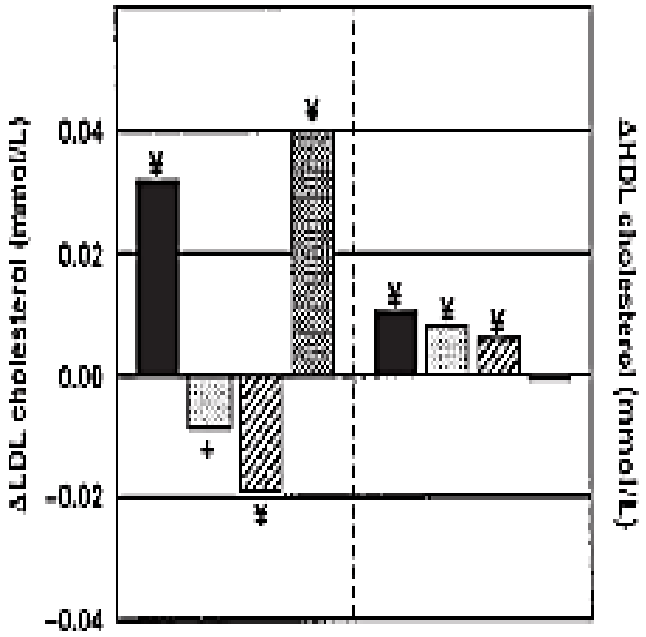
The fatty acid composition of major fats and oils in the diet is shown in the Table.[19] The main sources of saturated fat to rd (pork), beef tallo conut oil. Polyunsat , corn oil, soybean r oil, and walnuts. es of safflower and sunflower oils are uncommon. High-oleic varieties of safflower and sunflower oil, olive oil, avocados, and tree nuts such as almonds, cashews, hazelnuts, pistachios, and pecans have mainly monounsaturated fats and are low in saturated fat.

The main sources of saturated fat to be decreased are dairy fat (butter), lard (pork), beef tallow, palm oil, palm kernel oil, and coconut oil.

Effects of dietary fatty acids and carbohydrates on the ratio of serum total to HDL cholesterol and on serum lipids and apolipoproteins: a meta-analysis of 60 controlled trials[1–3]

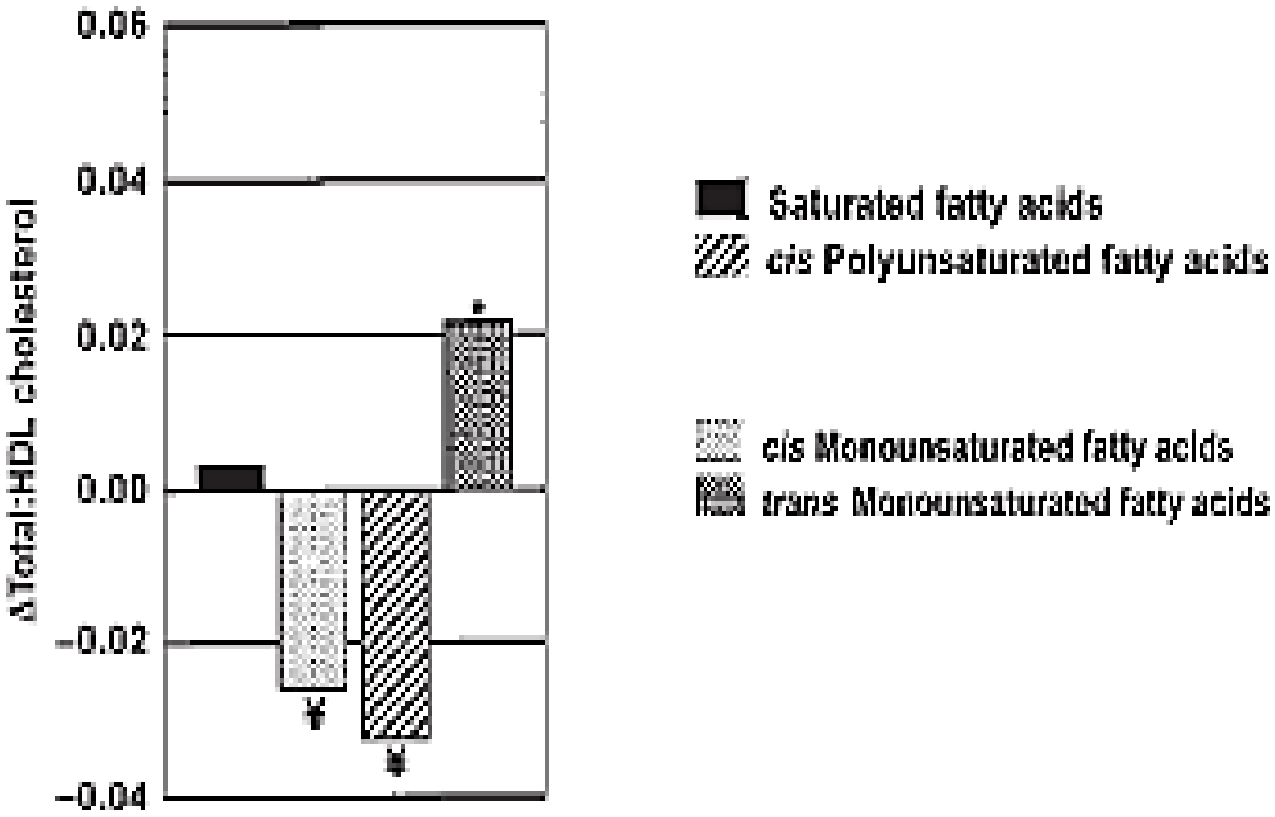
Ronald P Mensink, Peter L Zock, Arnold DM Kester, and Martijn B Katan

2003



Bad Cholesterol: LDL
Good Cholesterol: HDL

Closer Look: Total/HDL Cholesterol ratio



Lipids (2010) 45:893–905
DOI 10.1007/s11745-010-3393-4

REVIEW

Saturated Fat and Cardiometabolic Risk Factors, Coronary Heart Disease, Stroke, and Diabetes: a Fresh Look at the Evidence

Renata Micha · Dariush Mozaffarian

Received: 3 December 2009 / Accepted: 27 January 2010 / Published online: 31 March 2010

Changes in Total Cholesterol: HDL- Ratio for Consumption of SFA, MUFA, PUFA, and TFA

