

MediDiet



Lo Studio MediDiet Aspetti Generali

Guido E. Moro

Associazione Italiana Banche del Latte Umano (AIBLUD)

Alba, 16 – 18 settembre 2016



ALLATTAMENTO MATERNO

DIETA MEDITERRANEA

DIETA MEDITERRANEA E
ALLATTAMENTO ?

...1981

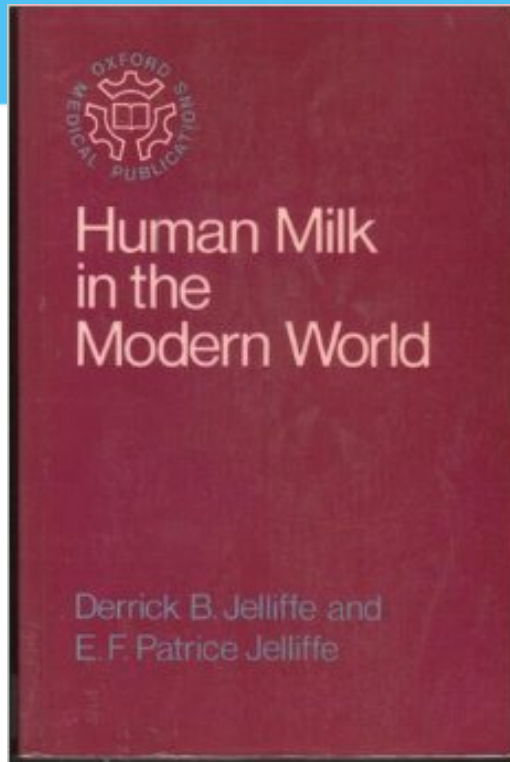


“In all mammalian species the reproductive cycle comprises both pregnancy and breast-feeding: in the absence of latter, none of these species, man included, could have survived”

Vahlquist B. Report of the WHO Collaborative Study on Breast-feeding. Geneva 1981



...1978



*Derrick and Patrice Jelliffe
Oxford University Press 1978*

“Breast-feeding is a matter of concern in both industrialised and developing countries because it has such a widerange of often underappreciated consequences”.

“Breastfeeding will be relevant to present-day interest in the consequences of infant nutrition on subsequent adult health”.

...2016

Breastfeeding 1

www.thelancet.com Vol 387 January 30, 2016

Results from epidemiological studies and growing knowledge of the roles of epigenetics, stem cells, and the developmental origins of health and disease lend strong support to the ideas proposed by Vaniquist and the Jelliffes.

*Cesar G Victora, Rajiv Bahl, Aluísio J D Barros, Giovanny V A França, Susan Horton, Julia Krasevec, Simon Murch, Mari Jeeva Sankar, Neff Walker, Nigel C Rollins, for The Lancet Breastfeeding Series Group**

...Key Messages

Breastfeeding 1 www.thelancet.com Vol 387 January 30, 2016

Breastfeeding in the 21st century: epidemiology, mechanisms, and lifelong effect

Cesar G Victora, Rajiv Bahl, Aluisio J D Barros, Giovanni V A França, Susan Horton, Julia Krusevec, Simon Murch, Mari Jeeva Sankar, Neff Walker, Nigel C Rollins, for The Lancet Breastfeeding Series Group*

- Children who are breastfed for longer periods have lower infectious morbidity and mortality, fewer dental malocclusions, and higher intelligence than do those who are breastfed for shorter periods, or not breastfed. This inequality persists until later in life. Growing evidence also suggests that breastfeeding might protect against overweight and diabetes later in life.

Global distribution of breastfeeding at 12 months
Data from 153 countries between 1995 and 2013.



ALLATTAMENTO MATERNO

DIETA MEDITERRANEA

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DEFINITION

The **Mediterranean diet** is a modern nutritional recommendation originally inspired by the traditional dietary patterns of **Greece, Southern Italy** and **Spain**.

The principal aspects of this diet include proportionally high consumption of **olive oil, legumes, unrefined cereals, fruits** and **vegetables**, moderate to high consumption of **fish**, moderate consumption of dairy products (mostly as cheese and yogurt), moderate wine consumption, and low consumption of meat and meat products.



PATRIMONIO UNESCO

Il 17 Novembre 2010,
l'UNESCO ha riconosciuto
questo modello alimentare
come **Patrimonio Culturale
Immateriale dell'Umanità**
in questi paesi dell'area
Mediterranea.



Anni'40-'50...

The Rockefeller Foundation's Study

1948-1953

Aspettativa di vita più lunga
rispetto al resto della popolazione
greca e minor incidenza di
patologie coronariche



- Simile intake calorico
- Minor consumo di carne e zuccheri
- Maggior consumo di frutta, verdura ed olio d'oliva



