VII CONGRESSO NAZIONALE B&M 2018

IV SESSIONE

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BRAIN AND MALNUTRITION
Chronic Diseases Association ONLUS

Pasti sostitutivi come strategia per il dimagrimento

Samir Giuseppe Sukkar
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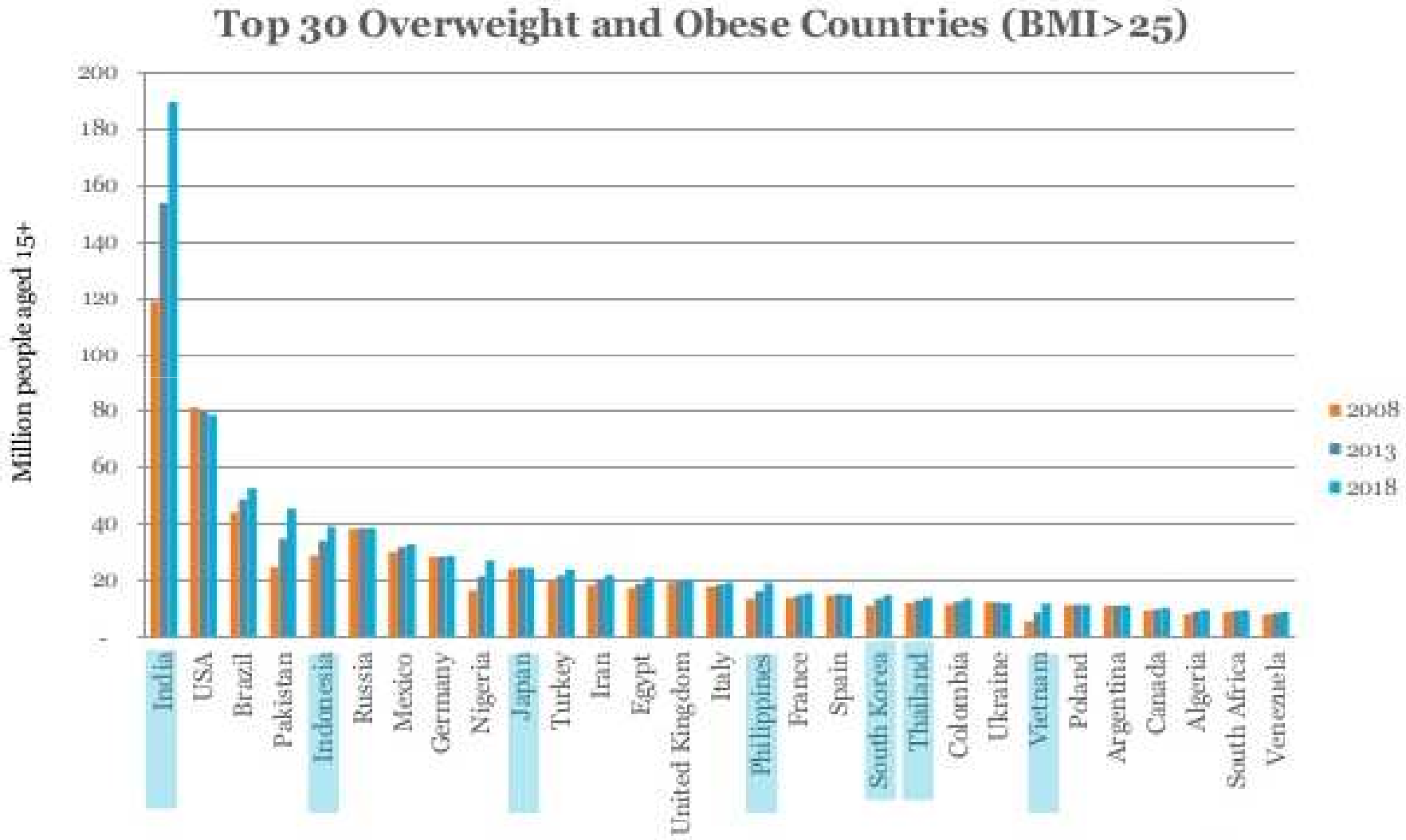
Sistema Sanitario Regione Liguria
Istituto di Ricovero e Cura a Carattere scientifico per l'Oncologia

Certificazione UNI EN ISO9001 2000N°9122.OSSM relativa a:
Erogazione di Servizi di Dietetica e Nutrizione Artificiale Enterale e Parenterale

Over 2 billion overweight and obese globally, led by China



OBESITA' : UN PROBLEMA COMPLESSO DAL PUNTO DI VISTA FISIOPATOLOGICO

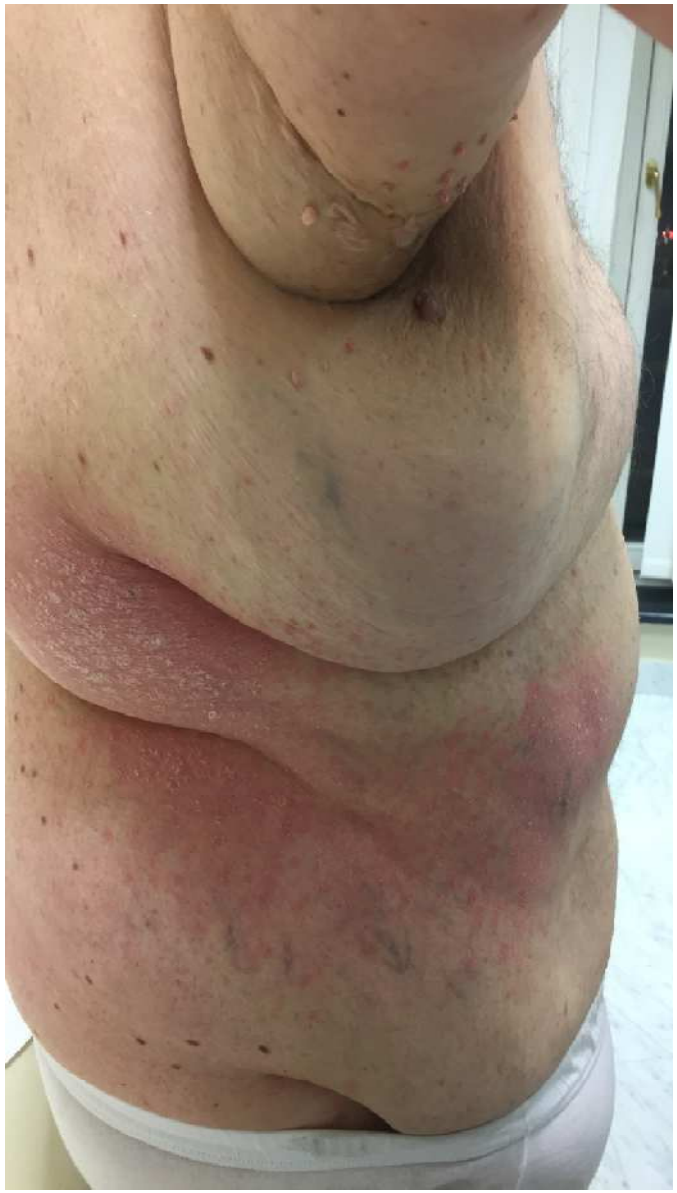
Mediterr J Nutr Metab (2011) 4:157–158
DOI 10.1007/s12349-011-0084-5