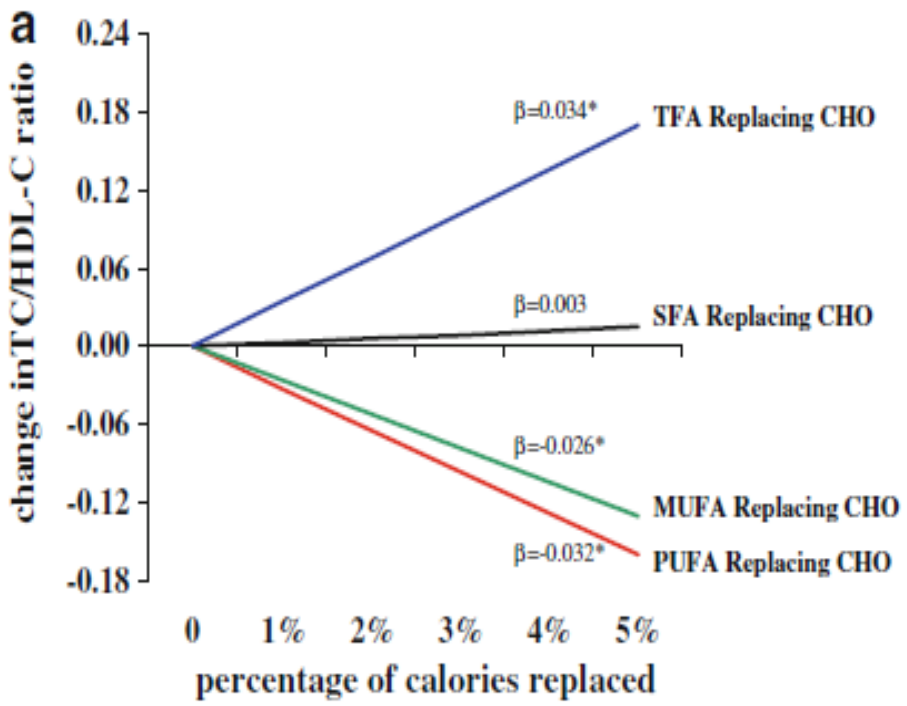


Fig. 2 Changes in blood lipid levels for consumption of saturated fatty acids (SFA), monounsaturated fatty acids (MUFA), polyunsaturated fatty acids (PUFA), or trans fatty acids (TFA) as an isocaloric replacement for carbohydrate (CHO) as a reference, based on two meta-analyses of randomized controlled feeding trials [5, 6]. β reflects the change for each 1% energy isocaloric replacement; $^{*}P < 0.05$

Meta-analysis of prospective cohort studies evaluating the association of saturated fat with cardiovascular disease[1–5]

Patty W Siri-Tarino, Qi Sun, Frank B Hu, and Ronald M Krauss

ABSTRACT

Background: A reduction in dietary saturated fat has generally been thought to improve cardiovascular health.

Objective: The objective of this meta-analysis was to summarize the evidence related to the association of dietary saturated fat with risk
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Results: During 5–23 y of follow-up of 347,747 subjects, 11,006 developed CHD or stroke. Intake of saturated fat was not associated

2010

"More Data are needed to elucidate whether CVD risks are likely to be influenced by the specific nutrients used to replace saturated fat."

In conclusion, our meta-analysis showed that there is insufficient evidence from prospective epidemiologic studies to conclude that dietary saturated fat is associated with an increased risk of CHD, stroke, or CVD. However, the available data were not adequate for determining whether there are CHD or stroke

saturated fat. *Am J Clin Nutr* 2010;91:535–46.

INTRODUCTION

Early animal studies showed that high dietary saturated fat and cholesterol intakes led to increased plasma cholesterol concen-

fat to saturated fat (P:S), a hypothesis supported by a recent pooling analysis conducted by Jakobsen et al (24).

The goal of this study was to conduct a meta-analysis of well-designed prospective epidemiologic studies to estimate the risk of CHD and stroke and a composite risk score for both CHD and

remain similar over the long term (26) and variable adjustment for covariates by different investigators. Nonetheless, a summary

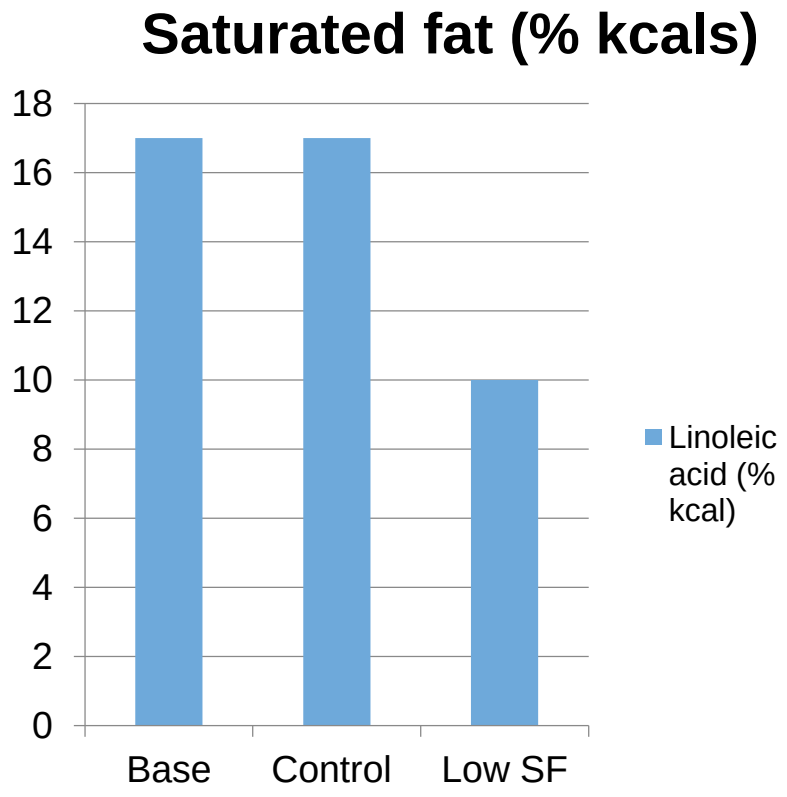
databases through 17 September 2009 by using the following search terms: ("saturated fat" or "dietary fat") and ("coronary" or "cardiovascular" or "stroke") and ("cohort" or "follow up").

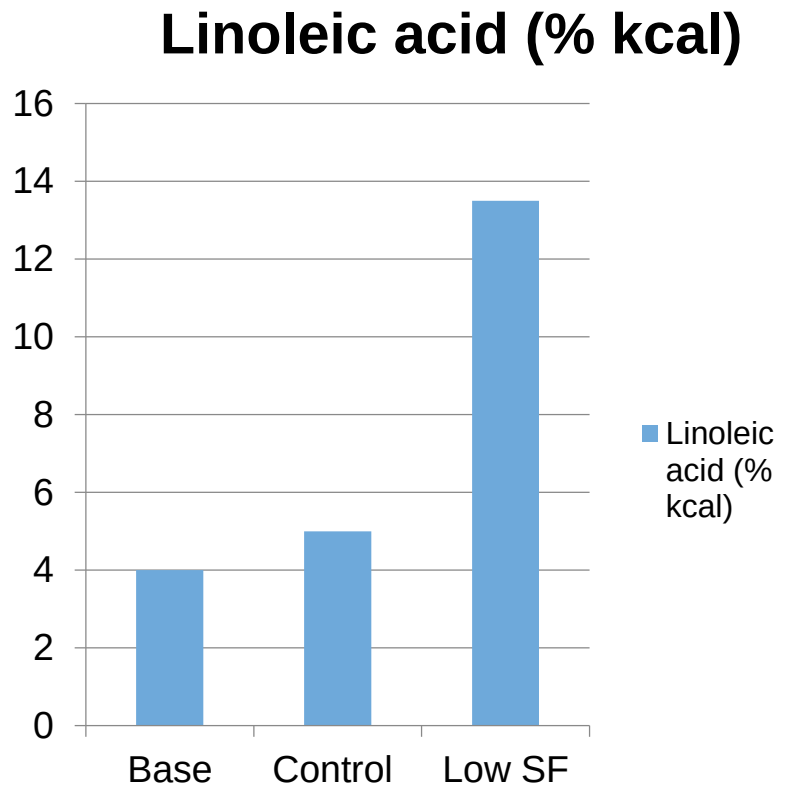
[1] From the Children's Hospital Oakland Research Institute, Oakland, CA (PWS-T and RMK), and the Departments of Nutrition (QS and FBH) and Epidemiology (FBH), Harvard School of Public Health, Boston, MA