Isola di Creta

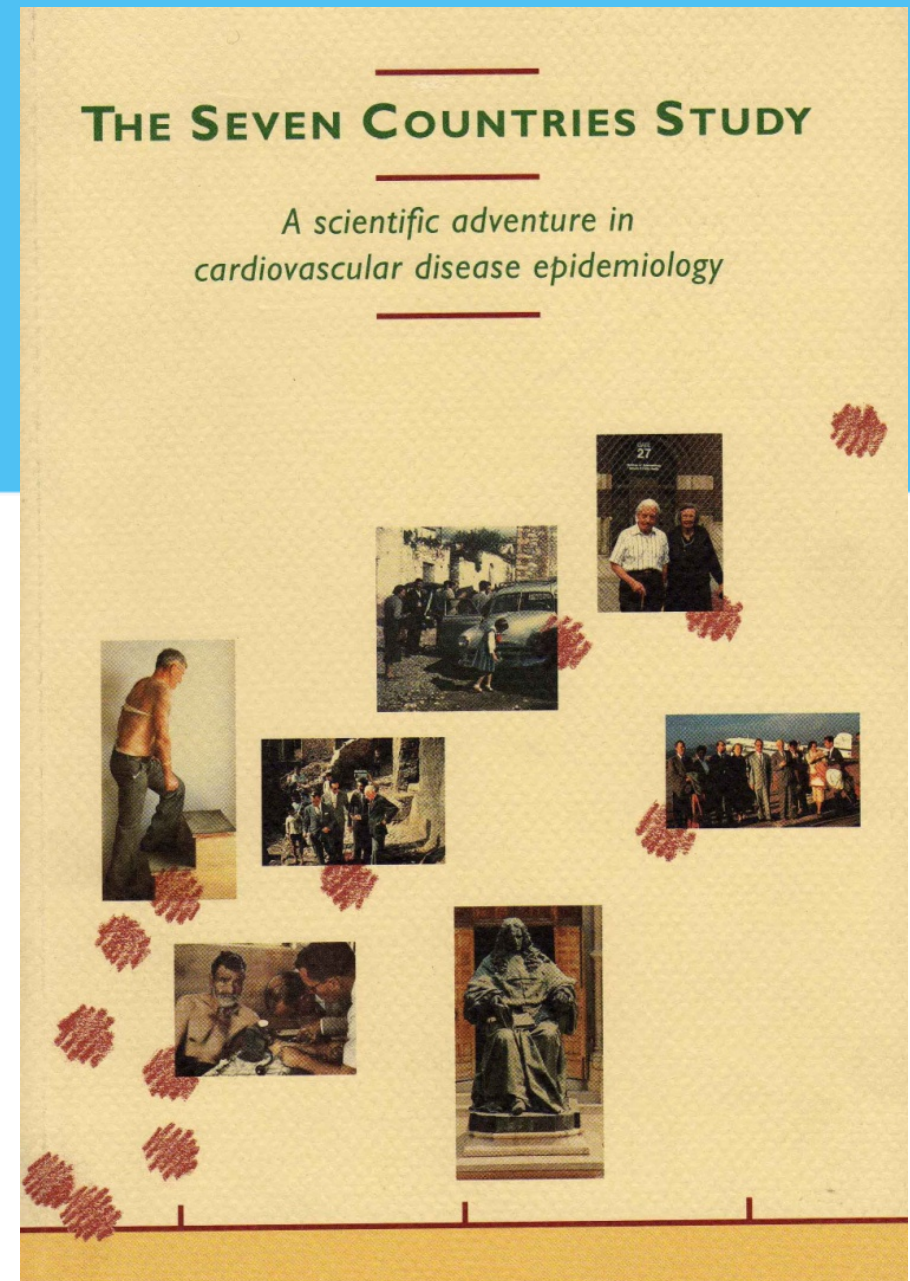
“Padre” degli studi sulla dieta mediterranea



Ancel
Keys 1914-2004

**Studio di coorte iniziato
alla fine del 1950**
(12.763 maschi tra 40 e 59 anni)

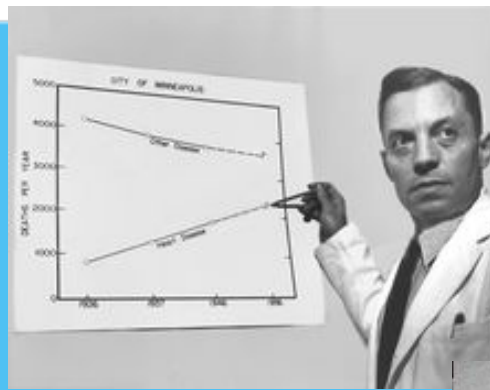
**Finlandia, Olanda, Italia, USA, Grecia,
Giappone, Jugoslavia**



The Seven Countries Study

Ridotta incidenza di malattie coronariche nelle popolazioni a “Dieta Mediterranea”

Colesterolemia correlata con le abitudini alimentari e lo stile di vita



Keys AB, Keys M. New York: Doubleday 1975
Keys AB. Cambridge: Mass Harvard University Press 1980

1975...

Mediterranean diet :

“... **homemade minestrone**, **pasta** of all varieties, with **tomato sauce** and a sprinkling of **Parmesan**, only occasionally enriched with a few pieces of meat or served with a **small fish of the place**, **beans** and **macaroni** ..., so much **bread**, never removed from the oven more than a few hours before being eaten, and nothing with which spread it, lots of **fresh vegetables** sprinkled with **olive oil**, a small portion of meat or fish maybe a couple of times a week and **always fresh fruit** for dessert”

EAT WELL AND STAY WELL

Ansel & Margaret Keys

What YOU should know about the latest medical discoveries about how your diet affects your heart, arteries, and blood cholesterol level. Saturated and unsaturated fats and modern reducing clearly and simply explained.

How to select and prepare foods for eating pleasure and health, with appetizing recipes and menus combining the latest nutritional knowledge and gourmet satisfaction.

FOREWORD BY

Paul Dudley White, M.D.