LETTER FROM THE EDITOR

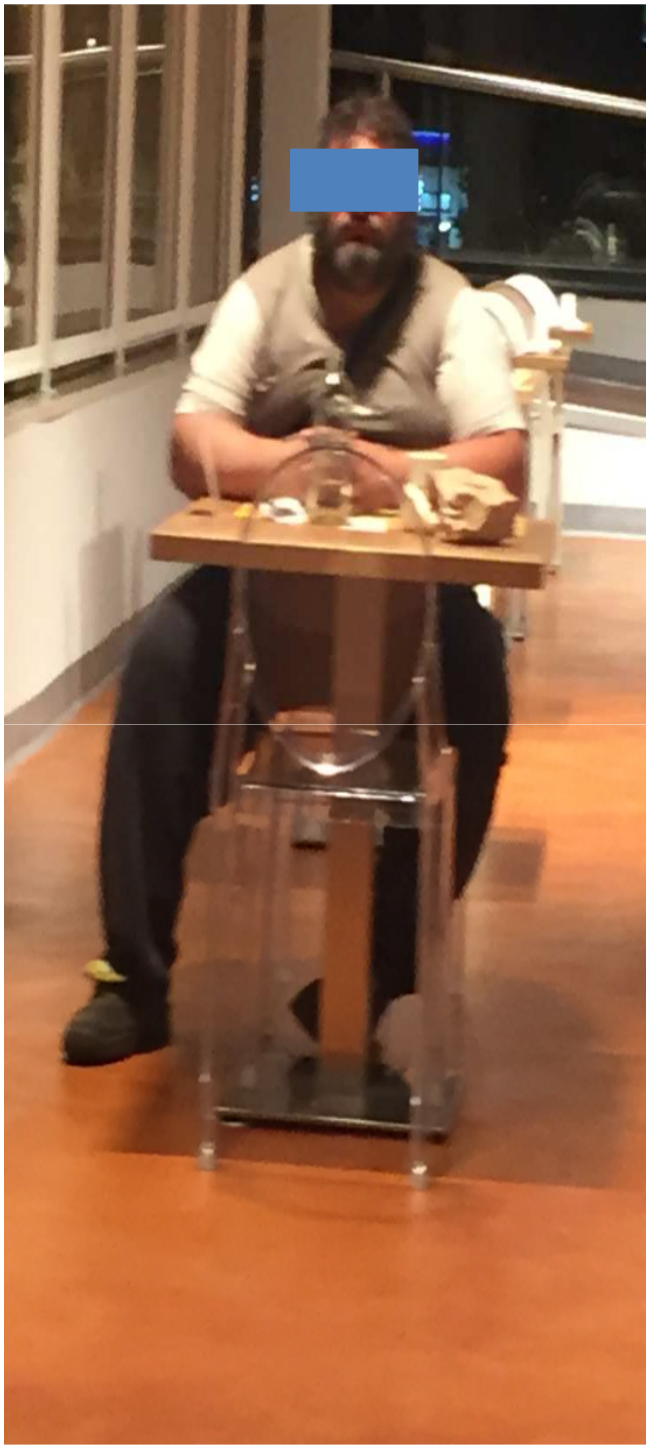
Biological, ethological, genetical, environmental, clinical and pharmacological alliance towards obesity control: the target of "The obese species workshop" in Erice, 21–26 October 2011

Samir G. Sukkar · Carlo Polidori

Contributors to the closing discussion pointed out that obesity has increased remarkably in the last half century and that genetic and environmental factors have been keys in this phenomenon. They indicated that some simple modifications should be made: daily exercise and lower fat intake top the list, while pharmaceutical intervention comes later, possibly with polytherapy, but emphasized that prevention is the most important tool at our disposal.



Non solo BMI



Eat Weight Disord
DOI 10.1007/s40519-016-0279-3

BRIEF REPORT

SIO management algorithm for patients with overweight or obesity: consensus statement of the Italian Society for Obesity (SIO)

Ferruccio Santini[1] · Luca Busetto[2] · Barbara Cresci[3] · Paolo Sbraccia[4]

Edmonton classification

Treatment Algorithm of Patients with Overweight and Obesity

EOSS	BMI < 30	BMI 30-35	BMI 35-40	BMI >40	Age (years)
STAGE 0					> 60
					< 60
STAGE 1				S	> 60
					< 60
STAGE 2				S	> 60
					< 60
STAGE 3			S	S	> 60
					< 60
STAGE 4					> 60
		S	S	S	< 60

lifestyle intervention

pharmacological therapy (In patients with T2DM, is indicated the use of antidiabetic medications that have additional actions to promote weight loss, such as GLP-1 analogs).

bariatric surgery

rehabilitation (physical, neurological, cardiopulmonary, psychiatric)

S surgery to be considered in selected cases with favorable risk/benefit profile

Santini et al Eat.Weight Disord. 2016

Conoscenza delle sedi anatomiche e dei meccanismi che controllano il comportamento alimentare

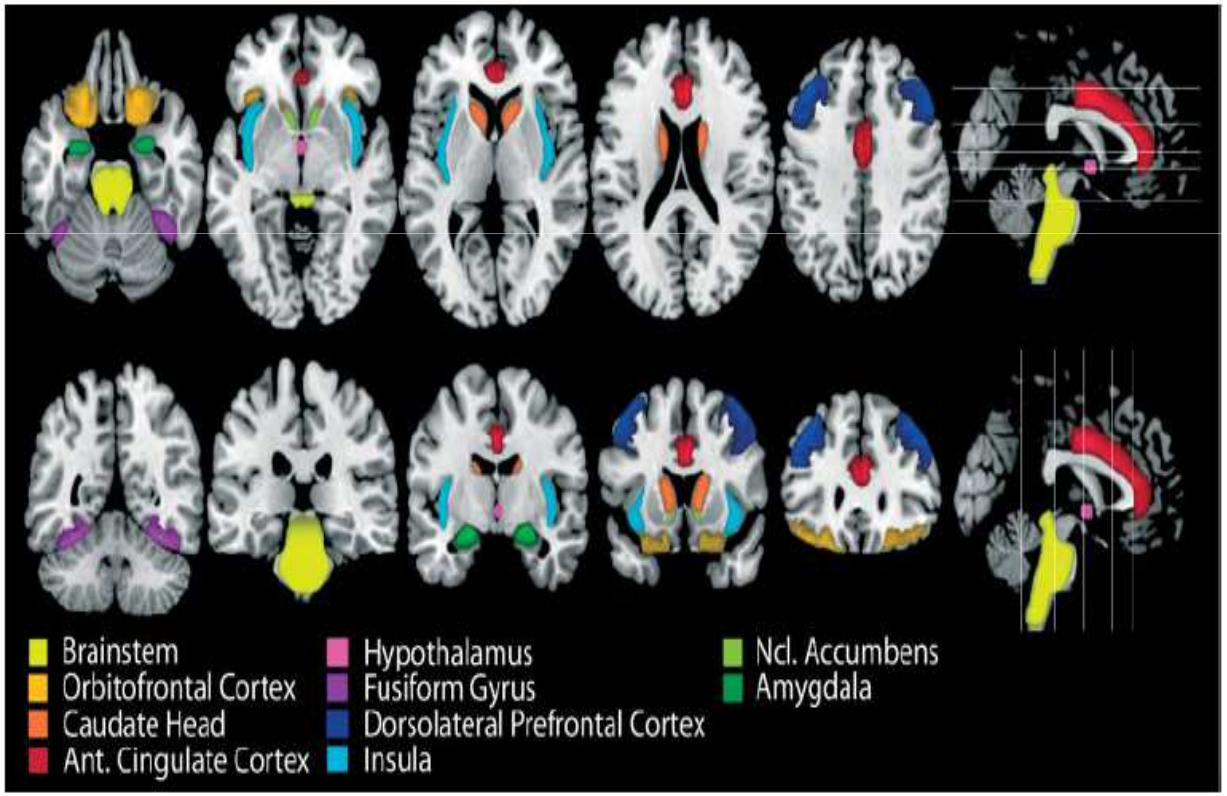
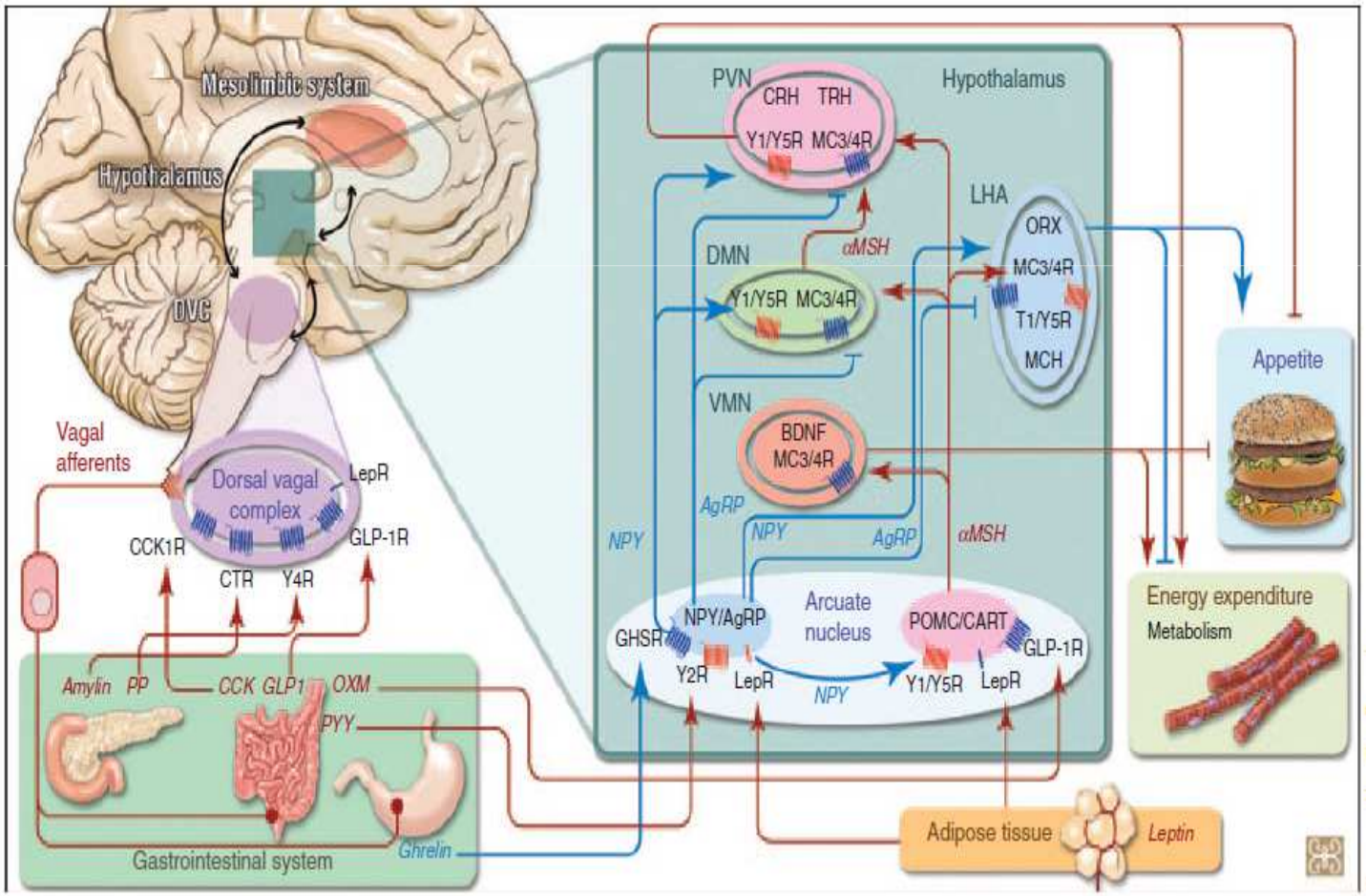