Re-evaluation of the traditional diet-heart hypothesis: analysis of recovered data from Minnesota Coronary Experiment (1968-73)

Christopher E Ramsden,[1,2] Daisy Zamora,[3] Sharon Majchrzak-Hong,[1] Keturah R Faurot,[2] Steven K Broste,[4] Robert P Frantz,[5] John M Davis,[3,6] Amit Ringel,[1] Chirayath M Suchindran,[7] Joseph R Hibbeln[1]

Linoleic Acid and Saturated Fat Composition of MCE Control and Intervention Group Diets





Changes in Serum Cholesterol in Intervention and Control

Table 2 | Predicted and observed changes in serum cholesterol in intervention and control groups

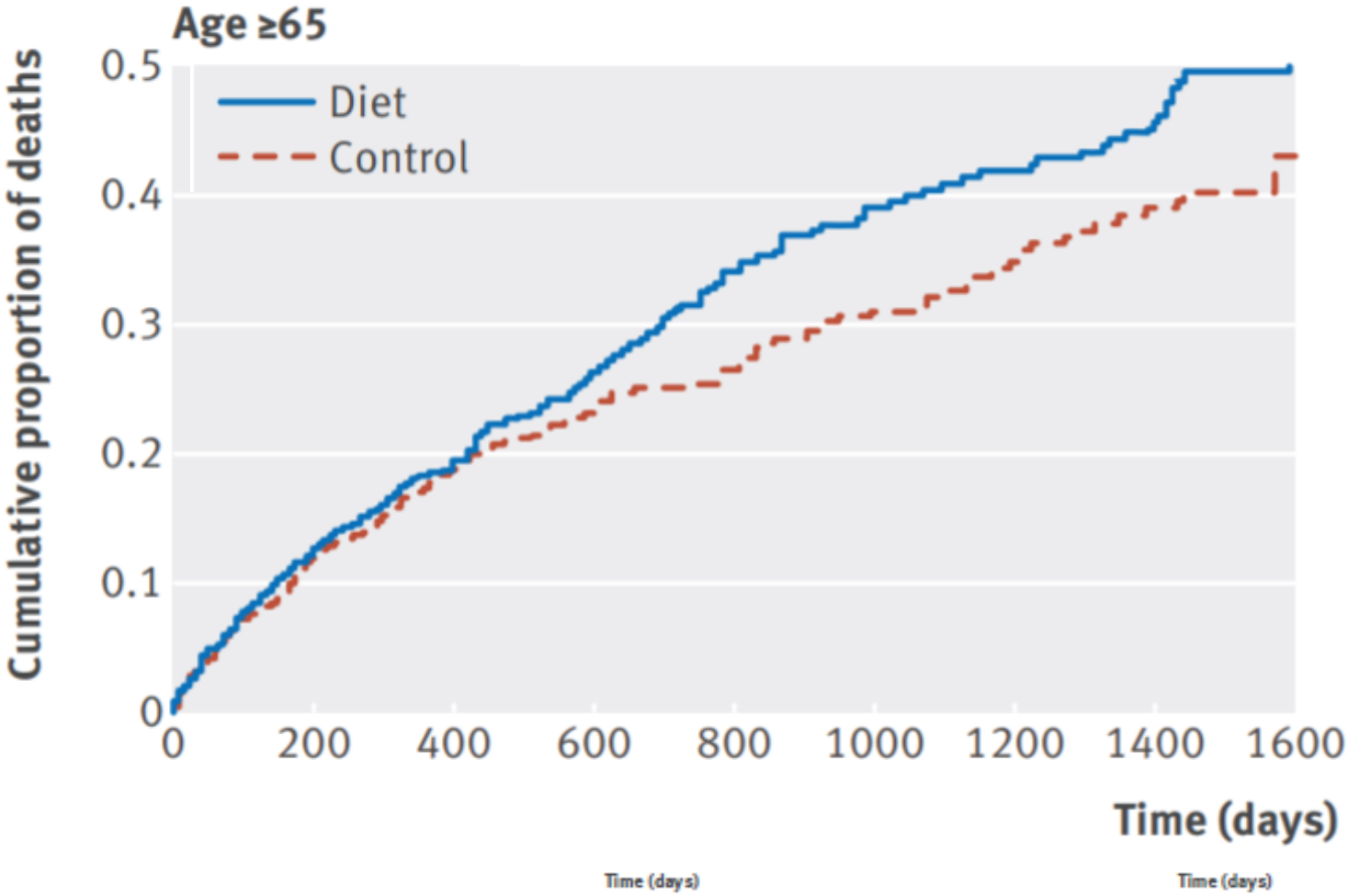
	Observed dietary changes*		Serum cholesterol % changes	
	LA (% change)	SFA (% change)	Predicted based on Keys equation†	Observed in MCE (n=2355)‡
Intervention diet	288	−51	−18.1%	−13.8% (SD 13.0%), P<0.001
Control diet	38	−1	−1.1%	−1.0% (SD 14.5%), P<0.001

LA=linoleic acid; SFA=saturated fat.

*Changes from baseline hospital diet calculated from 1975 abstract, with LA estimated by multiplying total polyunsaturated fatty acids by 0.9.