HOW TO EAT WELL AND STAY WELL THE MEDITERRANEAN WAY

By the Authors of the Best-selling Book
EAT WELL AND STAY WELL

Ansel and Margaret Keys

*Foreword by Jean Mayer,
Professor of Nutrition, Harvard University School of Public Health*

Here is the real food of the ordinary people of Greece, Italy, and the Mediterranean section of France and Spain: the wholesome, its beautiful appearance, its ease of preparation, its economy. The recipes have been tested in the Keys' homes in southern Italy and in Minnesota. Harvard's Dr. Jean Mayer writes, in his Foreword, "All of you who read this book and try the recipes, and eventually adopt them as the backbone of your daily cooking, will know that at last you have found a way to preserve your health while increasing your enjoyment of life."

...Anni 2000



...Oggi

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PubMed mediterranean diet Search

Article types: Clinical Trial, **Review**, Customize

Text availability: Abstract, Free full text, Full text

PubMed Commons: Reader comments, Trending articles

Publication dates: 5 years, **10 years**, Custom range...

Species: Humans, Other Animals

Search results: Items: 1 to 20 of 626

Filters activated: Review, published in the last 10 years. Clear all to show 4164 items.

- [The Mediterranean diet, its components, and cardiovascular disease.](#)
1. Widmer RJ, Flammer AJ, Lerman LO, Lerman A. Am J Med. 2015 Mar;128(3):229-38. doi: 10.1016/j.amjmed.2014.10.014. Epub 2014 Oct 15. **Review.** PMID: 25447615 **Free PMC Article**
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- [Mediterranean diet and health status: an updated meta-analysis and a proposal for a literature-based adherence score.](#)
2. Sofi F, Macchi C, Abbate R, Gensini GF, Casini A. Public Health Nutr. 2014 Dec;17(12):2769-82. doi: 10.1017/S1368980013003169. Epub 2013 Nov 29. **Review.** PMID: 24476641
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- [Mediterranean diet for breast cancer prevention and treatment in postmenopausal women.](#)
3. Potentas E, Witkowska AM, Zujko ME. Prz Menopauzalny. 2015 Dec;14(4):247-53. doi: 10.5114/pm.2015.56381. Epub 2015 Dec 22. **Review.** PMID: 26848297 **Free PMC Article**
[Similar articles](#)
- [Mediterranean Diet: From a Healthy Diet to a Sustainable Dietary Pattern.](#)
4. Dernini S, Berry EM. Front Nutr. 2015 May 7;2:15. doi: 10.3389/fnut.2015.00015. eCollection 2015. **Review.** PMID: 26284249 **Free PMC Article**
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Results by year

Related searches: mediterranean diet health, mediterranean diet score, mediterranean diet and cardiovascular disease, mediterranean diet cognitive, mediterranean diet cancer

Titles with your search terms: Primary prevention of cardiovascular disease with a **Mediterranean diet**. [N Engl J Med. 2013], **Mediterranean Diet** and Age-Related Cognitive Decline: A Randomized [JAMA Intern Med. 2015], A Palaeolithic **diet** improves glucose tolerance more than a **Mediterranean** [Diabetologia. 2007]

...Oggi

REVIEW

THE AMERICAN
JOURNAL of
MEDICINE®

The Mediterranean Diet, its Components, and Cardiovascular Disease



R. Jay Widmer, MD, PhD,^a Andreas J. Flammer, MD,^a Lilach O. Lerman, MD, PhD,^b Amir Lerman, MD^a

^aDivision of Cardiovascular Diseases and ^bDivision of Nephrology and Hypertension, Mayo School of Graduate Medical Education, Rochester, Minn.

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KEYWORDS: Cardiovascular disease; Mediterranean diet



Review

The Effect of the Traditional Mediterranean-Style Diet on Metabolic Risk Factors: A Meta-Analysis

Marissa Garcia¹, Jessica D. Bihuniak², Julia Shook¹, Anne Kenny³, Jane Kerstetter¹ and Tania B. Huedo-Medina^{1,*}

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² NYU Steinhardt, Department of Nutrition and Food Studies, New York University, New York, NY 10003, USA; jdb13@nyu.edu

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Received: 23 December 2015; Accepted: 10 March 2016; Published: 15 March 2016

DOI: 10.5114/pm.2015.56381

Prz Menopauzalny 2015; 14(4): 247-253

REVIEW PA

Mediterranean diet for breast cancer prevention and treatment in postmenopausal women

Elżbieta Potentas, Anna Maria Witkowska, Małgorzata Elżbieta Zujko

Department of Food Commodities Science and Technology, Medical University of Białystok, Poland



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Available online at www.sciencedirect.com

Nutrition, Metabolism & Cardiovascular Diseases

journal homepage: www.elsevier.com/locate/nmcd



Exploring the path of Mediterranean diet on 10-year incidence of cardiovascular disease: The ATTICA study (2002–2012)



D.B. Panagiotakos^{a,*}, E.N. Georgousopoulou^a, C. Pitsavos^b, C. Chrysohoou^b, I. Skoumas^b, E. Pitaraki^a, G.A. Georgiopoulos^b, M. Ntertimani^a, A. Christou^a, C. Stefanadis^b, The ATTICA Study Group

frontiers
in Public Health

REVIEW
published: 28 April 2015
doi: 10.3389/fpubh.2015.00069

Effect of Mediterranean diet in diabetes control and cardiovascular risk modification: a systematic review

Dana Sleiman, Marwa R. Al-Badri and Sami T. Azar*

Department of Internal Medicine, Division of Endocrinology, American University of Beirut-Medical Center, Beirut, Lebanon

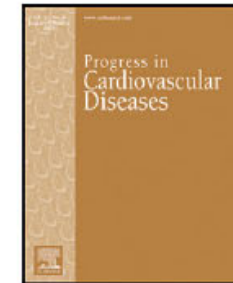


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Benefits of the Mediterranean Diet: Insights From the PREDIMED Study



