Proprietà nutrizionali del formaggio. Ruolo della frazione lipidica ed effetti sul metabolismo dell'uomo

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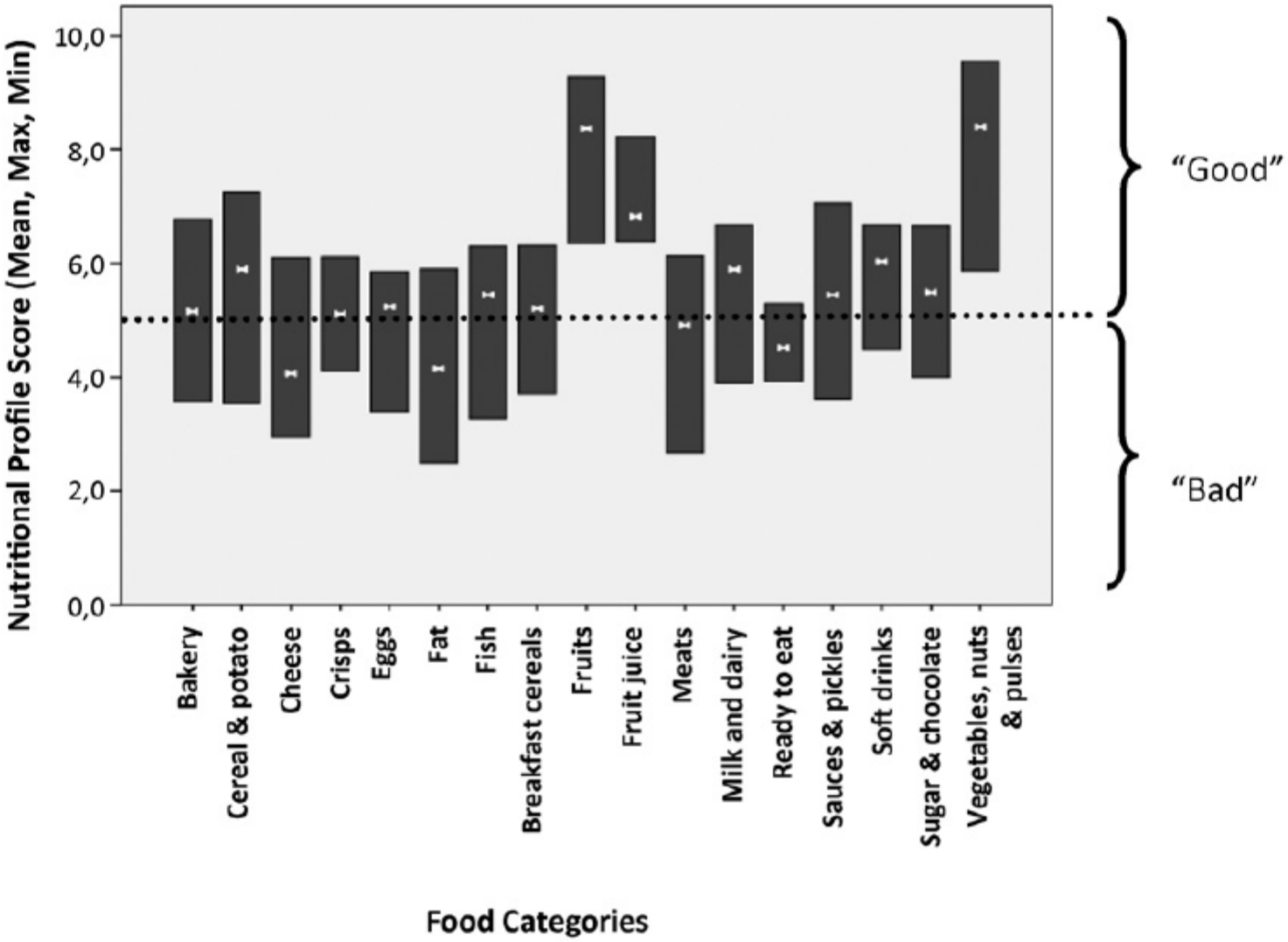
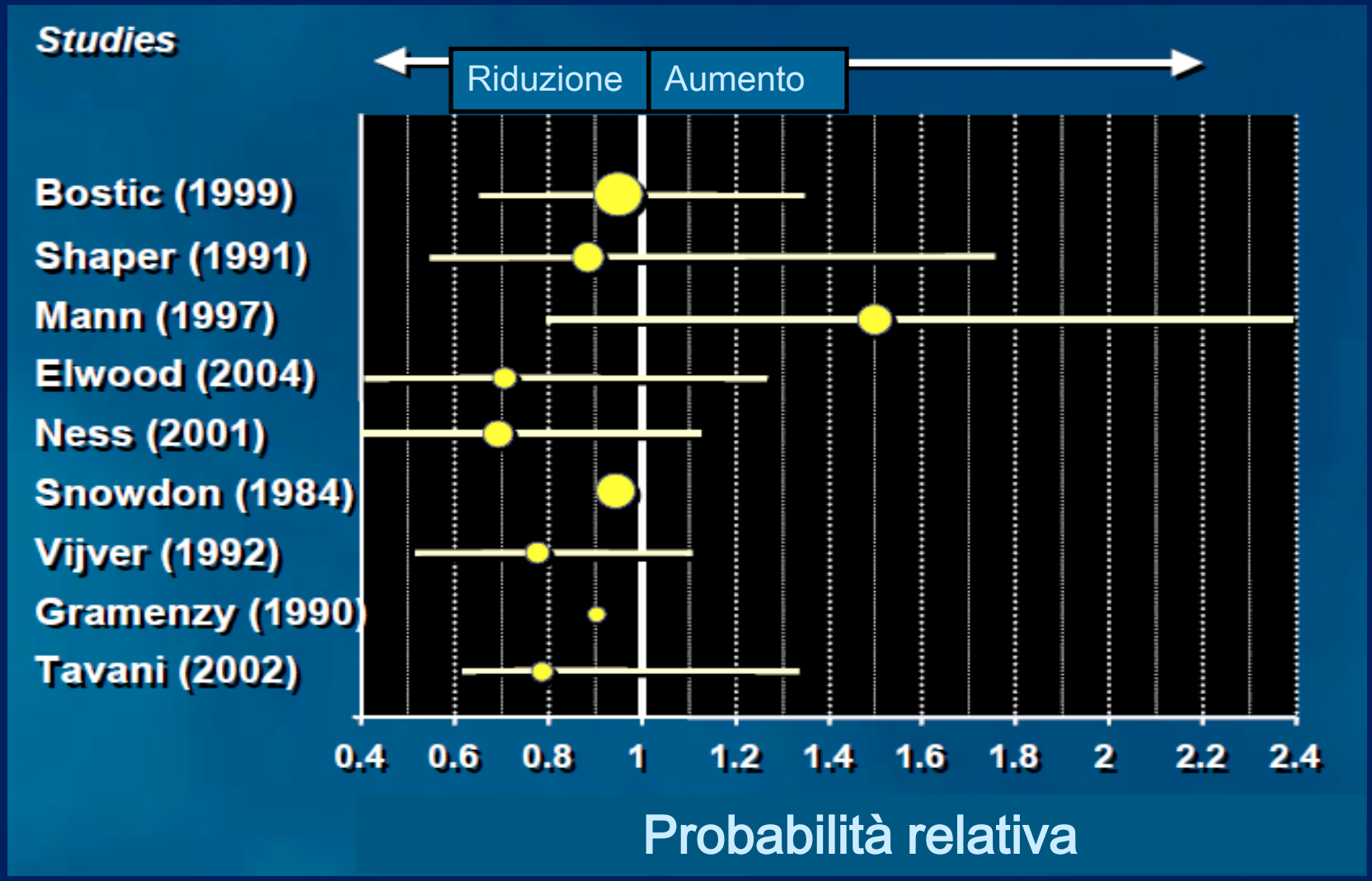
Healthy food / Atherosclerosis Supplements 10 (2009) 1–11



Prodotti lattiero-caseari e incidenza di malattie cardiovascolari



Modificato da Elwood et al. (2004) *Eur J Clin Nutr*. 58:718

AJCN. First published ahead of print January 26, 2011 as doi: 10.3945/ajcn.110.000430.