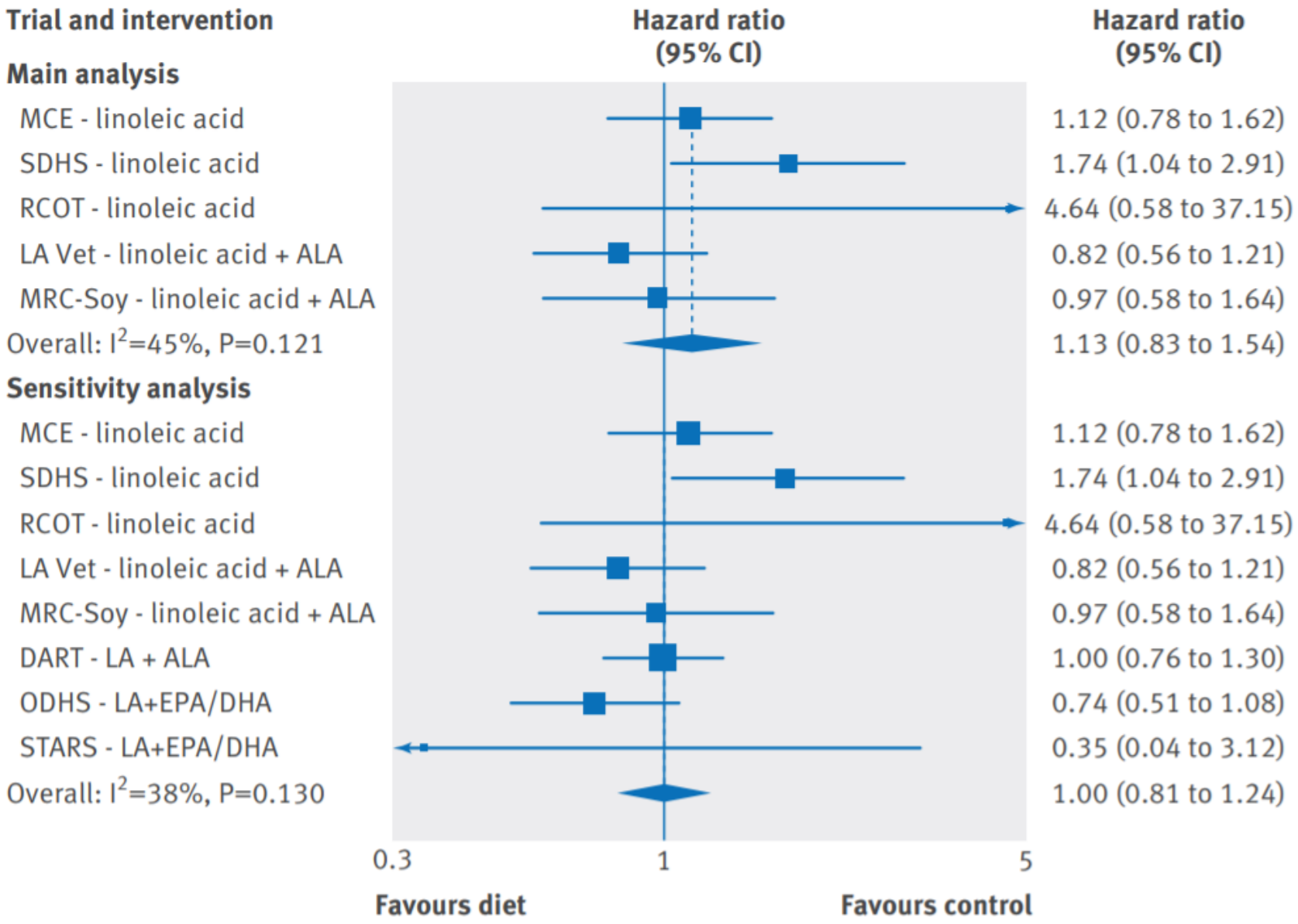
†$\Delta Chol = 1.3(2\Delta S - \Delta P)$ where S and P are percentage of calories from saturated and polyunsaturated fatty acids, respectively.

‡Percent change in serum cholesterol concentration calculated for each individual in cohort that received diet for one year or more. P values from paired *t* test comparing concentrations before and after randomization.



Time (days) Time (days)

Fig 5 | Risk of death from any cause by diet assignment in full MCE cohort and prespecified subgroups (Kaplan Meier life table graphs of cumulative mortality). Graphical depiction of cumulative mortality in full MCE cohort (n=9423) and prespecified subgroups in 1981 Broste thesis[7] showed no indication of benefit and suggested possibility of unfavorable effects of serum cholesterol lowering intervention among participants aged ≥65. Patient level data needed to repeat this analysis were not recovered


Trial and intervention
Hazard ratio (95% CI)
Hazard ratio (95% CI)
Main analysis
MCE - linoleic acid
1.12 (0.78 to 1.62)
SDHS - linoleic acid
1.74 (1.04 to 2.91)
RCOT - linoleic acid
4.64 (0.58 to 37.15)
LA Vet - linoleic acid + ALA
0.82 (0.56 to 1.21)
MRC-Soy - linoleic acid + ALA
0.97 (0.58 to 1.64)
Overall: I2=45%, P=0.121
1.13 (0.83 to 1.54)
Sensitivity analysis
MCE - linoleic acid
1.12 (0.78 to 1.62)
SDHS - linoleic acid
1.74 (1.04 to 2.91)
RCOT - linoleic acid
4.64 (0.58 to 37.15)
LA Vet - linoleic acid + ALA
0.82 (0.56 to 1.21)
MRC-Soy - linoleic acid + ALA
0.97 (0.58 to 1.64)
DART - LA + ALA
1.00 (0.76 to 1.30)
ODHS - LA+EPA/DHA
0.74 (0.51 to 1.08)
STARS - LA+EPA/DHA
0.35 (0.04 to 3.12)
Overall: I2=38%, P=0.130
1.00 (0.81 to 1.24)
0.3
1
5
Favours diet
Favours control

3. Reduce Saturated Fat – Conclusion

- **Full-fat milk should not be avoided**
  - Consumers can enjoy full-fat along side low fat dairy
- **Consumers can enjoy full-fat varieties of cheese.**
- **When consuming saturated fats, consumers should focus on reducing processed high sugar foods**
  - Eat more whole foods.

Dairy Fat

Saturated Fats Versus Polyunsaturated Fats Versus Carbohydrates for Cardiovascular Disease Prevention and Treatment

Patty W. Siri-Tarino,[1] Sally Chiu,[1] Nathalie Bergeron,[1,2] and Ronald M. Krauss[1]

[1]Atherosclerosis Research Program, Children's Hospital Oakland Research Institute, Oakland, California 94609; email: psiri@chori.org, rkrauss@chori.org

[2]College of Pharmacy, Touro University California, Vallejo, California 94594

2015

Conclusion: There is growing evidence that saturated fatty acids in the context of dairy foods, particularly fermented dairy products, have neutral or inverse associations with CVD.

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This article's doi:
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atherogenic dyslipidemia, lipids, diet, sugar, metabolism

Abstract

The effects of saturated fatty acids (SFAs) on cardiovascular disease (CVD) risk are modulated by the nutrients that replace them and their food matrices. Replacement of SFAs with polyunsaturated fatty acids has been associated with reduced CVD risk, although there is heterogeneity in both fatty acid

Dairy Foods and Milk Fat on Heart Disease

Eur J Nutr. 2009 Jun; 48(4): 191–203.
Published online 2009 Mar 4. doi: 10.1007/s00394-009-0002-5

PMCID: PMC2695872
PMID: 19259609

A reappraisal of the impact of dairy foods and milk fat on cardiovascular disease risk

J. Bruce German,[✉5] Robert A. Gibson,[7] Ronald M. Krauss,[9] Paul Nestel,[6] Benoît Lamarche,[2] Wija A. van Staveren,[1] Jan M. Steijns,[8] Lisette C. P. G. M. de Groot,[1] Adam L. Lock,[4] and Frédéric Destaillats[3]

Conclusions: Despite the contribution of dairy products to the saturated fatty acid composition of the diet, and given the diversity of dairy foods of widely differing composition, there is no clear evidence that dairy food consumption is consistently associated with a higher risk of CVD. Thus, recommendations to reduce dairy food consumption irrespective of the nature of the dairy product should be made with caution.