Figure 1. Important brain areas involved in eating behaviour and body weight regulation. Coloured areas indicate probability maps from Harvard-Oxford cortical and subcortical structural atlas (http://www.cma.mgh.harvard.edu), composed with MRIcron

Sedi anatomiche

di coordinazione e integrazione nel controllo dell'omeostasi energetica (1)



Mediterr J Nutr Metab (2013) 6:1–2
DOI 10.1007/s12349-013-0124-4

LETTER FROM THE EDITOR

Targeting a tailored therapeutic diet by means of nutrigenomics: future or reality?

Samir Giuseppe Sukkar

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DOI 10.1007/s12349-013-0124-4

LETTER FROM THE EDITOR

Targeting a tailored therapeutic diet by means of nutrigenomics: future or reality?

Samir Giuseppe Sukkar

Nutrigenomica vs. Nutrigenetica

Nutrigenomica

- scienza che studia gli effetti dei nutrienti sulla espressione genica
- Chadwick R. (2004) *Proceedings of the Nutrition Society* 63:161-166.

Nutrigenetica

- scienza che studia i rapporti tra il patrimonio genetico, il genoma, e la variabilità interindividuale ai cibi
- Chadwick R. (2004) *Proceedings of the Nutrition Society* 63:161-166.

Nutrigenomica vs. Nutrigenetica

Nutrigenomica

- “la dieta influenza i geni .”

Nutrigenetica

- “I geni influenzano la risposta alla dieta.”

Nutrigenetica vs Nutrigenomica

Nutrigenetica

"I geni influenzano la dieta

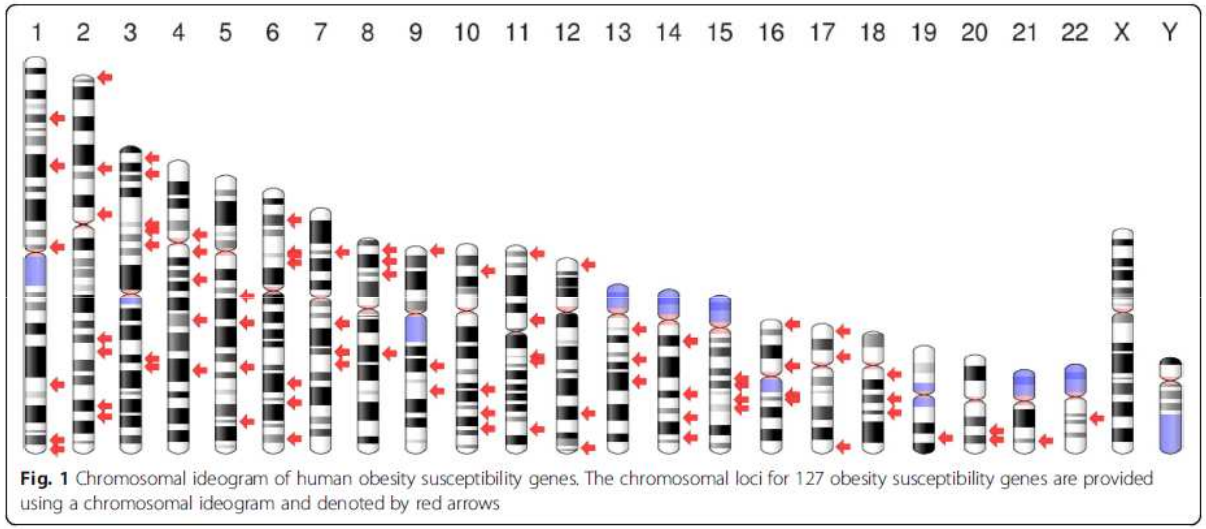

Fig. 1 Chromosomal ideogram of human obesity susceptibility genes. The chromosomal loci for 127 obesity susceptibility genes are provided using a chromosomal ideogram and denoted by red arrows

Varianti genetiche associate al rischio di obesità o alla resistenza alla perdita di peso nelle popolazioni umane

FTO
APOE
MC4R
UCP2 UCP3

SH2B1
PPARG
ACE
etc

Correlazione polimorfismo FTO , BMI, intake energetico e di nutrienti

Table 1. Associations of FTO SNP rs9939609 or a proxy with BMI and intakes of total energy, protein, carbohydrate and fat in a fixed effects meta-analysis of up to 177 330 adults[a]

	Model 1[b] β (95% CI)	P	I^2 (%)	Model 2[c] β (95% CI)	P	I^2 (%)
BMI (kg/m^2)						
Whites	0.34 (0.31,0.37)	1.9×10^{-105}	46	–	–	–
African Americans	0.00 (−0.20, 0.20)	0.98	0	–	–	–
Asians	0.25 (0.14, 0.35)	6.2×10^{-6}	48	–	–	–
All	0.33 (0.30, 0.35)	3.6×10^{-107}	47	–	–	–
Total energy (kcal/day)						
Whites	−7.8 (−11.8, −3.9)	1.5×10^{-4}	5	−7.2 (−11.1, −3.3)	3.3×10^{-4}	0
African Americans	4.0 (−19.9, 27.9)	0.74	40	4.6 (−19.3, 28.5)	0.70	39
Asians	13.2 (−2.8, 29.2)	0.11	30	10.5 (−5.5, 26.5)	0.20	26
All	−6.4 (−10.1, −2.6)	0.001	18	−5.9 (−9.7, −2.1)	0.002	13
Protein (% of energy)						
Whites	0.08 (0.06, 0.10)	3.8×10^{-15}	26	0.05 (0.03, 0.07)	8.8×10^{-8}	20
African Americans	0.15 (0.01, 0.29)	0.03	0	0.14 (0.00, 0.28)	0.05	5
Asians	0.06 (−0.02, 0.15)	0.14	57	0.06 (−0.02, 0.15)	0.15	57
All	0.08 (0.06, 0.10)	2.4×10^{-16}	32	0.05 (0.04, 0.07)	7.5×10^{-9}	29
Carbohydrate (% of energy)						
Whites	−0.07 (−0.11, −0.02)	0.005	30	−0.04 (−0.09, 0.01)	0.10	22
African Americans	−0.06 (−0.40, 0.27)	0.71	60	−0.05 (−0.38, 0.28)	0.77	59
Asians	−0.07 (−0.32, 0.18)	0.57	0	−0.08 (−0.33, 0.17)	0.53	0
All	−0.07 (−0.11, −0.02)	0.004	29	−0.04 (−0.09, 0.01)	0.08	23
Fat (% of energy)						
Whites	0.02 (−0.02, 0.07)	0.30	1	0.00 (−0.04, 0.05)	0.85	0
African Americans	0.03 (−0.22, 0.27)	0.84	43	0.01 (−0.23, 0.26)	0.92	42
Asians	0.07 (−0.12, 0.26)	0.47	0	0.08 (−0.11, 0.28)	0.39	0
All	0.03 (−0.02, 0.07)	0.24	3	0.01 (−0.03, 0.05)	0.69	0

[a]Data are β coefficients (95% CI) per minor allele of rs9939609 or a proxy ($r^2 > 0.8$) for each trait. Analyses from individual studies were conducted separately in men and women, and then combined by meta-analysis of up to 177 330 adults (154 439 Whites, 5776 African Americans and 17 115 Asians).
[b]Model 1, adjusted for age, physical activity (if available), region (if available) and eigenvectors (GWAS data only).
[c]Model 2, further adjusted for BMI.