Miguel A. Martínez-González^{a, b, c, *}, Jordi Salas-Salvadó^{b, c, d}, Ramón Estruch^{b, c, e},
Dolores Corella^{c, f}, Montse Fitó^{c, g}, Emilio Ros^{c, e}, for the PREDIMED INVESTIGATORS¹

**Studio multicentrico randomizzato su 7447
soggetti a rischio di malattie cardiovascolari**

Spagna, 2003 - 2011



Benefits of the Mediterranean Diet: Insights From the PREDIMED Study

Miguel A. Martínez-González^{a, b, c, *}, Jordi Salas-Salvadó^{b, c, d}, Ramón Estruch^{b, c, e}, Dolores Corella^{c, f, j}, Montse Fitó^{c, g}, Emilio Ros^{c, e}, for the PREDIMED INVESTIGATORS¹

Mechanisms of protection by the Mediterranean diet

CVD protection by the MeDiet can be explained by a beneficial effect on classical and emergent CV risk factors.^{56,99–101} Although the underlying mechanisms of protection against CVD by the MeDiet are not fully understood, the richness of this dietary pattern in antioxidant¹⁰¹ and anti-inflammatory molecules⁹⁷ is likely to be relevant. On one hand, this can be due to their anti-oxidant capacity, such as cell redox state modulating enzyme systems. On the other hand, nutrients have the capacity of modulating gene and protein expression and, subsequently, metabolite production. Previous nutrigenomic studies have revealed that the MeDiet has a protective effect on the expression of several proatherogenic genes involved in vascular inflammation, foam cell formation, and thrombosis.^{102,103}

Polyphenol intake from MEDITERRANEAN diet decrease inflammatory biomarkers related to atherosclerosis: A sub-study of the PREDIMED trial

Medina-Remón A, Casas R, Tresserra-Rimbau A, et All PREDIMED Study Investigators. Br J Clin Pharmacol. 2016 Apr 21. doi: 10.1111/bcp.12986. [Epub ahead of print] Review.

Conclusions:

increase in polyphenol intake measured as urinary excretion are associated with decreased inflammatory biomarkers, suggesting a dose-dependent anti-inflammatory effect of polyphenols.

In addition, high polyphenol intake improve cardiovascular risk factors, mainly Blood Pressure and lipid profile

RICCHI IN POLIFENOLI ...





ALLATTAMENTO MATERNO

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ALLATTAMENTO ?



Allattamento al seno e uso del latte materno/umano

**Position Statement 2015 di Società Italiana di Pediatria (SIP),
Società Italiana di Neonatologia (SIN), Società Italiana delle Cure
Primarie Pediatriche (SICuPP), Società Italiana di Gastroenterologia
Epatologia e Nutrizione Pediatrica (SIGENP)**

^{1,10} Riccardo Davanzo, ^{2,10} Claudio Maffei, ^{3,10} Marco Silano, ⁴ Enrico Bertino, ⁵ Carlo Agostoni
⁶ Teresa Cazzato, ⁴ Paola Tonetto, ⁷ Annamaria Staiano, ⁸ Renato Vitiello, ⁹ Fabio Natale
Gruppo di Lavoro *ad hoc* di SIP, SIN, SICuPP, SIGENP



La dieta va variata con assunzione moderata dei vari alimenti e bevande.

L'importanza di una dieta speciale, come prerequisito per una buona produzione di latte, va quindi smitizzata.




Contents lists available at ScienceDirect

Nutrition

journal homepage: www.nutritionjrn.com



Review

Does maternal diet during pregnancy and lactation affect outcomes in offspring? A systematic review of food-label approaches  CrossMark

Ruolo specifico della dieta mediterranea in allattamento?

Meryn J. Netting B.Sc., B.N.D.^a,
Philippa F. Middleton M.F.H., Grad.Dip.Lib.St., B.Sc.(Hons.)^b,
Maria Makrides Ph.D., B.Sc., B.N.D.^{a,b,d,*}

Conclusion:
However, maternal consumption of Mediterranean dietary patterns, diets rich in fruits and vegetables, fish, and vitamin D-containing foods were suggestive of benefit, requiring further evaluation.

Impact of maternal nutrition on breast-milk composition: a systematic review^{1,2}

Francesca Bravi,^{3*} Frank Wiens,⁵ Adriano Decarli,^{3,6} Alessia Dal Pont,³ Carlo Agostoni,^{4,7} and Monica Ferraroni³

³Laboratory of Medical Statistics, Biometry and Epidemiology “G.A. Maccacaro,” and ⁴Pediatric Clinic, Department of Clinical Sciences and Community Health, Università degli Studi di Milano, Milan, Italy; ⁵Nutricia Research, Utrecht, Netherlands; ⁶Unit of Medical Statistics, Biometry and Bioinformatics, Fondazione IRCCS Istituto Nazionale Tumori, Milan, Italy; and ⁷Fondazione IRCCS Ospedale Maggiore Policlinico, Milan, Italy

ABSTRACT

Background: It is widely reported that maternal diet influences the nutritional composition of breast milk. The amount of variability in human milk attributable to diet remains mostly unknown. Most original studies that reported a dietary influence on breast-milk composition did not assess diet directly, did not quantify its association with milk composition, or both.

Objective: To gather the quantitative evidence on this issue, we carried out a systematic PubMed and Medline search of articles published up to January 2015 and filtered the retrieved articles according to predefined criteria.