Biomarkers of milk fat and the risk of myocardial infarction in men and women: a prospective, matched case-control study[1–3]

Eva Warensjö, Jan-Håkan Jansson, Tommy Cederholm, Kurt Boman, Mats Eliasson, Göran Hallmans, Ingegerd Johansson, and Per Sjögren 2010

ABSTRACT

Background: High intakes of saturated fat have been associated with cardiovascular disease, and milk fat is rich in saturated fat.

Objective: The objective of this study was to investigate the association between the serum milk fat biomarkers pentadecanoic acid (15:0), heptadec
a first myocardi
Design: The st
nested within a
in the study wer
matched on sex.
Clinical, anthrop
dietary data wer
by using conditi
Results: In wor
phospholipids w
in cases and we
with risk factors for metabolic syndrome. The crude standardized odds ratios of becoming an MI case were 0.74 (95% CI: 0.58, 0.94) in women and 0.91 (95% CI: 0.77, 1.1) in men. After multivariable adjustment for confounders, the inverse association remained in both sexes and was significant in women. In agreement with biomarker data, quartiles of reported intake of cheese (men and women) and fermented milk products (men) were inversely related to a first MI (P for trend < 0.05 for all).

Conclusions: Milk fat biomarkers were associated with a lower risk of developing a first MI, especially in women. This was partly confirmed in analysis of fermented milk and cheese intake. Components of metabolic syndrome were observed as potential inter-

such as myocardial infarction (MI). In the CARDIA (Coronary Artery Risk Development in Young Adults) study, frequent consumption of dairy products was associated with a 70% decreased risk of developing metabolic syndrome over 10 y (6), but a higher dairy intake could not be linked to lower body weight or
abolic syndrome
he Hoorn Study
iry consumption
obesity and dys-
ity protein, and
cceptance of the
were part of
d fat, including
tional advice for
cardiovascular
health (11).

The absence of clear evidence linking dairy consumption to cardiovascular events may be explained by the content of health-promoting components in dairy products (2, 10), but the exact mechanisms remain uncertain. To overcome the bias associated with dietary assessment, especially for fatty food, biomarkers may be used. Dairy fat contains the ruminant-specific fatty acids pentadecanoic acid (15:0) and heptadecanoic acid (17:0), and the presence of these fatty acids in serum lipids can be used as objective biomarkers of milk fat intake (12–14). This was recently validated in the survey population from which the present

Conclusion: Milk fat biomarkers were associated with a lower risk of developing a first MI, especially in women.

Milk and dairy consumption and incidence of cardiovascular diseases and all-cause mortality: dose-response meta-analysis of prospective cohort studies[1–3]

Sabita S Soedamah-Muthu, Eric L Ding, Wael K Al-Delaimy, Frank B Hu, Marielle F Engberink, Walter C Willett, and Johanna M Geleijnse 2011

ABSTRACT

Background: The consump
risk of cardiovascular disea
flicting findings have been
Objective: The objective w
total dairy products, and h
risk of CVD [including co
and total mortality.
Design: PubMed, EMBAS
ticles published up to Febru
met the inclusion criteria,
cohort studies. Random-eff
summarized dose-response
pooled in these analyses.
Results: In 17 prospective
CHD, 15,554 stroke, and 2
association was found betw

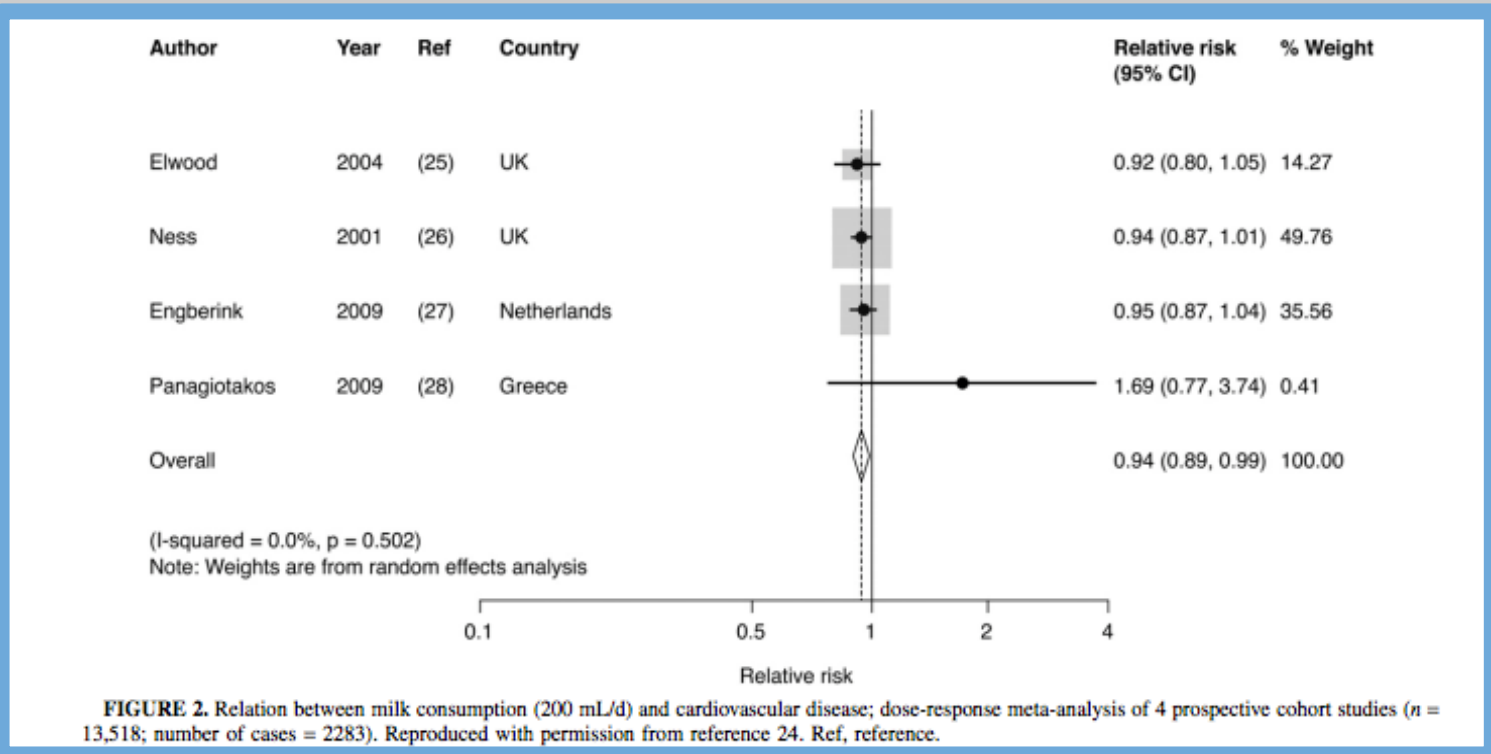

FIGURE 2. Relation between milk consumption (200 mL/d) and cardiovascular disease; dose-response meta-analysis of 4 prospective cohort studies (n = 13,518; number of cases = 2283). Reproduced with permission from reference 24. Ref, reference.