FTO genetic variants, dietary intake and body mass index: insights from 177 330 individuals

an Molecular Genetics, 2014, Vol. 23, No. 25 6961–6972

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LETTER FROM THE EDITOR

Biological, ethological, genetical, environmental, clinical and pharmacological alliance towards obesity control: the target of "The obese species workshop" in Erice, 21–26 October 2011

Samir G. Sukkar · Carlo Polidori

E ANCOR DI PIU' DAL PUNTO DI VISTA TERAPEUTICO

IL PERCORSO DIAGNOSTICO-TERAPEUTICO DEL PAZIENTE OBESO

Il fenomeno sovrappeso/obesità nei paesi del mondo economicamente avanzati ha raggiunto dimensioni tali da assumere le caratteristiche di problema di salute pubblica con inevitabili ricadute in ambito economico e sociale.

Al momento nessun Paese ha sviluppato un protocollo completamente efficace per la prevenzione e/o il trattamento generale dell'obesità.

European Guidelines for Obesity Management in Adults

Comprehensive Obesity Management

Appropriate goals of weight management emphasise realistic weight loss to achieve a reduction in health risks and should include:

promotion of weight loss

maintenance

prevention of weight regain.

Patients should understand that, since **obesity is a chronic disease, weight management will need to be continued lifelong.**

More attention to WC and the **improvement in body composition**

Management of **co-morbidities**, improving **quality of life and well-being of** obese patients

Obes Facts 2015;8:402–424

OBESITA' :LINEE GUIDA

- Terapia dietetica
- Attività fisica
- Terapia comportamentale
- Terapia farmacologica
- Chirurgia
- Terapia integrata

Quello che conta è un percorso completo

- Ogni terapia va collocata in un unicum di trattamento continuativo

Pasti sostitutivi

- Razionale
- Indicazioni
- Modalità
- efficacia

L’utilizzo dei pasti sostitutivi come strategia per perdere peso

- ✓ I pasti sostitutivi rappresentano una modalità pratica e moderna nel trattamento del sovrappeso.
- ✓ Da un’indagine telefonica americana a 1431 soggetti, il 15% delle donne e il 13% degli uomini usano il pasto sostitutivo al fine di dimagrire.
- ✓ Secondo un’indagine inglese, i 2/3 di un gruppo di 252 pazienti, utilizzano i pasti sostitutivi almeno 1 volta al giorno come strategia per perdere peso all’interno di un piano di dimagrimento *(Levy AS, Heaton AW. Weight Ann Intern Med 1993; Bowerman S, et al, Obes Res 2001)*

Clinical management of obesity

AHA, American Heart Association; ACC, American College of Cardiology; CV, cardiovascular; TOS, The Obesity Society guidelines

Treatment	BMI category (kg/m^2)				
	≥25	≥27	≥30	≥35	≥40
Diet, physical activity and behaviour therapy	**With comorbidities**	**With comorbidities**	**+**	**+**	**+**
Pharmacotherapy		**With comorbidities**	**+**	**+**	**+**
Surgery				**With comorbidities**	**+**

- **Guidance centred around weight loss as means of ↓ CV risk**
  - **Diet and exercise remain cornerstone of weight loss interventions**
  - **Participation in a long-term (≥1 year) comprehensive weight loss maintenance programme is strongly recommended**
  - **Surgery may be appropriate after diet and exercise and pharmacotherapy failure**

Jensen *et al. J Am Coll Cardiol* 2014;63(25 Pt B):2985–3023

- I pasti sostitutivi sono utilizzati all'interno di diete ipocaloriche soprattutto nei pazienti con difficoltà a modificare le abitudini alimentari .

- Sono formulati in base al Decreto n.519/98 del Ministero della Salute
-
- Le indicazioni in etichetta e le modalità d'uso sono stabilite da una regolamentazione europea molto precisa : Direttiva 96/8/CE sugli alimenti destinati a diete ipocaloriche volte alla riduzione del peso (ID 1417), al mantenimento del peso raggiunto dopo la perdita (ID 1418) ai sensi dell'Articolo 13 , del Regolamento (CE) n. 1924/2006.

REGOLAMENTO (UE) 2016/1413 DELLA COMMISSIONE del 24 agosto 2016

- Tali indicazioni sono state inserite nell'elenco delle indicazioni sulla salute consentite in base al parere favorevole dell'Autorità europea per la sicurezza alimentare (di seguito «l'Autorità») del 2010 [Question EFSA-Q-2008-2154, EFSA-Q-2008-2155 (4)], secondo il quale risulta stabilita una relazione causa-effetto tra il consumo di sostituti del pasto invece dei pasti regolari e il mantenimento del peso corporeo dopo una perdita di peso, come anche tra il consumo di sostituti del pasto invece dei pasti regolari nell'ambito di diete ipocaloriche e la riduzione del peso corporeo.
  L'Autorità ha precisato che per poter recare le indicazioni in questione l'alimento deve fornire al massimo 250 kcal per porzione e soddisfare le specifiche di cui alla direttiva 96/8/CE.

DIRETTIVA 96/8/CE DELLA COMMISSIONE
del 26 febbraio 1996
sugli alimenti destinati a diete ipocaloriche volte alla riduzione del peso

- **COMPOSIZIONE ESSENZIALE DEGLI ALIMENTI DIETETICI DESTINATI A DIETE IPOCALORICHE**

DIRETTIVA 96/8/CE DELLA COMMISSIONE
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- **energia** fornita da un prodotto di cui all'articolo 1, paragrafo 2, lettera a)

  800 -1200 kcal per l'intera razione alimentare giornaliera.

- **energia** fornita da un prodotto di cui all'articolo 1, paragrafo 2, lettera b)

  200 -400 kcal per pasto.

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- **COMPOSIZIONE ESSENZIALE DEGLI ALIMENTI DIETETICI DESTINATI A DIETE IPOCALORICHE**
- Le **proteine** contenute nei prodotti di cui all'articolo 1, paragrafo 2, lettere a) e b)
- 25 % 50 % dell'energia totale del prodotto.
- sempre <125 g.
- l'indice chimico della proteina di riferimento della FAO/OMS deve essere almeno uguale all'80 % di quello della proteina di riferimento.
- L'aggiunta di amminoacidi è comunque permessa soltanto allo scopo di migliorare il valore nutrizionale delle proteine e unicamente nelle proporzioni a tal fine necessarie.

SCELTA DELLE PROTEINE CHE COMPONGONO I SOSTITUTI DEL PASTO

Whey proteins influence food intake throughout :

(1) intrinsec physico-chemical carachteristics;

(2) Releasing of specific aminoacids;

(3) Combined action on peptides and /or aminoacids derived by enterohormones which control appetite

(4) Bioactive peptides;

Whey proteins influence food intake throughout :

(1) intrinsec physico-chemical carachteristics;

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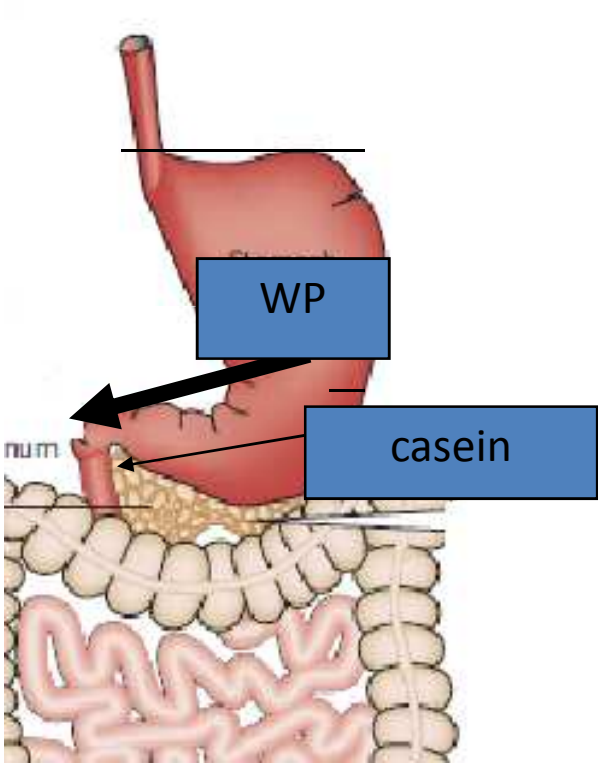
(3) Combined action on peptides and /or aminoacids derived by enterohormones which control appetite