Design: Only studies that provided quantitative information on both maternal diet and milk data, measured in individual healthy mothers of healthy term infants and based on an original observational or experimental design, were included. Exclusion criteria were a focus on supplements, transfer of toxic metals or other contaminants from diet to milk, or on marginally nourished women.

Results: Thirty-six publications—including data on 1977 lactating women—that matched our criteria were identified. Seventeen studies investigated dietary effects on fatty acids in breast milk. The rest included studies that focused on a diverse spectrum of other nutritional properties of breast milk. The largest evidence, in terms of number of articles, for any link between maternal diet and a nutritive property of breast milk came from 3 studies that supported the link between fish consumption and high docosahexaenoic acid in breast milk and 2 studies that reported a positive correlation between dietary vitamin C and milk concentrations of this vitamin.

Conclusions: The available information on this topic is scarce and diversified. Most of the evidence currently used in clinical practice to make recommendations is limited to studies that only reported indirect associations. *Am J Clin Nutr* doi: 10.3945/ajcn.115.120881.

MediDiet



Mediterranean Diet and Lactation

MediDiet Study

Exploratory, non-comparative, multi-centre, mono-country study.

Cooperation between the AIBLUD Research Line and the Department of Human Milk Research, Danone Nutricia Early Life Nutrition.



Medidiet Study : Hypothesis



We predict that breast milk of women adhering to Mediterranean diet is characterized by relatively **low levels of oxidative damage** to its ingredients and a relatively **high anti-oxidative capacity**.



Medidiet Study : Objectives

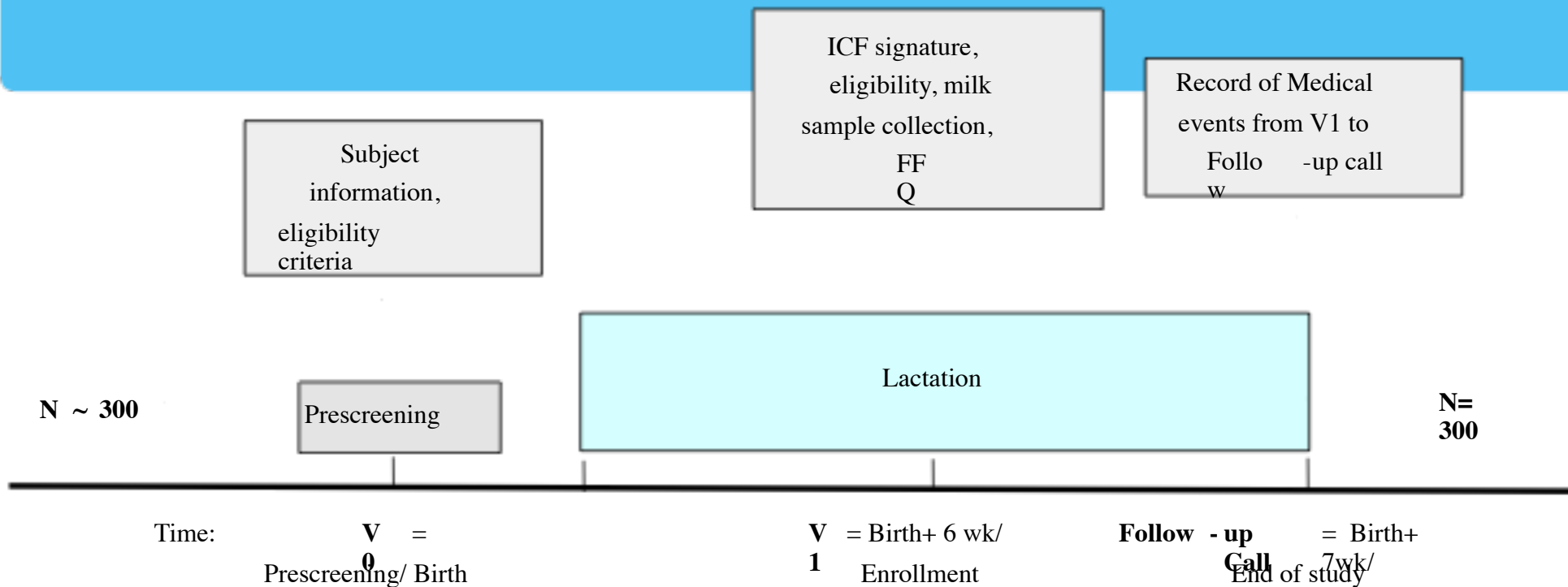
Primary :

- Association of the Mediterranean diet with **oxidative status** and **antioxidative capacity of human milk fatty acid (FA) profile** and/or cholesterol level of human milk.

Secondary :

- Association between the oxidative status and antioxidative capacity of human milk and **lifestyle parameters** other than diet, i.e. (non-)smoking status or exposure to smoking of the lactating woman and her level of physical activity.