Dairy consumption and 10-y total and cardiovascular mortality: a prospective cohort study in the Netherlands[1–3]

R Alexandra Goldbohm, Astrid MJ Chorus, Francisca Galindo Garre, Leo J Schouten, and Piet A van den Brandt

Design: The NLCS was initiated in 120,852 men and women aged 55–69 y at baseline in 1986. After 10 y of follow-up, 16,136 sub- jects with complete dietary information had died. Twenty-nine per- cent (men) and 22% (women) of these deaths were due to IHD or stroke. The validated 150-item food-frequency questionnaire provided detailed information on dairy products.

In conclusion, given the postulated risk-enhancing effects of dairy fat and the protective effects of low-fat dairy products, the role of dairy consumption in mortality generally appears to be neutral, particularly in men.

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

Am J Clin Nutr 2011;93:158–71.

Overall, this study showed no association between milk and total mortality, but modest inverse associations with CVD. Milk and dairy products cannot be recommended to benefit CVD health outcomes on the basis of this dose-response meta-analysis. Intake of milk and dairy products does not seem to be harmful, but whether the association is truly inverse cannot be firmly concluded. Further studies are warranted to investigate the relation between consumption of dairy products and risk of CVD and to investigate different dairy components separately with sufficient follow-up to assess multiple health outcomes.

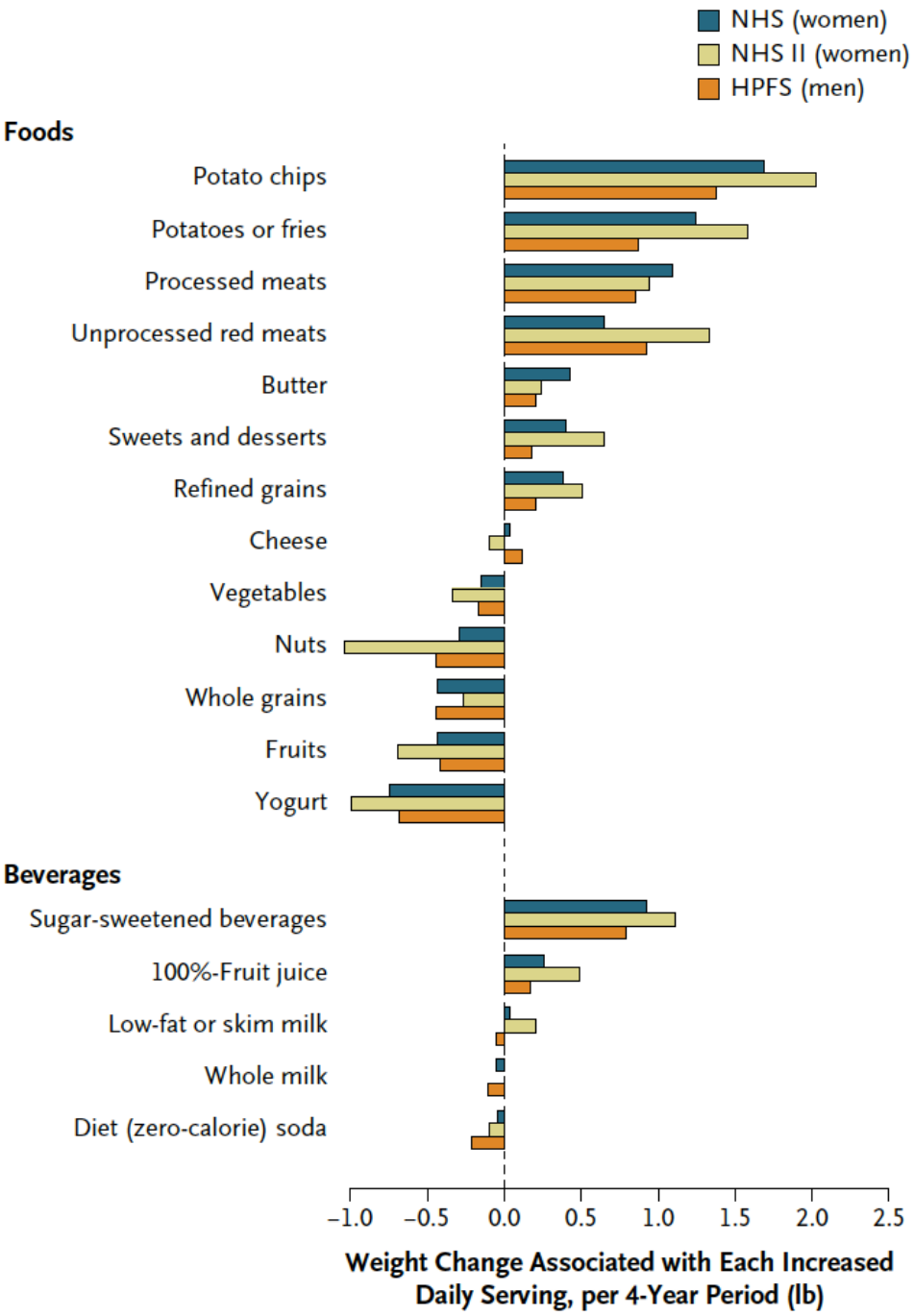
The NEW ENGLAND JOURNAL of MEDICINE

N Engl J Med 2011;364:2392-404.

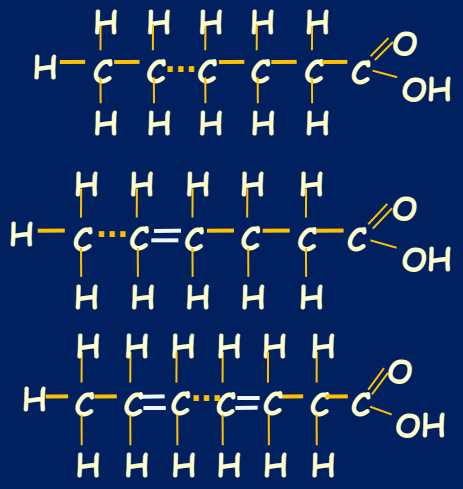
ORIGINAL ARTICLE

Changes in Diet and Lifestyle and Long-Term Weight Gain in Women and Men

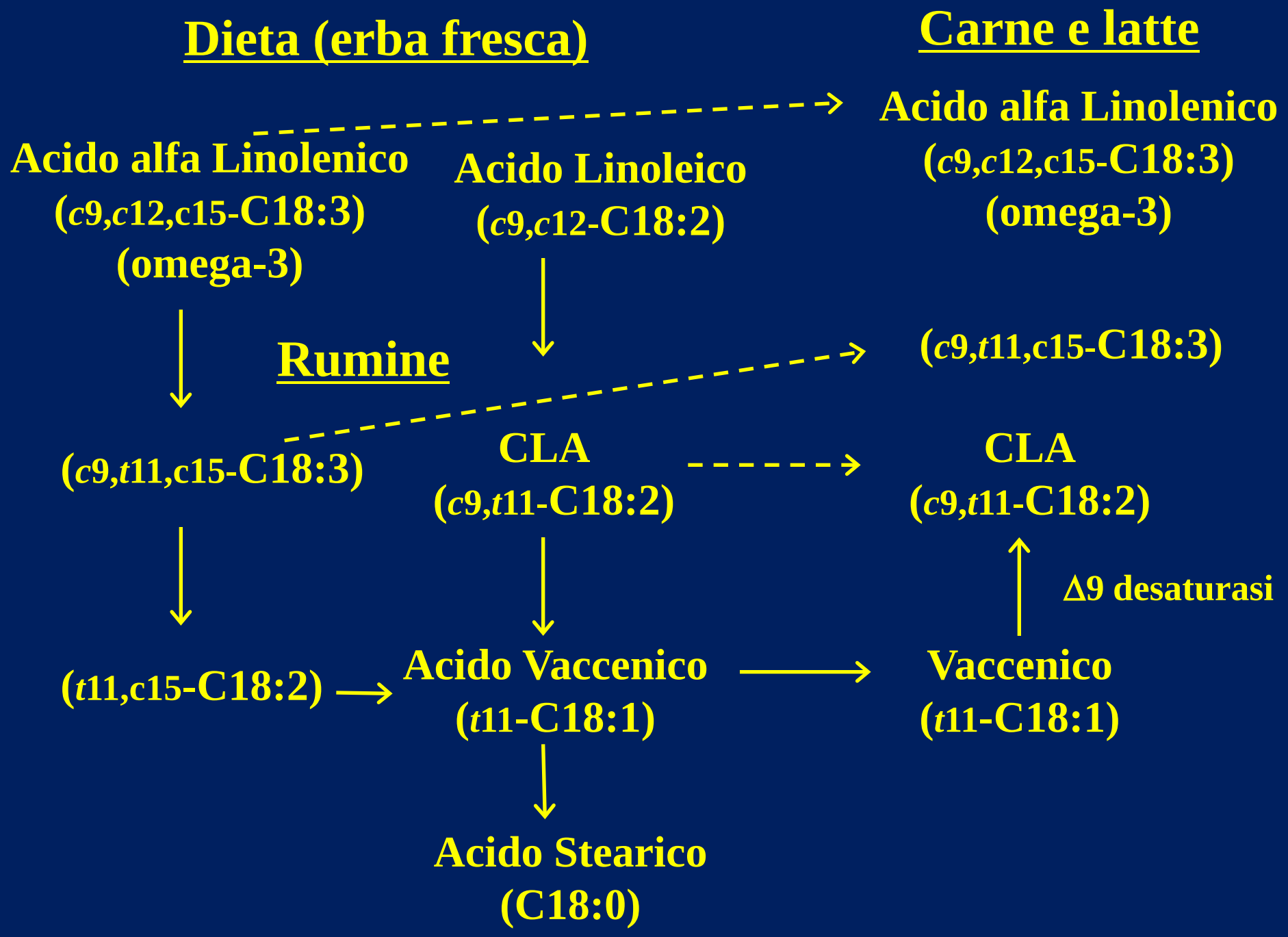
Dariush Mozaffarian, M.D., Dr.P.H., Tao Hao, M.P.H., Eric B. Rimm, Sc.D., Walter C. Willett, M.D., Dr.P.H., and Frank B. Hu, M.D., Ph.D.