Conclusion: This dose-response meta-analysis of prospective studies indicates that milk intake is not associated with total mortality but may be inversely associated with overall CVD risk; however, these findings are based on limited numbers.

nutrients

MDPI

Review

Regular-Fat Dairy and Human Health: A Synopsis of Symposia Presented in Europe and North America (2014–2015)

Arne Astrup [1], Beth H. Rice Bradley [2,*], J. Thomas Brenna [3], Bernadette Delplanque [4], Monique Ferry [5] and Moises Torres-Gonzalez [6]

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5 Sorbonne Paris-Cité, 190 Avenue de France, Paris 75013, France; monique.ferry@club-internet.fr
6 National Dairy Council, 10255 West Higgins Road, Suite 900, Rosemont, IL 60018, USA; Moises.Torres-Gonzalez@Dairy.org
* Correspondence: Beth.H.Rice@gmail.com; Tel.: +1-631-804-4274

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Symposia of:

- Eurofed Lipids Congress (2014 –France)
- Dairy Nutrition Annual Symposium (2014- Canada)
- American Society for Nutrition (2015 –USA)
- Experimental Biology (2015 –USA)
- Federation of European Nutrition Societies (2015 – Germany)

“The emerging scientific evidence indicates that the consumption of regular fat diary foods is not associated with an increased risk of cardiovascular disease”

Regular Dairy Did Not Alter LDL Cholesterol or Metabolic Syndrome Risk Factors

High intake of regular-fat cheese compared with reduced-fat cheese does not affect LDL cholesterol or risk markers of the metabolic syndrome: a randomized controlled trial FREE

Farinaz Raziani ✉, Tine Tholstrup, Marlene D Kristensen, Matilde L Svanegaard, Christian Ritz, Arne Astrup, Anne Raben

The American Journal of Clinical Nutrition, Volume 104, Issue 4, 1 October 2016, Pages 973–981, https://doi.org/10.3945/ajcn.116.134932

Published: 24 August 2016 **Article history** ▾

Conclusion: A high daily intake of regular-fat cheese for 12 wk did not alter LDL cholesterol or MetS risk factors differently than an equal intake of reduced-fat cheese or an isocaloric amount of carbohydrate-rich foods.

Dairy Fat Inversely Associated with Metabolic Syndrome

Total and Full-Fat, but Not Low-Fat, Dairy Product Intakes are Inversely Associated with Metabolic Syndrome in Adults FREE

Michele Drehmer ✉, Mark A Pereira, Maria Inês Schmidt, Sheila Alvim, Paulo A Lotufo, Vivian C Luft, Bruce B Duncan

The Journal of Nutrition, Volume 146, Issue 1, 1 January 2016, Pages 81–89,
https://doi.org/10.3945/jn.115.220699
Published: 27 October 2015 **Article history** ▾

Conclusions: Total and especially full-fat dairy food intakes are inversely and independently associated with metabolic syndrome in middle-aged and older adults, associations that seem to be mediated by dairy saturated fatty acids. Dietary recommendations to avoid full-fat dairy intake are not supported by our findings.

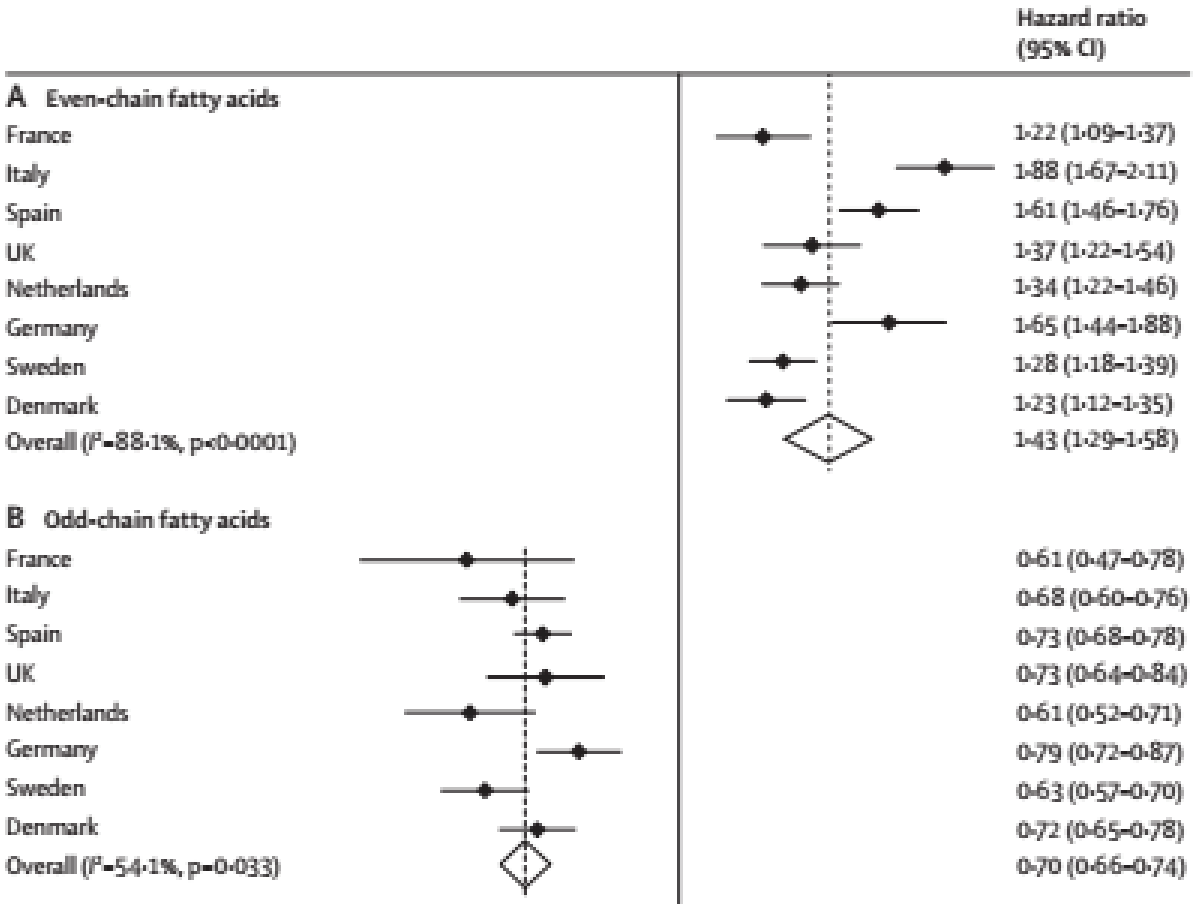
Saturated Fat in Dairy and Heart Disease

Why isn't dairy fat a risk factor for heart disease when it's high in saturated fat?