(4) Bioactive peptides;

FAST PROTEIN AND SLOW PROTEIN

- Whey proteins after ingestion pass quickly through the stomach and reach the jejunum as intact proteins, whereas the release of casein from the stomach is delayed because in the acid environment a clot is formed.
- After peptic hydrolysis, peptides are released to the small intestine.
- In the small intestine hydrolysis of whey proteins has been reported to be slow compared to other proteins and their digestion and absorption take place over a greater length of intestine



Boire Y et al Proc Natl Acad Sci 23, 1997 vol. 94 no. 26

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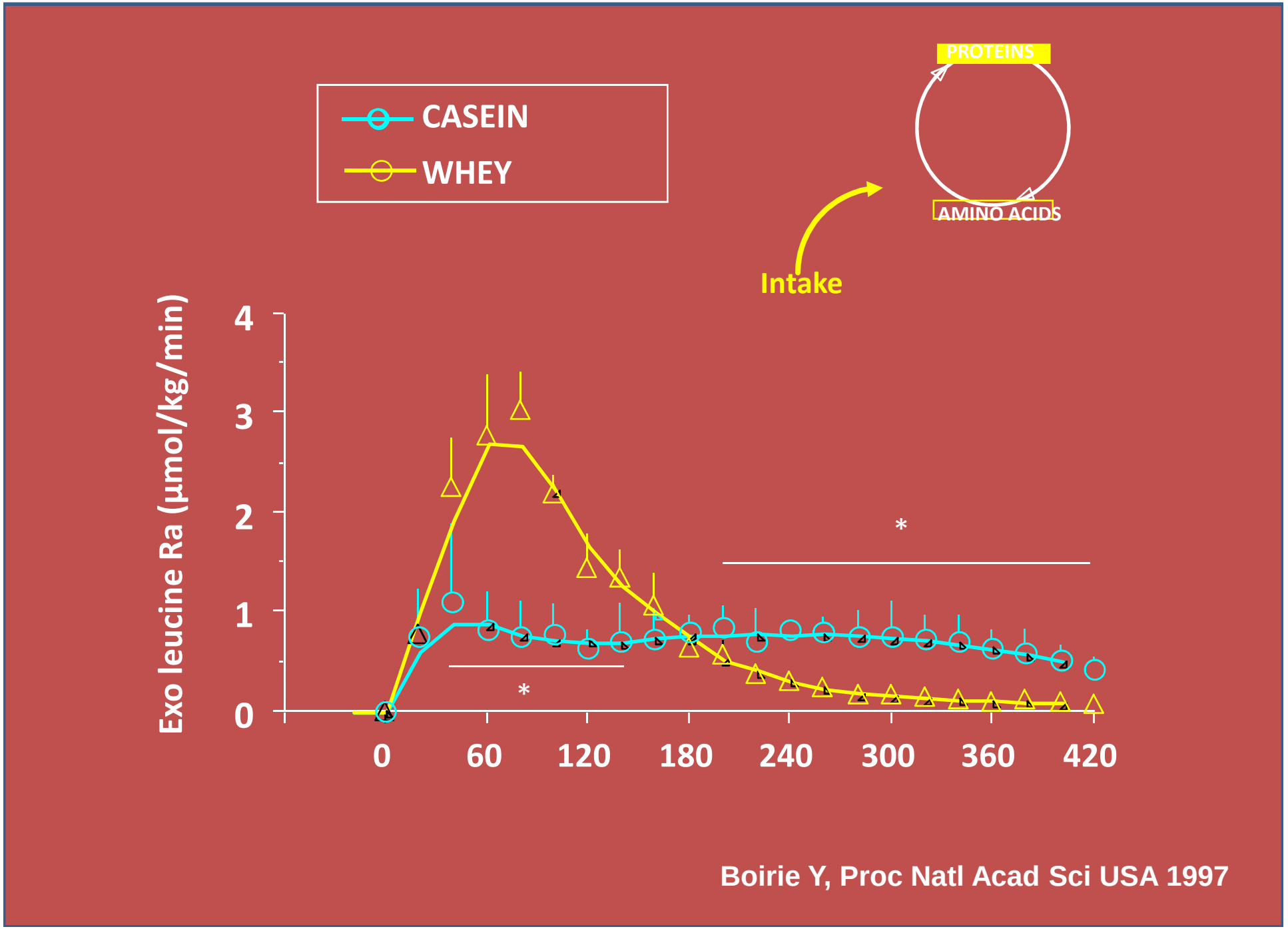

CASEIN
WHEY
PROTEINS
AMINO ACIDS
Intake
Exo leucine Ra (µmol/kg/min)
4
3
2
1
0
0
60
120
180
240
300
360
420
*
*
Boirie Y, Proc Natl Acad Sci USA 1997

Whey proteins influence food intake throughout :

(1) intrinsec physico-chemical carachteristics;

(2) Releasing of specific aminoacids;

(3) Combined action on peptides and /or aminoacids derived by enterohormones which control appetite

(4) Bioactive peptides;

Effetti neuroormonali delle sieroproteine

Mediterr J Nutr Metab
DOI 10.1007/s12349-013-0121-7

SHORT COMMUNICATION

Appetite control and gastrointestinal hormonal behavior (CCK, GLP-1, PYY 1–36) following low doses of a whey protein-rich nutraceutic

Samir Giuseppe Sukkar · Alberto Vaccaro · Giovanni Battista Ravera · Claudia Borrini · Raffaella Gradaschi · Anna Massa Sacchi-Nemours · Renzo Cordera · Gabriella Andraghetti

Table 1 Appetite and enterohormonal profile following whey proteins

Time (min.)	0′	15′	30′	90′	180′
Appetite	15.0 ± 4.3	12.6 ± 4.3	12.6 ± 4.2	12.2 ± 4.0*	13.2 ± 4.8
GLP-1 pmol/l	6.16 ± 1.78	6.80 ± 1.61	6.94 ± 1.7	7.11 ± 1.08**	6.77 ± 2.09
CCK ng/mL	1.1 ± 0.1	1.17 ± 0.18	1.17 ± 0.17	1.3 ± 0.25	1.16 ± 0.16
PYY pg/mL	19.7 ± 0.3	19.4 ± 0.5	19.6 ± 0.3	19.7 ± 0.5	19.7 ± 0.4

CCK NS, *PYY* NS

* Appetite: T0 vs. T90 $P = 0.0446$

** GLP-1: T0 vs. T90 $P = 0.0166$

Table 2 Appetite and enterohormonal profile following casein

Time (min.)	0′	15′	30′	90′	180′
Appetite	11.4 ± 7.8	9.6 ± 6.4	7.7 ± 4.7	9.4 ± 5.5	11.8 ± 6.8
GLP-1	7.0 ± 1.1*	7.1 ± 1.2	6.74 ± 1.1	7.2 ± 1.2	7.2 ± 1.2*
CCK	1.4 ± 0.1	1.3 ± 0.2	1.3 ± 0.1	1.4 ± 0.1	1.4 ± 0.1
PYY pg/mL	19.7 ± 0.3	19.5 ± 0.3	19.7 ± 0.4	19.8 ± 0.5	19.9 ± 0.6

Appetite NS, *CCK* NS, *PYY* NS

* GLP-1: T0 vs. T180 $P = 0.0129$

Whey proteins influence food intake throughout :

(1) intrinsec physico-chemical carachteristics;

(2) Releasing of specific aminoacids;

(3) Combined action on peptides and /or aminoacids derived by enterohormones which control appetite

(4) Bioactive peptides;

L’intervallo fra i pasti è prolungato dopo assunzione di WP rispetto ad altre proteine