NHS (women)
NHS II (women)
HPFS (men)
Foods
Potato chips
Potatoes or fries
Processed meats
Unprocessed red meats
Butter
Sweets and desserts
Refined grains
Cheese
Vegetables
Nuts
Whole grains
Fruits
Yogurt
Beverages
Sugar-sweetened beverages
100%-Fruit juice
Low-fat or skim milk
Whole milk
Diet (zero-calorie) soda
−1.0
−0.5
0.0
0.5
1.0
1.5
2.0
2.5
Weight Change Associated with Each Increased Daily Serving, per 4-Year Period (lb)

Composizione dei grassi del latte



Acidi grassi	Vacca	Bufala	Pecora	Capra
saturi	68.3	66.5	72.1	79.1
monoinsaturi	25.6	30.4	22.4	19.1
polinsaturi	6.1	3.2	5.4	1.8
saturi IC	46.9	46.1	44.4	44.9


Dieta (erba fresca)
Carne e latte
Acido alfa Linolenico
(c9,c12,c15-C18:3)
(omega-3)
Acido Linoleico
(c9,c12-C18:2)
Acido alfa Linolenico
(c9,c12,c15-C18:3)
(omega-3)
Rumine
(c9,t11,c15-C18:3)
(c9,t11,c15-C18:3)
CLA
(c9,t11-C18:2)
CLA
(c9,t11-C18:2)
Δ9 desaturasi
(t11,c15-C18:2)
Acido Vaccenico
(t11-C18:1)
Vaccenico
(t11-C18:1)
Acido Stearico
(C18:0)

British Journal of Nutrition (2013), **109**, 1453–1462
doi:10.1017/S0007114512003224
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Sheep cheese naturally enriched in α-linolenic, conjugated linoleic and vaccenic acids improves the lipid profile and reduces anandamide in the plasma of hypercholesterolaemic subjects

Stefano Pintus[1], Elisabetta Murru[2], Gianfranca Carta[2], Lina Cordeddu[2], Barbara Batetta[2], Simonetta Accossu[2], Danila Pistis[1], Sabrina Uda[2], Maria Elena Ghiani[2], Marcello Mele[3], Pierlorenzo Secchiari[3], Guido Almerighi[4], Paolo Pintus[1] and Sebastiano Banni[2]*

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[2]*Dipartimento di Scienze Biomediche, Università degli Studi di Cagliari, Cittadella Universitaria, Strada Statale 554, Km. 4, 500, Monserrato 09042, Cagliari, Italy*
[3]*Dipartimento di Agronomia e Gestione dell'Agroecosistema, Università di Pisa, Pisa, Italy*
[4]*O. Obesità ASL 8, Cagliari, Italy*

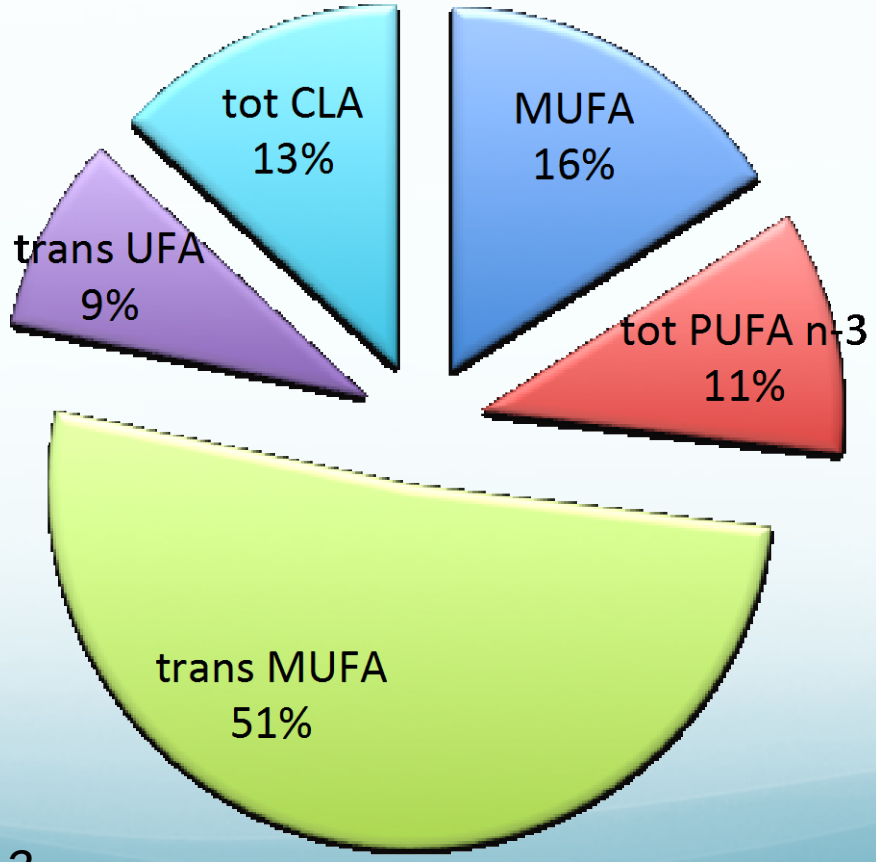
(Submitted 11 November 2011 – Final revision received 14 June 2012 – Accepted 19 June 2012 – First published online 24 August 2012)

Composizione in acidi grassi del pecorino

Fatty Acids	% in cheese fat		g/90 of cheese	
	CTRL	ENCH	CTRL	ENCH
total SFA	59.3	45.9	13.6	10.0
short chain (c4-c10)	16.6	11.3	3.8	2.5
c12:0	2.9	1.8	0.7	0.4
c14:0	8.5	6.1	1.9	1.3
c16:0	20.5	16.0	4.7	3.5
c18:0	10.5	10.5	2.4	2.3
Total cis MUFA	19.0	21.2	4.3	4.6
c16:1n-9	0.3	0.3	0.1	0.1
c18:1n-9	18.6	20.9	4.3	4.5
Total trans MUFA	3.4	10.6	0.8	2.3
c18:1 t11 (VA)	1.7	6.3	0.4	1.4
Total PUFA n-6	2.3	2.3	0.5	0.5
c18:2n-6 (LA)	2.2	2.2	0.5	0.5
Total PUFA n-3	0.6	2.1	0.1	0.5
c18:3n-3 (ALA)	0.6	2.1	0.1	0.5
Total trans PUFA	0.4	1.6	0.1	0.3
Total CLA	1.0	2.8	0.2	0.6
c9,t11 CLA	0.8	2.5	0.2	0.5