- Odd chain saturated fat
- Good trans fat
- Calcium
- Probiotics

Intake of Saturated Fat and Type 2 Diabetes

August 6, 2014



CVD Risk and High Dairy Fat Intake

Biomarkers of dairy fat intake and risk of cardiovascular disease: A systematic review and meta analysis of prospective studies

Jingjing Liang, Quan Zhou, William Kwame Amakye, **Yixiang Su** ✉, MD, MS, Professor & **Zheqing Zhang** ✉, PhD, MD, Lecturer

Accepted author version posted online: 21 Dec 2016, Published online: 05 Jul 2017

Conclusions: Higher dairy fat exposure is not associate with an increased risk of CVD.

Pooled Relative Risks of CVD for Top Third vs. Bottom Third

Fatty Acids	Pool Relative Risks
Pentadecanoic acid (15:0)	**0.94**
heptadecanoic acid (17:0)	**0.82**
trans-palmitoleic acid (trans-16:1n-7)	**0.82**

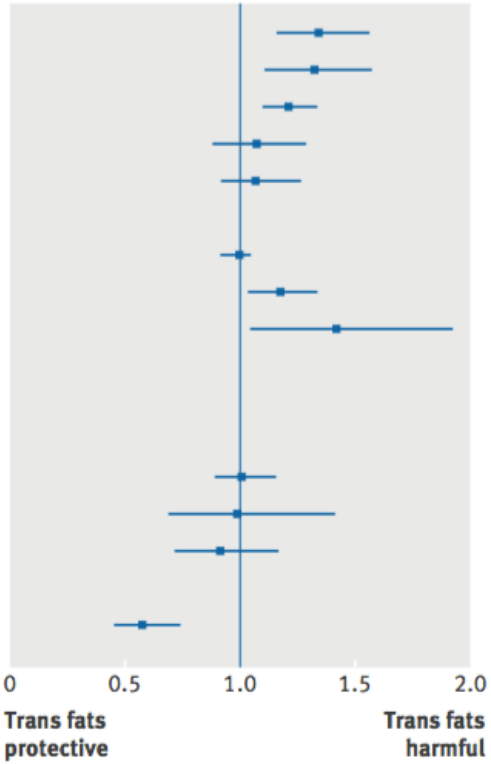
OPEN ACCESS

Intake of saturated and trans unsaturated fatty acids and risk of all cause mortality, cardiovascular disease, and type 2 diabetes: systematic review and meta-analysis of observational studies

Russell J de Souza,[1,2,3,4] Andrew Mente,[1,2,5] Adriana Maroleanu,[2] Adrian I Cozma,[3,4] Vanessa Ha,[1,3,4] Teruko Kishibe,[6] Elizabeth Uleryk,[7] Patrick Budylowski,[4] Holger Schünemann,[1,8] Joseph Beyene,[1,2] Sonia S Anand[1,2,5,8]

July 15, 2015

Outcome	No of studies /comparisons	No of events /participants	Relative risk (95% CI)	P	P_{het}	I^2 (%)
Total trans fats						
All cause mortality	2/2	2141/20 346	1.34 (1.16 to 1.56)	<0.001	0.07	70
CHD mortality	5/6	1234/70 864	1.28 (1.09 to 1.50)	0.003	0.66	0
CHD total	6/7	4579/145 922	1.21 (1.10 to 1.33)	<0.001	0.43	0
Ischemic stroke	3/4	1905/190 284	1.07 (0.88 to 1.28)	0.50	0.03	67
Type 2 diabetes	6/6	8690/230 135	1.10 (0.95 to 1.27)	0.21	0.01	66
Industrial trans fats						
All cause mortality	1/2	11 890/71 464	0.98 (0.92 to 1.04)	0.52	0.52	0
CHD mortality	2/2	3018/93 394	1.18 (1.04 to 1.33)	0.009	0.68	0
CHD total	2/2	454/69 848	1.42 (1.05 to 1.92)	0.02	0.22	34
Ischemic stroke	0	0/0	-	-	-	-
Type 2 diabetes	0	0/0	-	-	-	-
Ruminant trans fats						
All cause mortality	1/2	11 890/71 464	1.04 (0.92 to 1.18)	0.51	0.31	4
CHD mortality	2/3	3018/93 394	1.01 (0.71 to 1.43)	0.95	0.01	79
CHD total	3/4	828/73 546	0.93 (0.73 to 1.18)	0.55	0.13	46
Ischemic stroke	0	0/0	-	-	-	-
Type 2 diabetes	5/5	1153/12 942	0.58 (0.46 to 0.74)	<0.001	0.22	30