Appetite 52 (2009) 372–379

Contents lists available at ScienceDirect

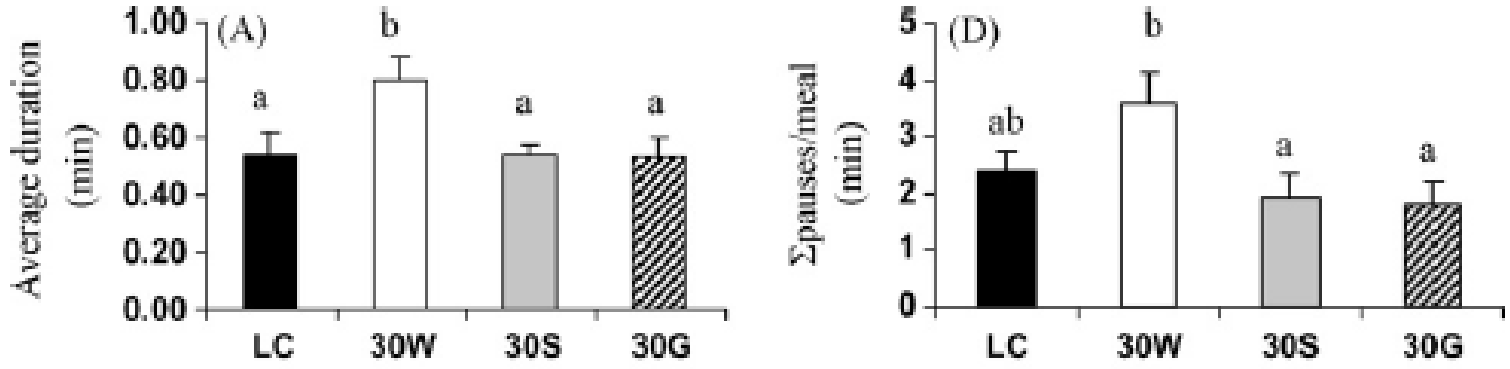
Appetite

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

Research report

Inter-meal interval is increased in mice fed a high whey, as opposed to soy and gluten, protein diets

Yinghua Yu, Tim South, Xu-Feng Huang *



DIRETTIVA 96/8/CE DELLA COMMISSIONE
del 26 febbraio 1996
sugli alimenti destinati a diete ipocaloriche volte alla riduzione del peso

- **COMPOSIZIONE ESSENZIALE DEGLI ALIMENTI DIETETICI DESTINATI A DIETE IPOCALORICHE**
- **Grassi**
- energia derivata dai grassi <30 % dell'energia totale
- 3.2. Per i prodotti di cui all'articolo 1, paragrafo 2, lettera a), l'acido linoleico >4,5 g.
- 3.3. Per i prodotti di cui all'articolo 1, paragrafo 2, lettera b), l'acido linoleico >1 g.

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- **COMPOSIZIONE ESSENZIALE DEGLI ALIMENTI DIETETICI DESTINATI A DIETE IPOCALORICHE**
- **Fibre alimentari**
- Il contenuto delle fibre alimentari nei prodotti di cui all'articolo 1, paragrafo 2, lettera a) 10 -30 g perla razione alimentare giornaliera.
- 5. **Vitamine e minerali**
- 5.1. I prodotti menzionati all'articolo 1, paragrafo 2, lettera a) devono fornire per l'intera razione alimentare giornaliera almeno il 100 % del quantitativo di vitamine e minerali specificato nella tabella.
- 5.2. I prodotti menzionati all'articolo 1, paragrafo 2, lettera b) devono fornire, per pasto, almeno il 30 % del quantitativo di vitamine e minerali specificato nella tabella;
- il quantitativo di potassio fornito da questi prodotti > 500 mg per pasto.

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- **COMPOSIZIONE ESSENZIALE DEGLI ALIMENTI DIETETICI DESTINATI A DIETE IPOCALORICHE**

VANTAGGI DEI SOSTITUTI DEL PASTO

- **PRATICI**
- **PRONTI ALL'USO**
- **MAGGIOR SENSO DI SAZIETA'**

SVANTAGGI DEI SOSTITUTI DEL PASTO

- **SPESSO ASSENZA DI MASTICAZIONE**
- **MANCANZA DI CONDIVISIONE E SOCIALITA'**
- RISCHIO DI **MANCANZA DI CORREZIONE DELLE ABITUDINI ALIMENTARI**
- RIPETITIVITA'

Studi di efficacia

Position of the Academy of Nutrition and Dietetics: Interventions for the Treatment of Overweight and Obesity in Adults

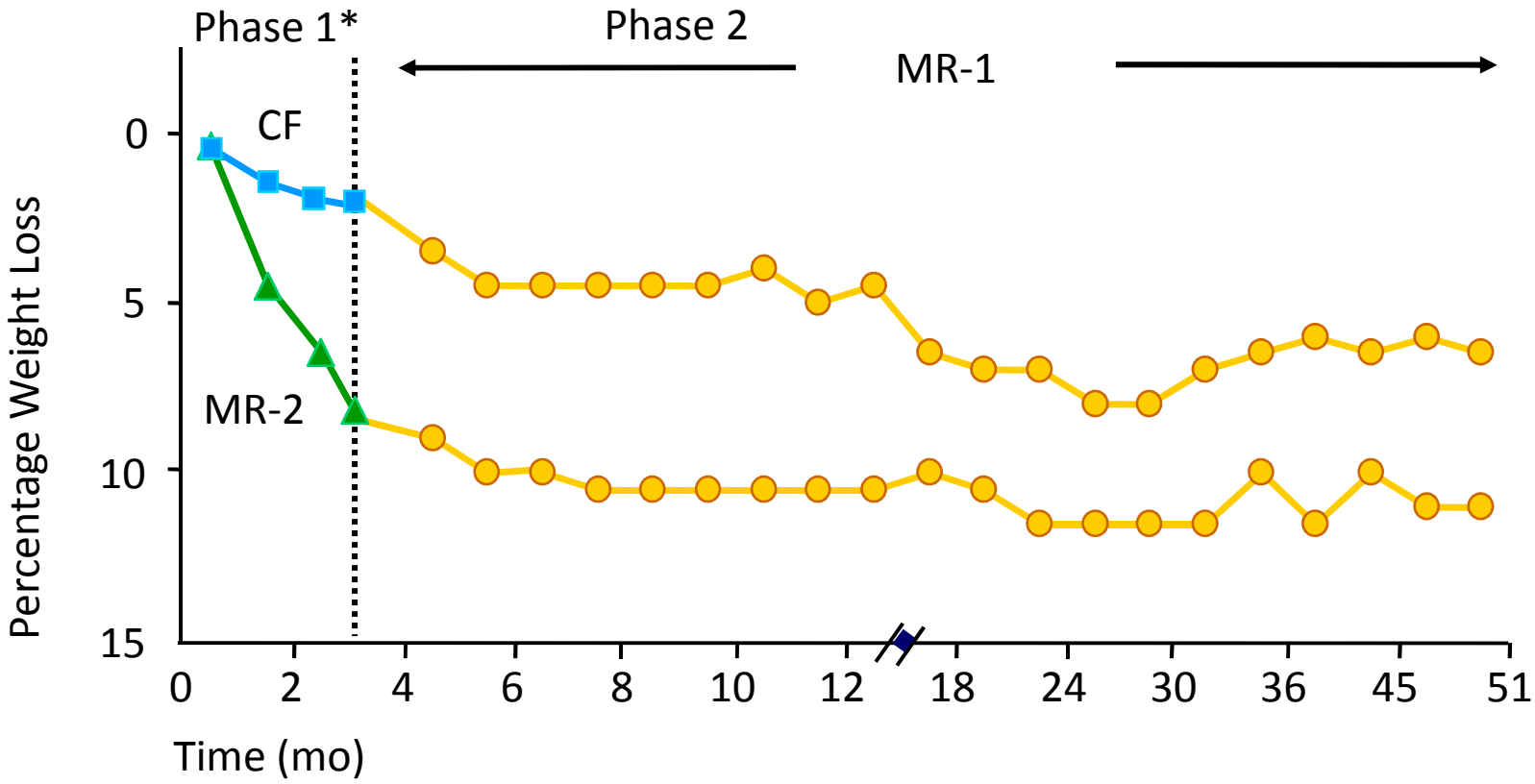
Diet	Investigated using RCTs[a] with evidence considered supportive for weight loss	Investigated using RCTs with evidence considered non-supportive for weight loss	Lacking investigation for weight loss using RCTs
Small, food-based			
Increasing fruits and vegetables		X	
Decreasing sugar-sweetened beverages	X		
Decreasing fast food			X
Portion control	X		
Larger-, energy-, macronutrient- and/or dietary pattern-based			
Energy-focused			
Low-calorie diet	X		
Meal replacement/structured meal plans	X		
Very-low-calorie diet	X		
Macronutrient-focused			
Low-carbohydrate	X		
Low glycemic index/load without energy restriction		X	
High protein with energy restriction	X		
Dietary-pattern focused			
Energy density			X
DASH[b] with energy restriction	X		
Mediterranean with energy restriction	X		
Dietary-timing focused			
Eating frequency			X
Timing of eating			X
Breakfast consumption			X

Studi di efficacia

- Peso e composizione corporea
- Senso di sazietà
- Sindrome metabolica
- Chirurgia bariatrica

EFFETTI SUL PESO E COMPOSIZIONE CORPOREA

I sostituti del pasto aumentano la perdita di peso nel breve e nel lungo periodo , consentendo di ridurre il peso nei sogg a dieta tradizionale non responders



*1200–1500 kcal/d diet prescription.
CF=conventional foods.
MR-2= OPTIFAST replacements for 2 meals, 2 snacks daily.
MR-1= OPTIFAST replacements for 1 meal, 1 snack daily.