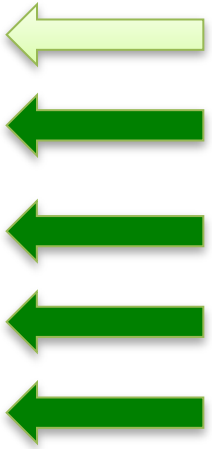
Mele et al. Int Dairy J. 21:365-372, 2011

Percentuale delle classi di acidi grassi che sostituiscono i saturi



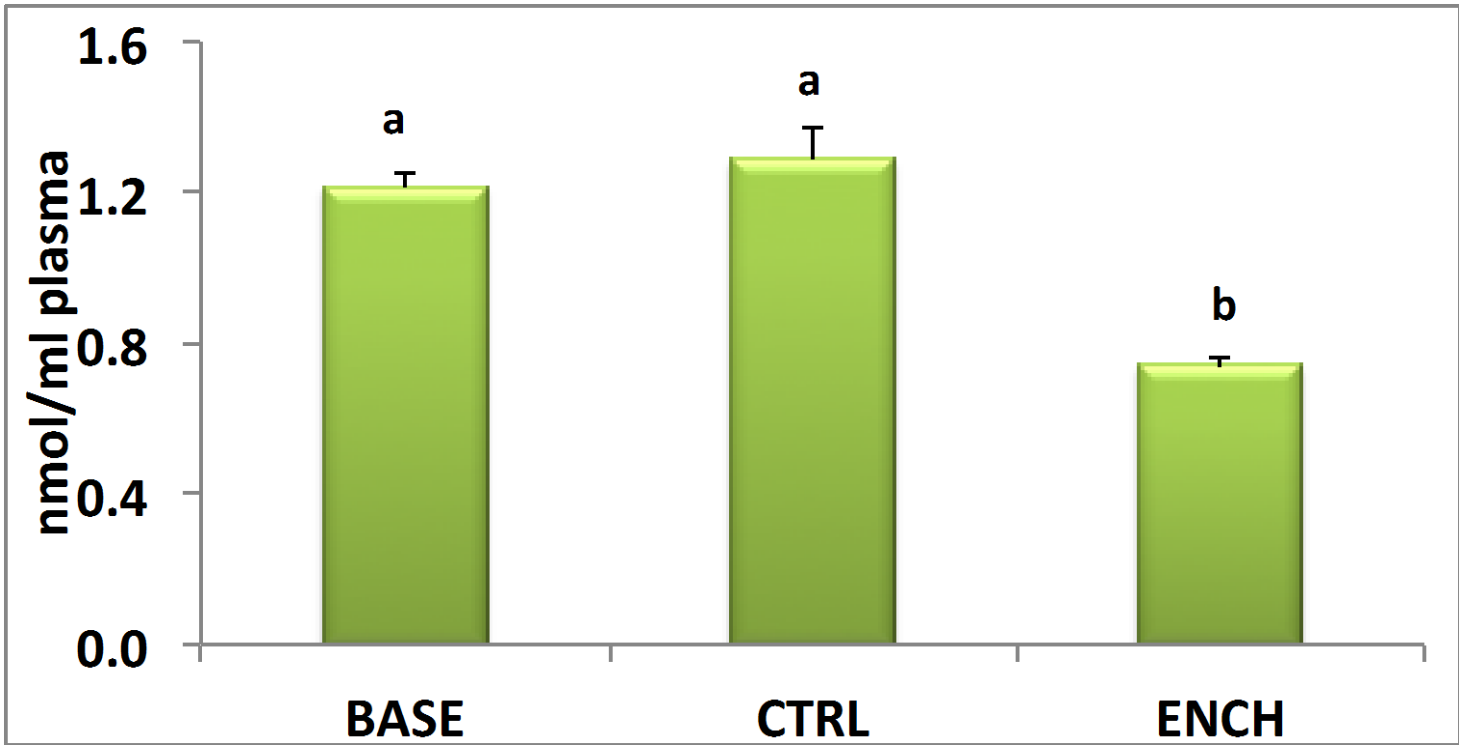
Pintus et al. Br J Nutr 2013

	Baseline	REGCH	ENCH
BMI (Kg/m^2)	26.64 ± 2.83	26.30 ± 3.18	26.03 ± 3.21
Tot chol. (mg/dL)	243.52 ± 18.54 [a]	256.29 ± 31.96 [a]	230.80 ± 18.41 [b]
C-LDL (mg/dL)	165.88 ± 16.2[a]	170.55 ± 26.03[a]	154.79 ± 13.26[b]
C-HDL (mg/dL)	55.36 ± 9.46[a]	61.84 ± 11.48[b]	56.54 ± 10.42[a]
C- non HDL (mg/dL)	188.17 ± 19.44[a]	188.74 ± 41.95[a]	174.27 ± 18.38[b]
tot/HDL	4.54 ± 0.98	4.25 ± 0.81	4.23 ± 0.92
TAG (mg/dL)	111.81 ± 52.06	120.29 ± 87.92	111.71 ± 69.70
Glycemia (mg/dL)	99.33 ± 12.17	96.97 ± 8.05	98.98 ± 12.85
Creatinine (mg/dL)	0.99 ± 0.16	0.96 ± 0.13	0.97 ± 0.15
Uricemia (mg/dL)	5.14 ± 1.13	5.14 ± 3.02	4.89 ± 1.06

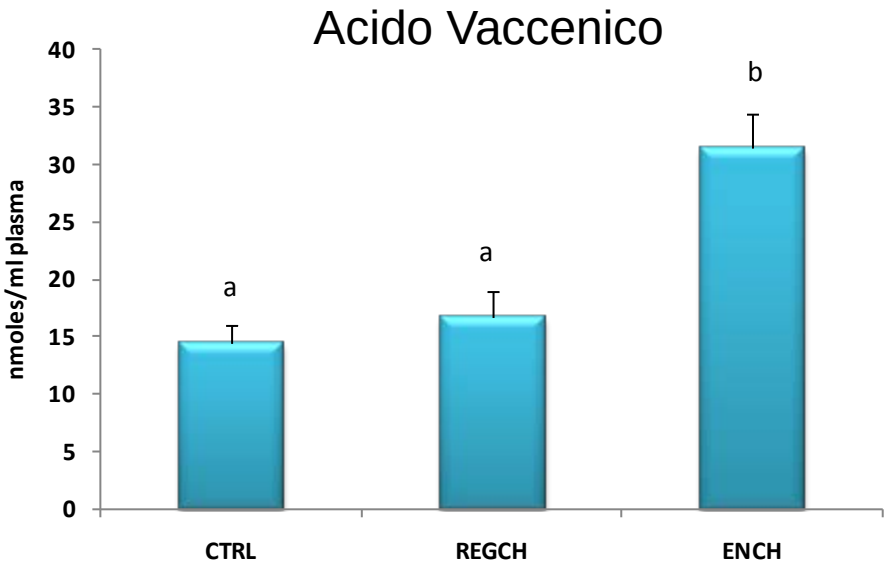


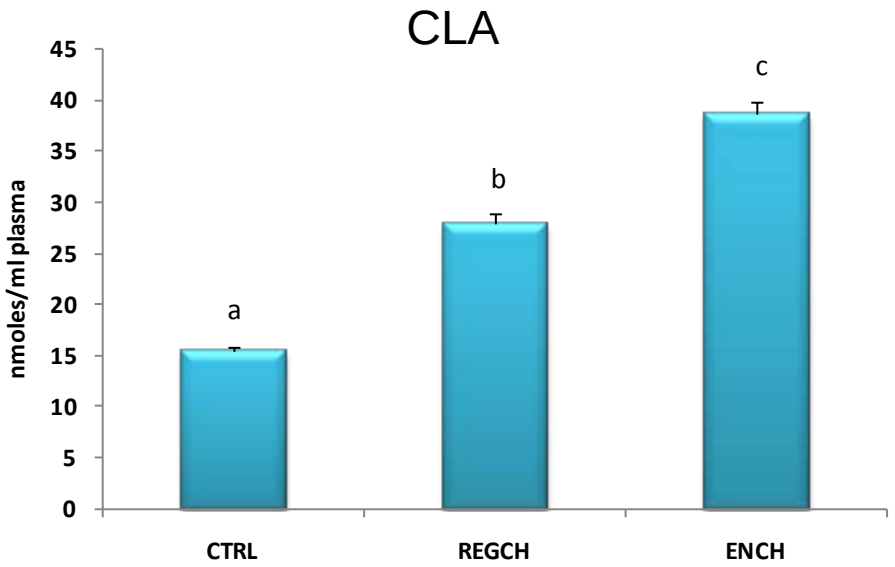
Pintus et al. Br J Nutr 2013

Livelii di lipoidroperossidi plasmatici come marker di stress ossidativo



Pintus et al. Br J Nutr 2013





Acido Linolenico
(*c*9,*c*12,c15-C18:3)