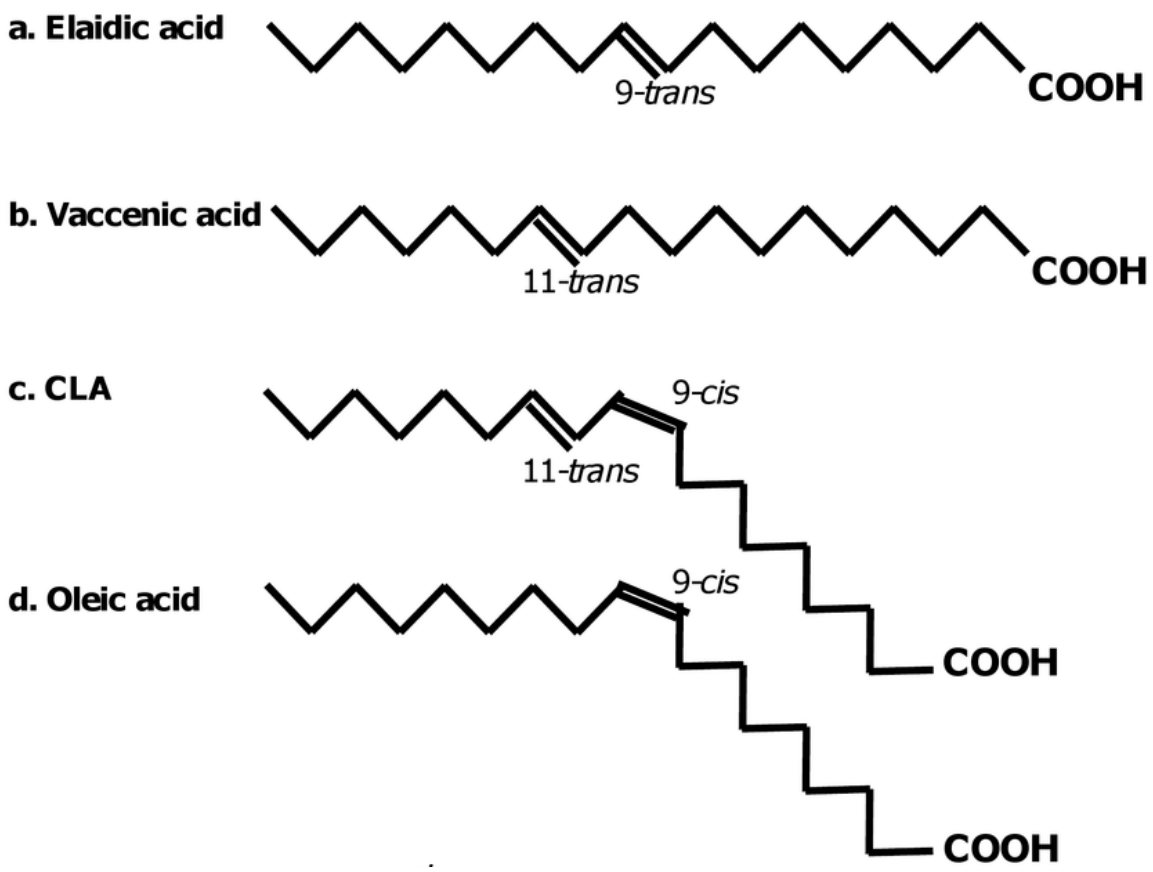


Fatty Acid Structures

Industrial

Ruminant

Ruminant



Am J Clin Nutr. 2014 May;99(5):984-91. doi: 10.3945/ajcn.113.077735. Epub 2014 Mar 12.

Effect of dairy calcium from cheese and milk on fecal fat excretion, blood lipids, and appetite in young men.

Soerensen KV[1], Thorning TK, Astrup A, Kristensen M, Lorenzen JK.

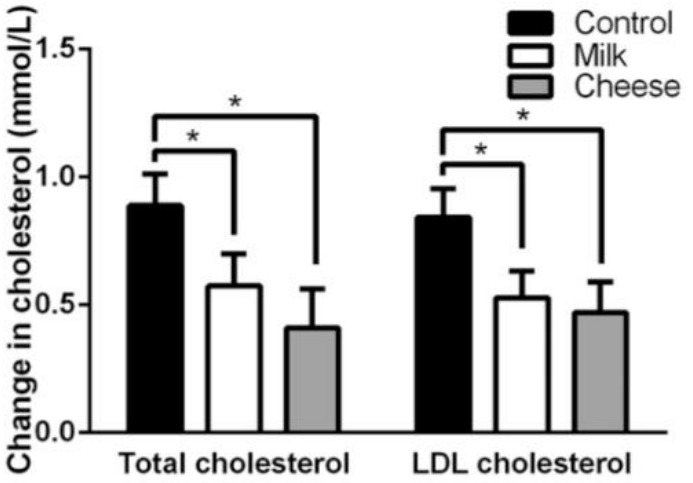


FIGURE 1. Mean ± SD changes in total and LDL cholesterol after 2-wk consumption of control, milk, and cheese diets. *Total and LDL cholesterol after both milk and cheese diets differed from after the control diet in an ANOVA adjusted for the corresponding baseline variable, diet, and period ($P < 0.05$) ($n = 15$).

Conclusions: Compared with the control diet, milk- and cheese-based diets attenuated saturated fatty acid–induced increases in total and LDL cholesterol and resulted in increased fecal fat excretion; however, effects of milk and cheese did not differ. Because the diets contained similar amounts of saturated fat, similar increases in total and LDL cholesterol could be expected; however, both milk and cheese attenuated these responses, which seem to be explained by their calcium contents.

Dairy Consumption to Prevent Cardiometabolic Diseases

Yogurt and dairy product consumption to prevent cardiometabolic diseases: epidemiologic and experimental studies FREE

Arne Astrup

The American Journal of Clinical Nutrition, Volume 99, Issue 5, 1 May 2014, Pages 1235S–1242S, https://doi.org/10.3945/ajcn.113.073015

Published: 02 April 2014

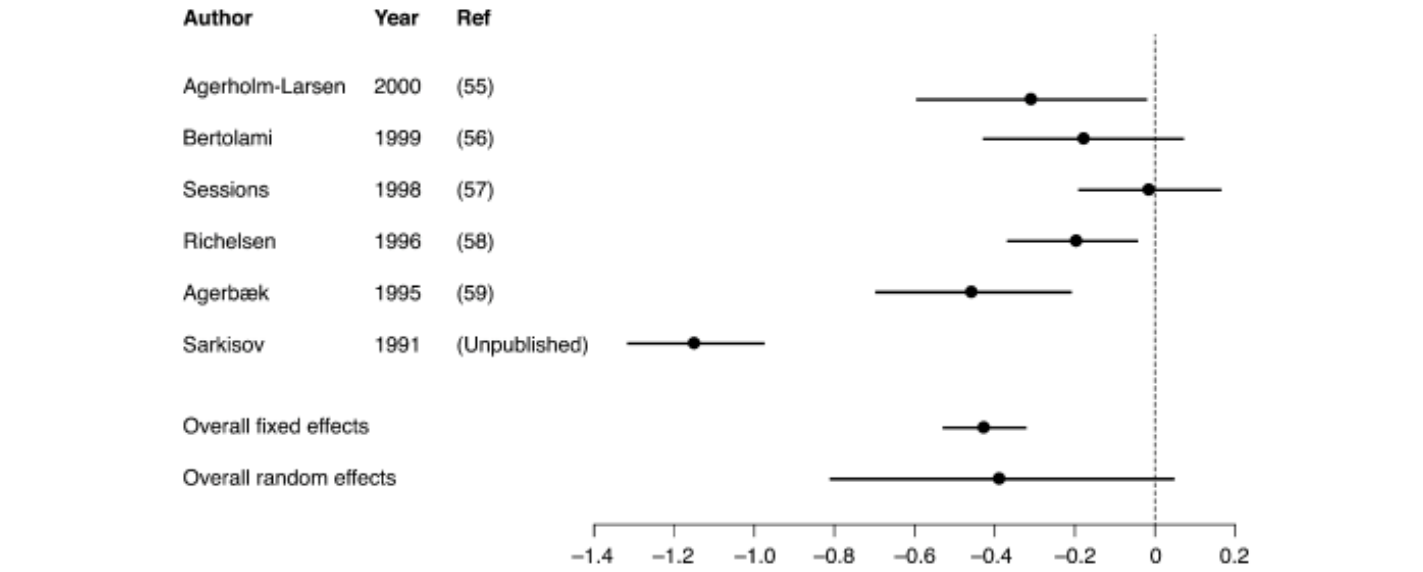


FIGURE 3. Effects of a probiotic milk product on plasma cholesterol; differences in the changes in LDL cholesterol (intervention minus control; mmol/L) with 95% CIs for 6 studies included in a meta-analysis are shown. Estimates of overall fixed and random effects are also shown. Reproduced with permission from reference 54. Ref, reference.

What does this all mean?

You can encourage full-fat dairy along side low-fat dairy!

- Full-fat dairy need not be avoided.
- Sauces may be added to the diet without feeling guilty.
- Use fatty foods like avocados, nuts, and seeds to add *taste* and *texture*.
- Whole milk is back!
- Sauces have a new lease on life, so use them without apology.

Thank You!





Questions?

Thank you to siggi's for making this presentation possible!

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