Medidiet: Study Diagram

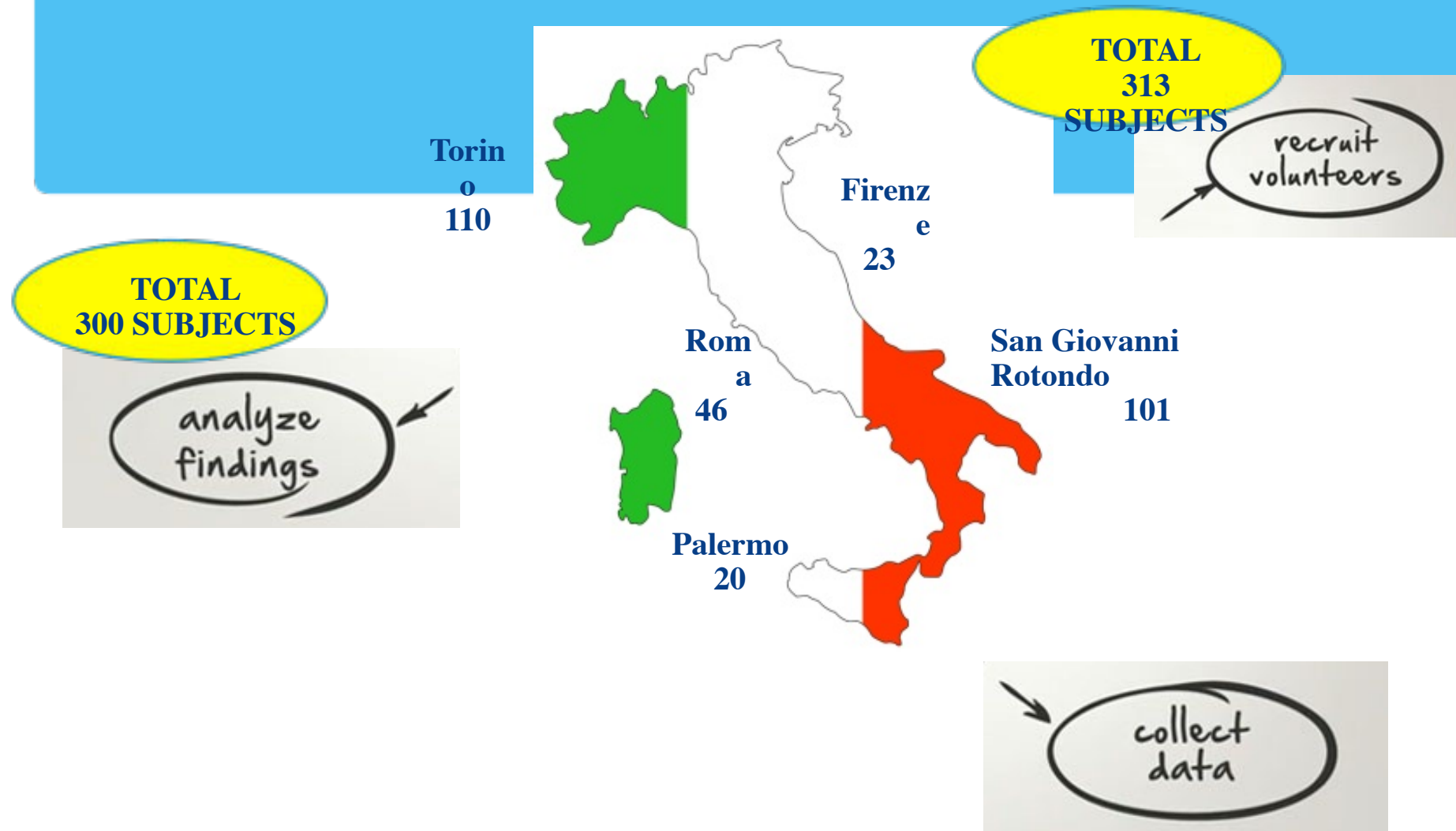


Medidiet Study : Subjects



Ca. **300 Italian mothers**, aged 25-41, of healthy term-born infants each providing one milk sample at 6 weeks \pm 1 week of delivery.

Overview on recruitment



Ongoing Analyses



- **Lab analysis milk samples :**

Macro nutrients

Lipids

Oxidative damage to proteins

Lipid peroxidation

Antioxidative capacity

Volatiles



- **Dietary data analysis**

Food Frequency Questionnaires

14 questions on general dietary habits;

78 foods/ beverages;

5 questions on alcohol

CONFIDENZIALE Protocollo 31060 MD	N° PAESE 380	SIGLA CENTRO	N° SOGGETTO.	N° CARD 4	1-11
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DIETA ABITUALE DOPO IL PARTO

Intervistatore: 12-13

Data intervista: g g m m aa a a
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LE SEGUENTI DOMANDE SI RIFERISCONO ALLE SUE ABITUDINI ALIMENTARI DAL MOMENTO DEL PARTO AD OGGI

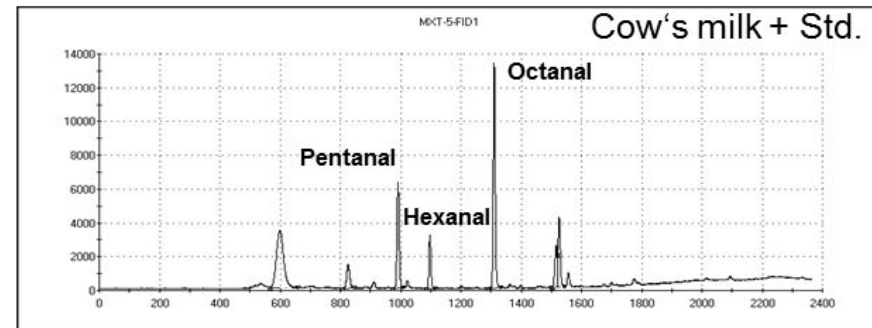
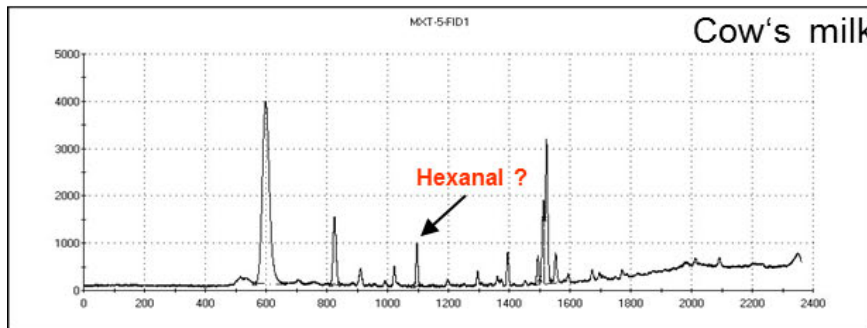
Che condimento ha usato per:

1=Nessuno	2=Olio di oliva	3=Olio di girasole, mais, soya
4=Olio di arachidi	5=Olio di semi vari o non specificato	6=Burro
7=Margarina	8=Panna, besciamella, lardo o strutto	9=Non so

	1° condimento	2° condimento (solo in caso di equivalenza di consumo)	
Condire la verdura cruda	<input type="checkbox"/>	<input type="checkbox"/>	22-23
Cucinare o condire la verdura cotta	<input type="checkbox"/>	<input type="checkbox"/>	24-25
Cucinare la carne	<input type="checkbox"/>	<input type="checkbox"/>	26-27
Friggere	<input type="checkbox"/>	<input type="checkbox"/>	28-29
Condire la pasta o il riso (anche nel sugo)	<input type="checkbox"/>	<input type="checkbox"/>	30-31
Come definirebbe il suo consumo di condimenti? 1= Scarso 2= Medio 3= Elevato		<input type="checkbox"/>	32
Tende a togliere la parte grassa della carne? 1= No 2= Si 3= Nessun consumo		<input type="checkbox"/>	33

Milk parameters analysed

Volatiles	Method	Unit
- hexanal - total profile of volatile compounds	eNOSE	ppm arbitrary units



Original Article

Quantification of hexanal as an index of lipid oxidation in human milk and association with antioxidant components

Ingrid Elisa and David D. Kitts*

Food, Nutrition, and Health, Faculty of Land and Food Systems, University of British Columbia, 2205 East Mall, Vancouver, B.C., V6T 1Z4, Canada

(Received 1 December, 2010; Accepted 31 December, 2010; Published online 3 September, 2011)

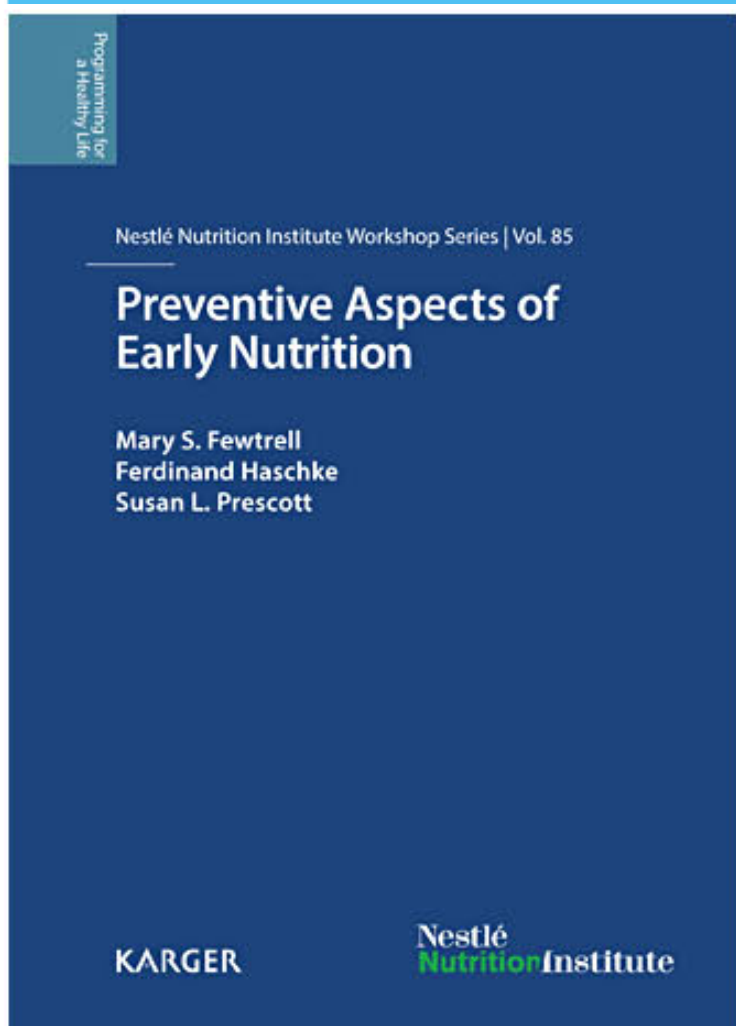
Hexanal, a secondary product of lipid oxidation, was identified as the major volatile aldehyde generated from lipid peroxidation in human milk. Hexanal was quantified in human milk using solid phase microextraction-gas chromatography/flame ionization detection that required correction for recovery based on the fat content

indicator of lipid oxidation products in some food systems, but has not previously been used to quantitate the onset of lipid oxidation in human milk. Factors that may impede the progression of lipid oxidation in human milk include the presence of antioxidant vitamins, E and C. While we have previously established



MediDiet





“Through exposure to the flavors of breast milk, which reflect the foods within the mother’s diet, infants become more accepting of the foods within their culture”

“In contrast, exclusively formula-fed children, who do not benefit from the ever-changing flavor profile of the breast milk, learn only about the flavour of their formula”