Acido Linoleico
(*c*9,*c*12-C18:2)

Rumine

(*c*9,*t*11,c15-C18:3)

(*t*11,c15-C18:2)

CLA
(*c*9,*t*11-C18:2)

Acido Vaccenico
(*t*11-C18:1)

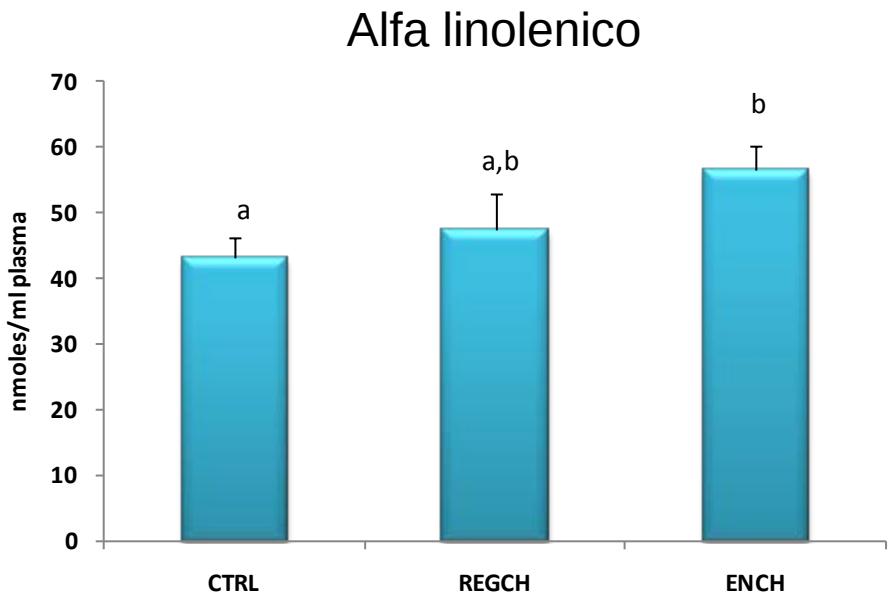
Acido Stearico
(C18:0)

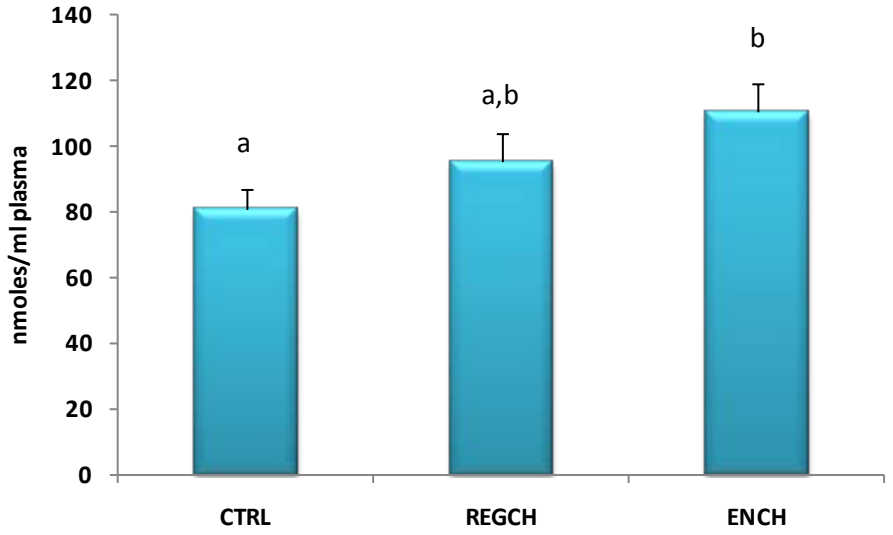
CLA
(*c*9,*t*11-C18:2)

Δ9 desaturase

Vaccenico
(*t*11-C18:1)