Ditschuneit et al. Am J Clin Nutr 1999;69:198.
Fletchner-Mors et al. Obes Res 2000;8:399

International Journal of Obesity (2003) 27, 537–549

0307-0565/03 $25.00
www.nature.com/ijo

PAPER

Weight management using a meal replacement strategy: meta and pooling analysis from six studies

SB Heymsfield[1]*, CAJ van Mierlo[2], HCM van der Knaap[2], M Heo[1] and HI Frier[3]

- Una meta-analisi di Heymsfield su 6 studi clinici randomizzati controllati ha dimostrato come un protocollo dietetico che includa pasti sostitutivi 1-2 volte al giorno, porti ad una perdita di peso maggiore rispetto ad una normale dieta ipocalorica, inoltre la percentuale di abbandono è minore nel lungo periodo *(Heymsfield SB, et al, Int J Obes Relat Metab Disord 2003)*

Three-month weight loss results

			RCD			PMR			Δ (PMR-RCD)		
	Study	N	Wt loss	s.e.	P-value	Wt loss	s.e.	P-value	Wt	s.e.	P-value
Individual	ULM	100	1.57	0.48	0.001	7.38	0.46	<0.001	5.81	0.60	<0.001
	UCLA	65	4.05	0.83	<0.001	5.94	0.74	<0.001	1.89	1.11	0.094
	MAYO	30	4.82	1.13	<0.001	6.74	1.03	<0.001	1.92	1.67	0.261
	NEV	50	2.63	0.73	<0.001	5.37	0.59	<0.001	2.75	0.96	0.006
	SDA	91	4.40	0.51	<0.001	6.76	0.53	<0.001	2.37	0.71	0.001
	TP	67	4.41	0.63	<0.001	4.90	0.58	<0.001	0.49	0.71	0.496
Meta	Fixed	403	3.34	0.26	<0.001	6.28	0.24	<0.001	3.01	0.33	<0.001
	Random	403	3.56	0.60	<0.001	6.19	0.44	<0.001	2.60	0.96	0.006
Pooled	Completer	403	3.96	0.29	<0.001	6.50	0.27	<0.001	2.54	0.37	<0.001
	LOCF	485	3.23	0.28	<0.001	5.62	0.26	<0.001	2.39	0.35	<0.001
	MI	487	3.99	0.29	<0.001	6.22	0.27	<0.001	2.23	0.35	<0.001
Q			24.21	5.00	<0.001	15.06	5.00	0.010	7.04	5.00	<0.001
Publication Bias	Fail-safe-N		137			377			60		
	tau		0.07		0.851	−0.200		0.573	−0.200		0.573

Wt loss (kg)=Wt at Baseline-Wt at 3 Mo (adjusted for gender, age, and baseline BMI). The six studies are summarized in Table 2.
LOCF, last observation carried forward; MI, multiple imputation.

reduced calorie diet (RCD)
partial meal replacement (PMR)

SB Heymsfield et al, International Journal of Obesity (2003)

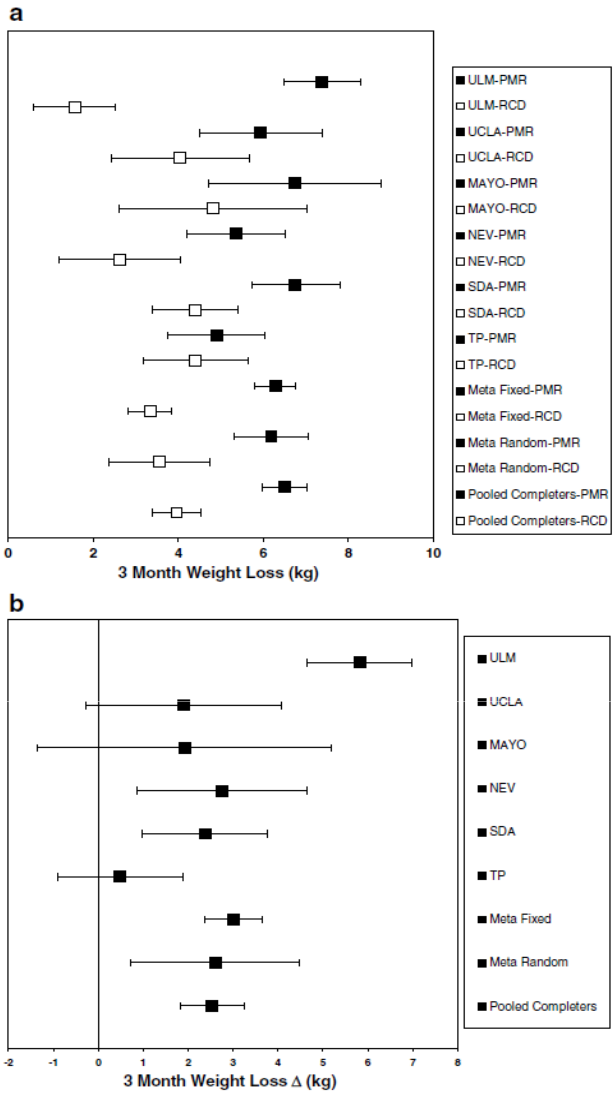


Figure 2 (a) Effect sizes of weight loss with 95% CI (X±1.96 s.e) for individual PMR studies and all studies combined at 3 months. (b) Weight loss difference (Δ) with 95% CI (Δ±1.96 s.e.) between the PMR and RCD programs at 3 months.

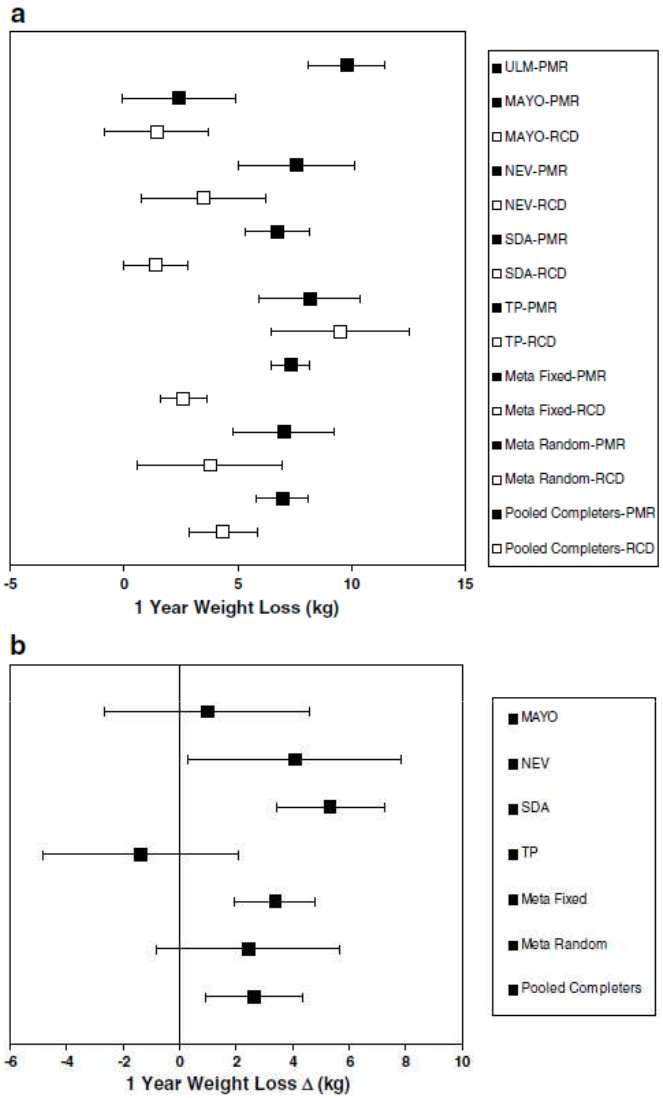


Figure 3 (a) Effect sizes of weight loss with 95% CI (X±1.96 s.e.) for individual PMR studies and all studies combined at 1 y. (b) Weight loss difference (Δ) with 95% CI (Δ±1.96 s.e.) between the PMR and RCD programs at 1 y.