2016

Medidiet Study Preliminary data



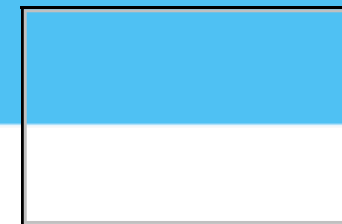
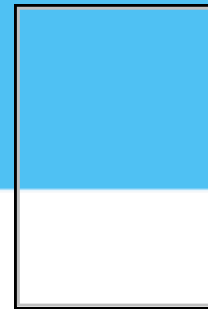
Distribution of breast milk macronutrient composition among 300 women. Italy, 2012 - 2014

	Mean	SD	Minimum	P10	Median	P90	Maximum	USD A\$
Fat g/100ml	3.05	1.26	0.65	1.45	1.90	4.65	7.15	4.4
Protein g/100ml	0.90	0.18	0.15	0.70	0.90	1.10	1.40	1.0
CHO g/100ml	6.80	0.16	6.20	6.60	6.80	7.00	7.20	6.9
Energy kcal/100ml	57.2	10.1	37.00	44.0	56.50	71.0	88.00	70.00

USD: National Nutrient Database for Standard Reference <http://www.nrc.gov> retrieved 08/07/2014.

P10: 10th percentile; P90: 90th percentile; SD: Standard Deviation; TS: total solids.

Medidiet Study Preliminary data



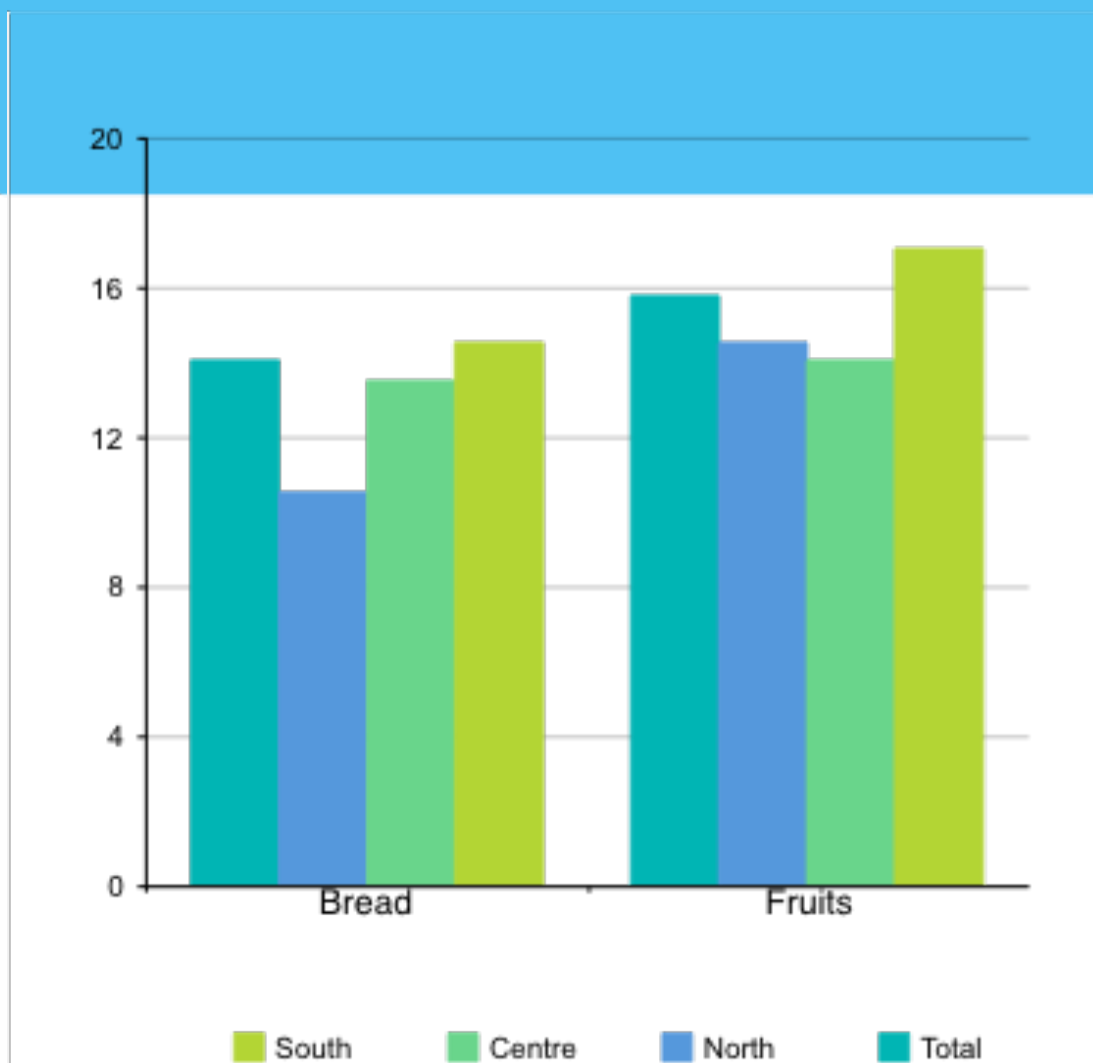
	Olive Oil	Other Fat used
To dress raw vegetables	99,97%	-----
To cook or season cooked vegetables	98,33%	Butter 6,00%
To cook meat	93,00%	Butter 5,33%
To fry	43,67%	Seeds Oil 37,33%
To season pasta or rice (also used for sauce)	99,33%	Butter 5,33%



Usual diet during lactation

Selected food groups by Geographical area

Higher intake of fruit and bread in South Italy



Ma mangiare di fronte al
mare si puo' considerare
dieta mediterranea?