Pintus et al. Br J Nutr 2013





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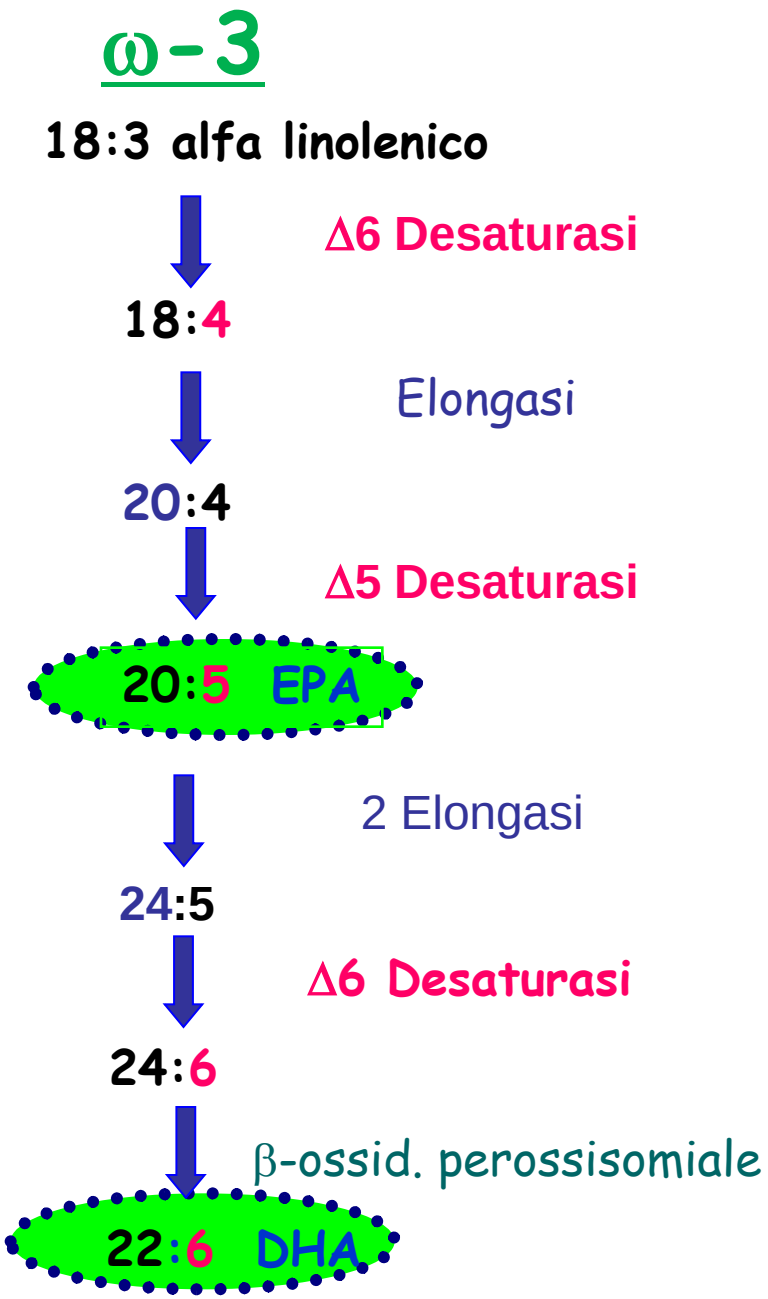
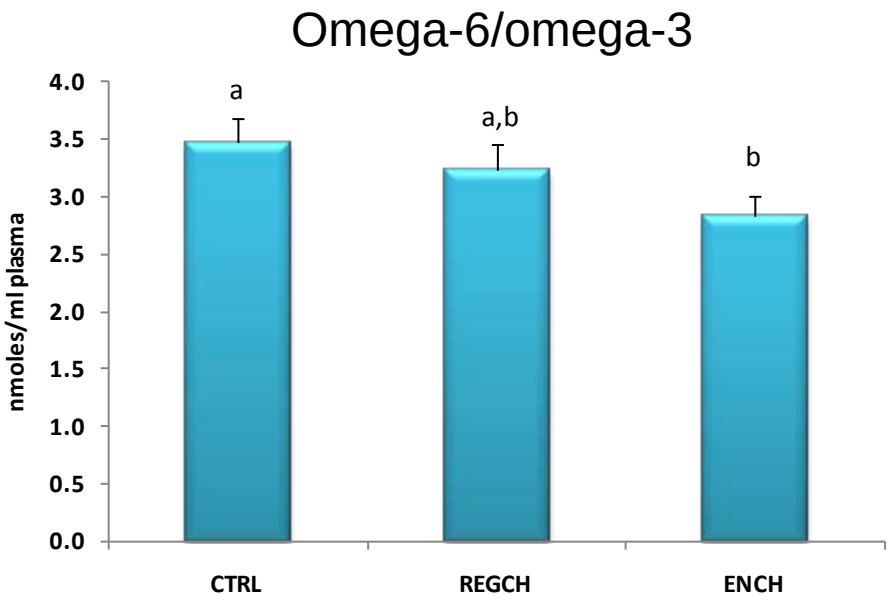
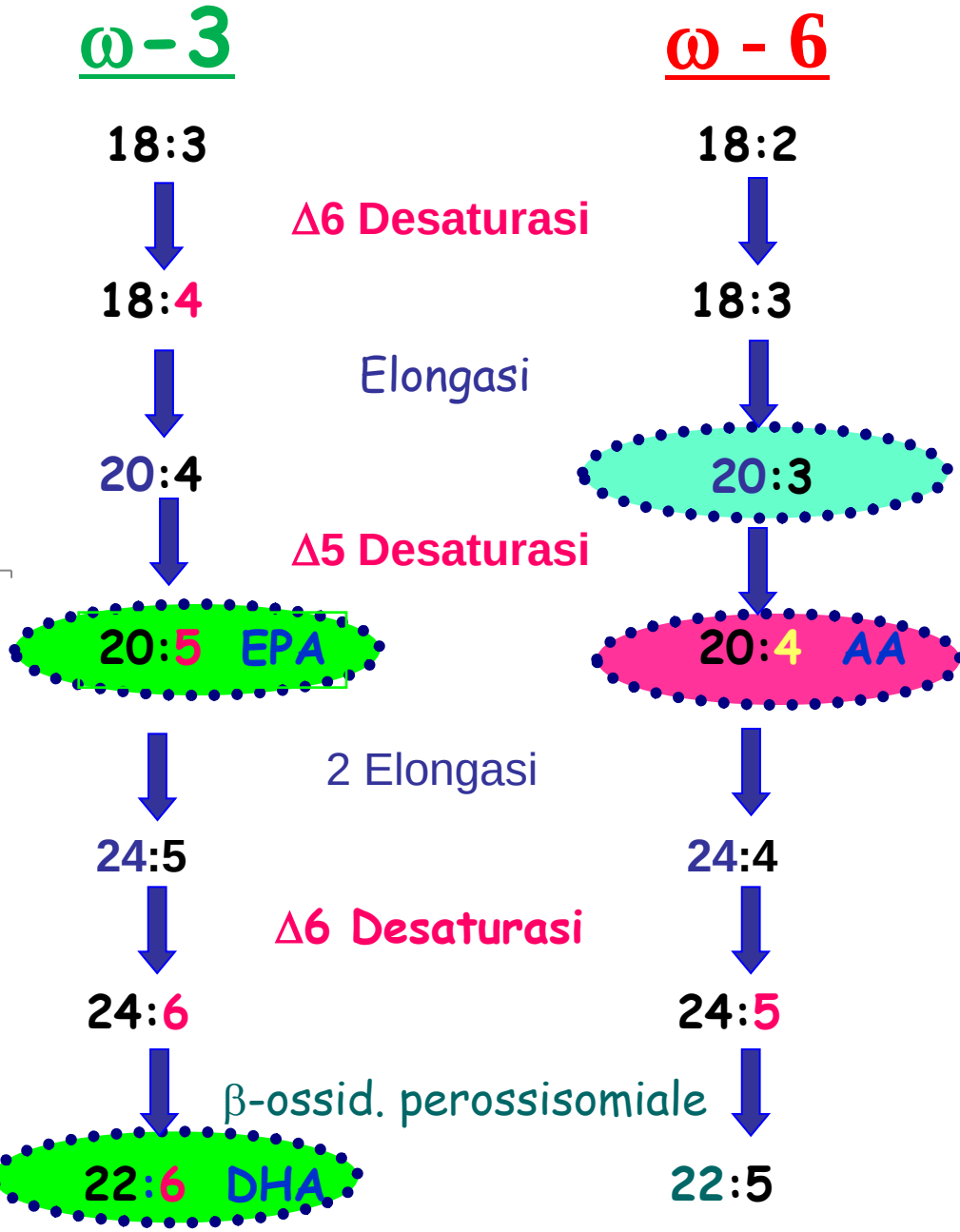
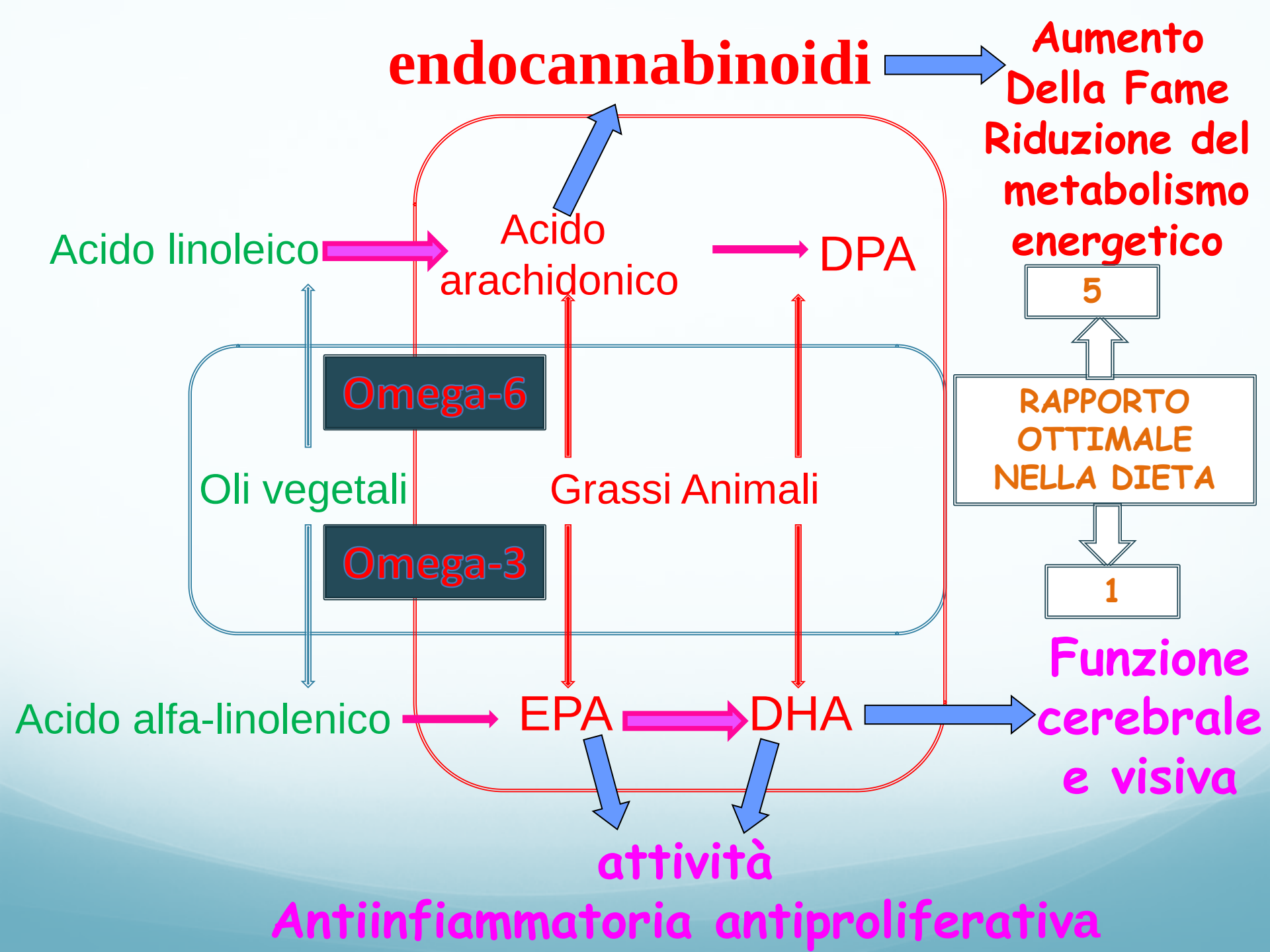


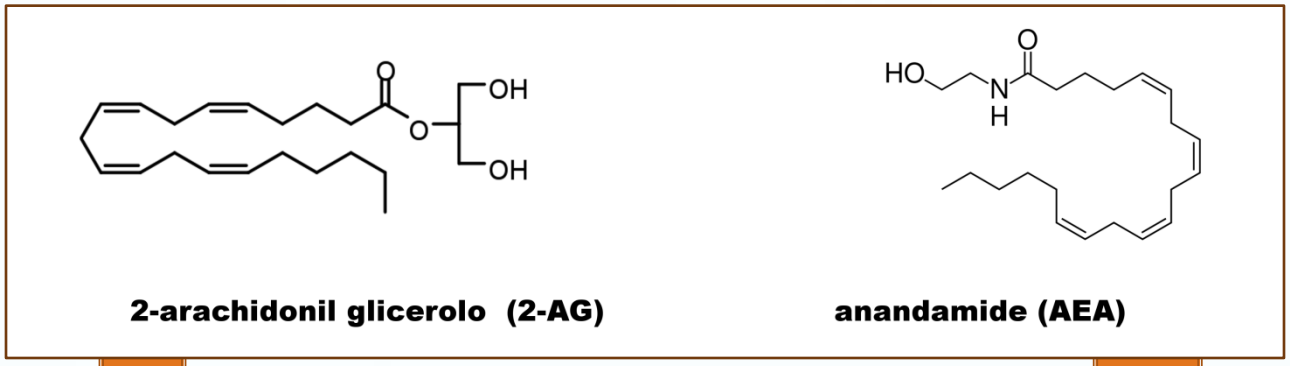




Pintus et al. Br J Nutr 2013


endocannabinoidi
Aumento Della Fame
Riduzione del metabolismo energetico
Acido linoleico
Acido arachidonico
DPA
Omega-6
Oli vegetali
Grassi Animali
Omega-3
5
RAPPORTO OTTIMALE NELLA DIETA
1
Acido alfa-linolenico
EPA
DHA
Funzione cerebrale e visiva
attività
Antiinfiammatoria antiproliferativa

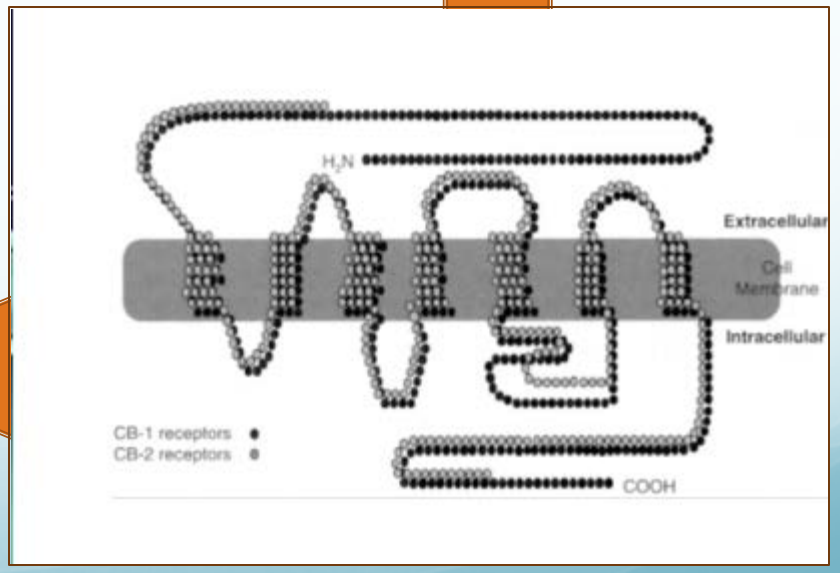
ENDOCANNABINOIDI

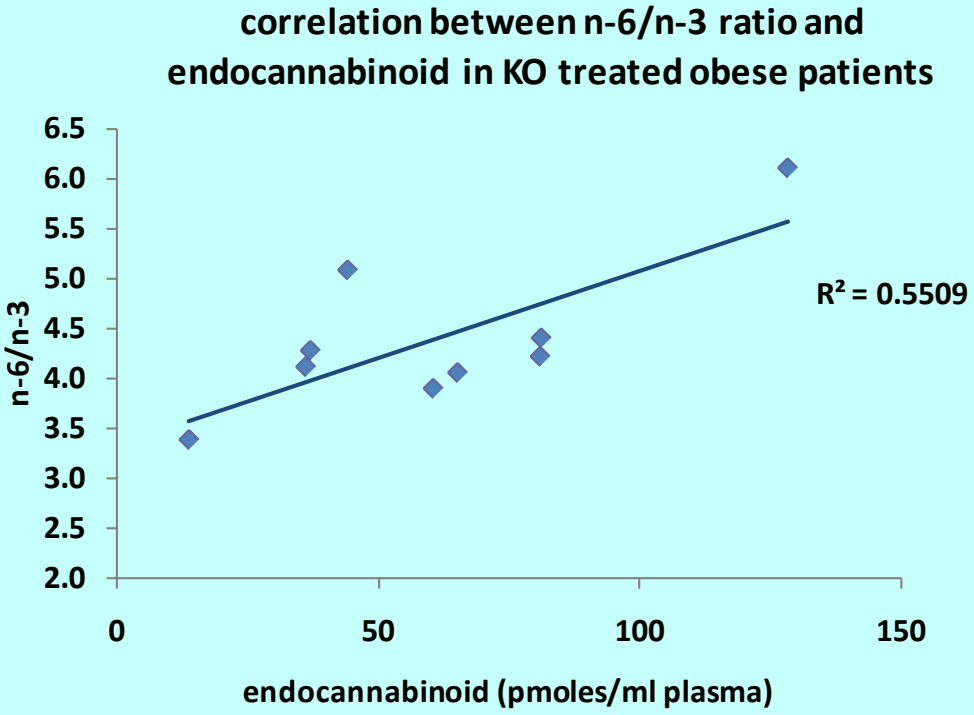


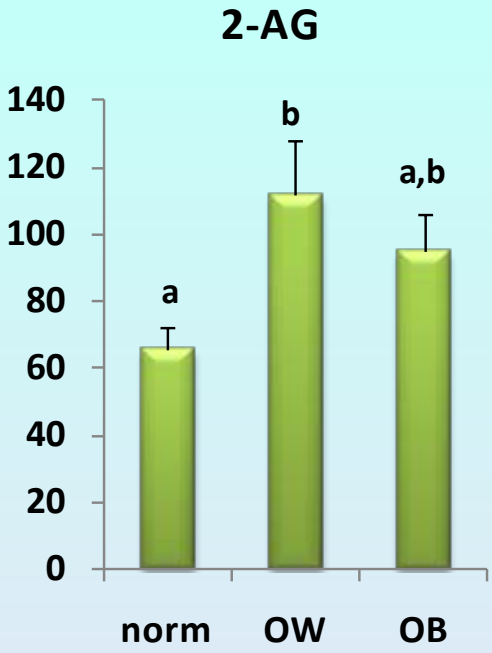
2-arachidonil glicerolo (2-AG) **anandamide (AEA)**

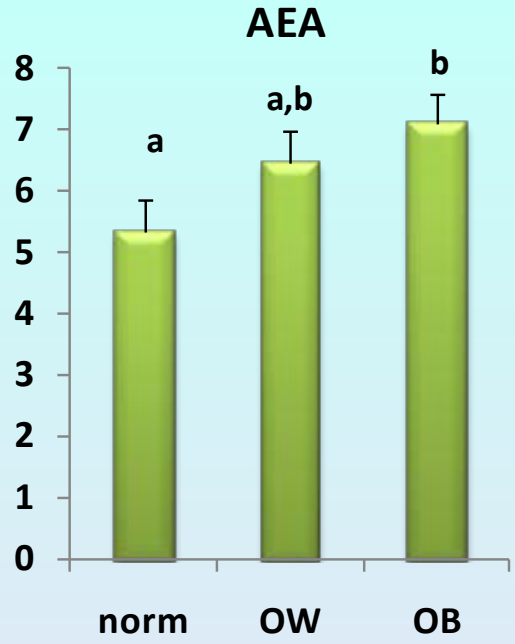
Ligandi endogeni dei recettori CB1 e CB2

- **Bilancio energetico**
- **Comportamento alimentare**
- **Metabolismo lipidico**
- **Resistenza insulinica**









Banni et al. Nutr Metab 2011

Fosfolipidi

Sn-1

Sn-2

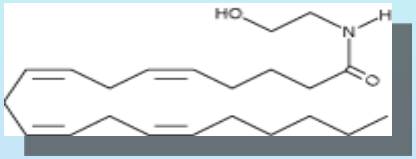
20:4

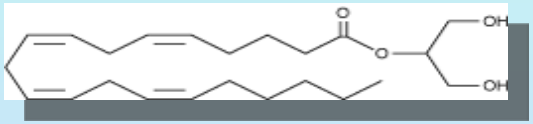
20:4

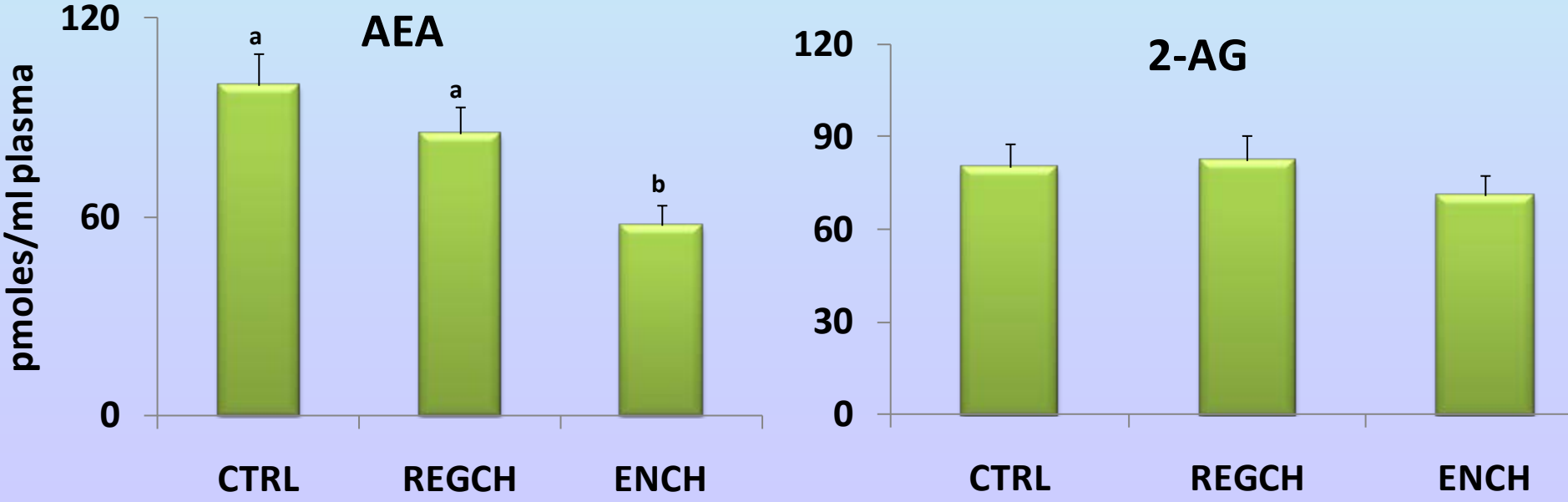
anandamide

2-AG

endocannabinoidi

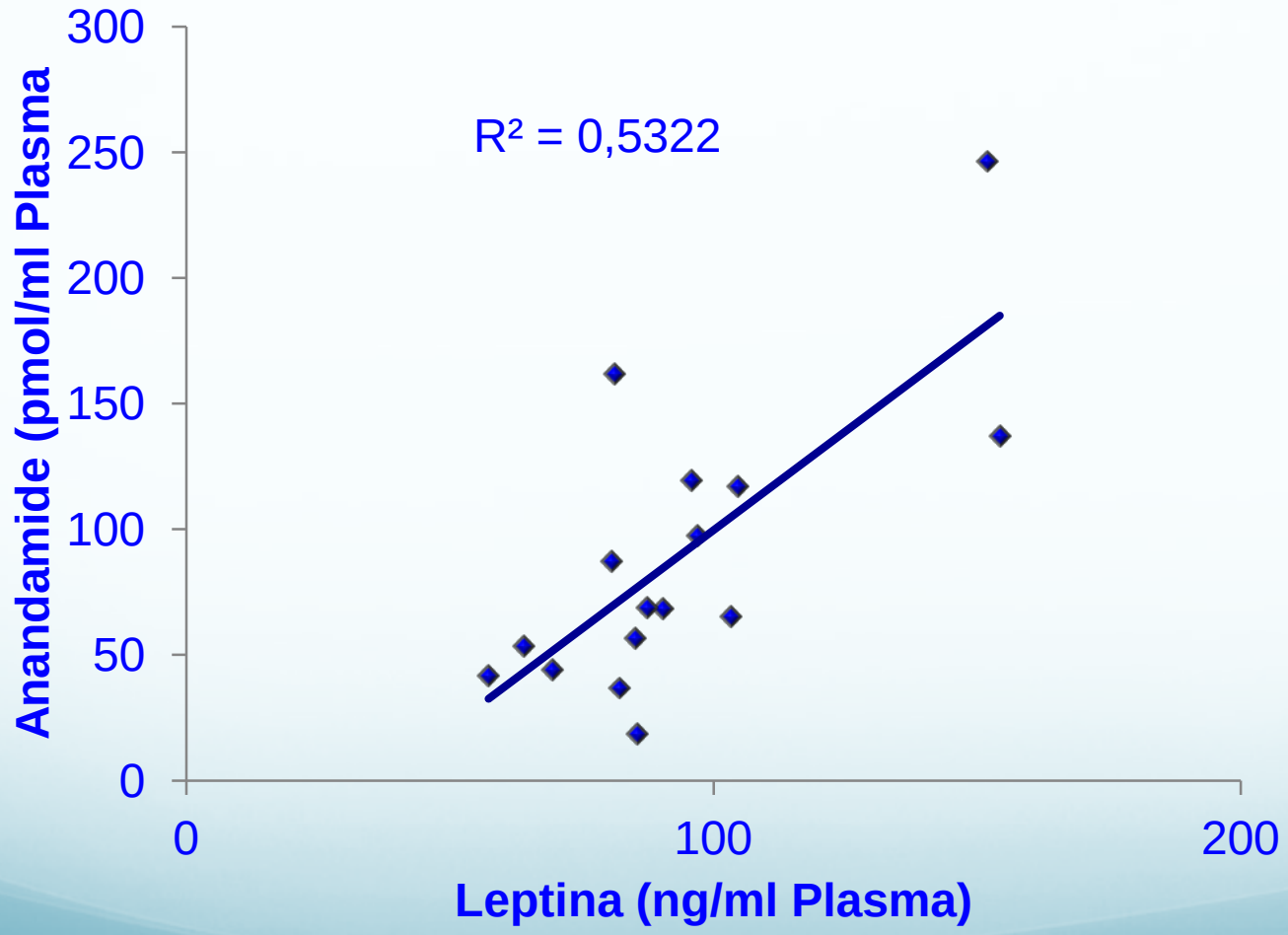






Pintus et al. Br J Nutr 2013

Correlazione tra livelli dell'endocannabinoide anandamide e leptina in pazienti ipercolesterolemici alimentati con il formaggio arricchito



Pintus et al. Br J Nutr 2013