Calo ponderale dopo 3 mesi

Calo ponderale dopo 1 anno

SB Heymsfield et al, International Journal of Obesity (2003)

COMPOSIZIONE CORPOREA

Liquid meal replacement vs traditional food: A potential model for women who cannot maintain eating habit change

DANA Q. ROTHACKER, PhD; BETH A. STANISZEWSKI; PETER K. ELLIS, PhD

March 2001 Volume 101 Number 3

Body weight, fat mass, % fat, and lean body mass: mean, change from baseline, and treatment differences for women using liquid meal replacement or traditional food diets

	n	Baseline	Week 12	Week 52
		← mean±standard deviation →		
Weight (kg)				
Meal replacement	28	75.2±6.9	69.2±6.4	68.9±7.7
Traditional food	33	77.5±7.5	73.7±7.6	76.2±9.4
		← mean±standard error →		
Weight change (kg)				
Meal replacement	28	. . .	−6.3±0.6	−6.4±0.9
Traditional food	33	. . .	−3.8±0.5	−1.2±0.7
			P *CI*	*P* *CI*
Treatment difference			.008** (−4.0, −0.6)	.000*** (−8.8, −2.8)
		← mean±standard deviation →		
Fat mass (kg)				
Meal replacement	28	32.8±5.9	26.8±5.0	27.5±6.7
Traditional food	33	34.5±6.2	30.3±6.2	33.9±7.9
		← mean±standard error →		
Fat mass change (kg)				
Meal replacement	28	. . .	−6.0±0.8	−5.3±0.9
Traditional food	33	. . .	−3.9±0.6	−0.9±0.9
			P *CI*	*P* *CI*
Treatment difference			.050* (−4.1, 0.1)	.002** (−6.6, −1.5)
		← mean±standard deviation →		
Fat %				
Meal replacement	28	44.0±5.0	38.9±4.8	39.7±5.9
Traditional food	33	44.8±5.2	41.7±5.6	44.5±6.8
		← mean±standard error →		
Fat % change				
Meal replacement	28	. . .	−5.1±0.7	−4.3±0.9
Traditional food	33	. . .	−3.1±0.7	−0.3±0.8
			P *CI*	*P* *CI*
Treatment difference			.060 (−4.0, 1.0)	.002** (−6.3, −1.5)
		← mean±standard deviation →		
Lean body mass (kg)				
Meal replacement	28	41.4±4.0	41.8±3.9	40.9±3.8
Traditional food	33	42.2±4.5	42.4±4.7	41.6±5.0
		← mean±standard error →		
Lean body mass change (kg)				
Meal replacement	28	. . .	−0.4±0.3	0.5±0.3
Traditional food	33	. . .	−0.3±0.4	0.6±0.5
			P *CI*	*P* *CI*
Treatment difference			.588 (−0.8, 1.5)	0.782 (−1.0, 1.3)

*$P<.050$.
**$P<.010$.
***$P<.001$.

Riduzione significativa della massa grassa dopo 12 e 52 settimane , nel gruppo con pasti sostitutivi

Clinical Study

Meal Replacements for Weight Loss in Type 2 Diabetes in a Community Setting

Jennifer B. Keogh[1] and Peter M. Clifton[2]

Journal of Nutrition and Metabolism
Volume 2012, Article ID 918571, 7 pages

TABLE 4: Bone density, bone mineral content, fat and lean mass, by dual X-ray absorptiometry at baseline 3 and 6 months in subjects who completed the study.

	Baseline		3 months		6 months	
	MR	DB	MR	DB	MR	DB
BMD	1.34 ± 0.10	1.34 ± 0.12	1.32 ± 0.10	1.31 ± 0.12	1.34 ± 0.10	1.34 ± 0.12
BMC	3.38 ± 0.58	3.34 ± 0.66	3.37 ± 0.56	3.35 ± 0.65	3.37 ± 0.55	3.34 ± 0.67
Fat mass (kg)	38.9 ± 8.5	35.6 ± 9.8	35.5 ± 8.6*	33.8 ± 9.7	35.9 ± 9.2*	34.3 ± 9.9
Lean mass (kg)	58.6 ± 11.9	57.1 ± 9.6	57.2 ± 11.8	55.8 ± 9.8	57.3 ± 11.8	55.9 ± 8.9

Data are mean ± SD.
MR: $n = 40$, DB: $n = 34$, $^*P < 0.01$ time by diet interaction.

Riduzione significativa della massa grassa dopo 3 e 6 mesi , nel gruppo con pasti sostitutivi

Nel mantenimento

Five-Year Self-Management of Weight Using Meal Replacements: Comparison With Matched Controls in Rural Wisconsin

Dana Quinn Rothacker, PhD Nutrition 16:344–348, 2000

- Weight changes of 50 males and 84 females following a self managed meal-replacement program for 5 y were compared with three matched controls per participant in rural Wisconsin.
- Weight changes were 25.8 kg and 24.2 kg for male and female meal replacement users, respectively, and 16.7 kg and 16.5 kg for the control subjects, respectively, indicating the importance of control subjects in long-term studies.

- oltre al calo ponderale, è stato dimostrato che utilizzando 2 pasti sostitutivi al giorno si ha un decremento di colesterolo totale, LDL, trigliceridi, glicemia, nettamente maggiore rispetto a soggetti che seguivano una dieta ipoglucidica e praticavano attività fisica regolare *(Rothacker DQ. Nutrition 2000)*

EFFETTI SULLA SINDROME METABOLICA

Biomarker results

		Independent variables								
		Baseline biomarker			*3 month Wt loss*			*Group (PMR-RCD)*		
Dependent variables Δ at 3 Month	N	*Beta*	*s.e.*	*P-value*	*Beta*	*s.e.*	*P-value*	*Beta*	*s.e.*	*P-value*
Glucose (mg/dl)	177	0.395	0.058	<0.001	1.177	0.530	0.028	7.898	4.522	0.083
SBP (mmHg)	197	0.395	0.057	<0.001	0.957	0.247	<0.001	0.085	1.838	0.963
DBP (mmHg)	197	0.615	0.057	<0.001	0.050	0.129	0.697	−0.143	0.960	0.882
Insulin (μU/ml)	94	0.470	0.089	<0.001	0.117	0.202	0.578	6.603	1.635	<0.001
Cholesterol (mmol/l)	159	0.341	0.051	<0.001	0.030	0.017	0.072	−0.125	0.121	0.302
HDL (mmol/l)	159	0.269	0.061	<0.001	0.007	0.007	0.271	−0.054	0.048	0.261
LDL (mmol/l)	58	0.431	0.088	<0.001	0.060	0.028	0.039	0.037	0.157	0.817
TG (mmol/l)	159	0.281	0.059	<0.001	0.051	0.021	0.014	0.123	0.153	0.424
Δ at 1 y					1 y wt loss					
Glucose (mg/dl)	107	0.617	0.079	<0.001	0.725	0.273	0.009	−2.278	3.895	0.560
SBP (mmHg)	133	0.426	0.072	<0.001	0.733	0.204	<0.001	−1.992	2.665	0.456
DBP (mmHg)	84	0.692	0.106	<0.001	0.154	1.004	0.319	0.344	1.946	0.861
Insulin (μU/ml)	86	0.629	0.088	<0.001	0.151	0.118	0.202	4.027	1.929	0.040
Cholesterol (mmol/l)	103	0.566	0.068	<0.001	0.047	0.011	<0.001	−0.185	0.158	0.245
HDL (mmol/l)	103	0.484	0.069	<0.001	0.002	0.004	0.563	0.048	0.062	0.443
LDL (mmol/l)	64	0.382	0.093	<0.001	0.044	0.012	0.001	−0.161	0.151	0.291
TG (mmol/l)	103	0.806	0.055	<0.001	0.023	0.009	0.011	−0.230	0.127	0.074

Values are adjusted for study.
DBP, diastolic blood pressure; HDL, high-density lipoprotein cholesterol; LDL, low-density lipoprotein cholesterol; SBP, systolic blood pressure; TG, triglyceride.
Values are adjusted for age, sex, and study.

reduced calorie diet (RCD)
partial meal replacement (PMR)

SB Heymsfield et al, International Journal of Obesity (2003)

Liquid Meal Replacements and Glycemic Control in Obese Type 2 Diabetes Patients

Ian Yip, Vay Liang W. Go,* Scott DeShields,* Pamela Saltsman,* Mindy Bellman,* Gail Thames,* Shanna Murray,* He-Jing Wang,*† Robert Elashoff,*† and David Heber**

OBESITY RESEARCH Vol. 9 Suppl. 4 November 2001

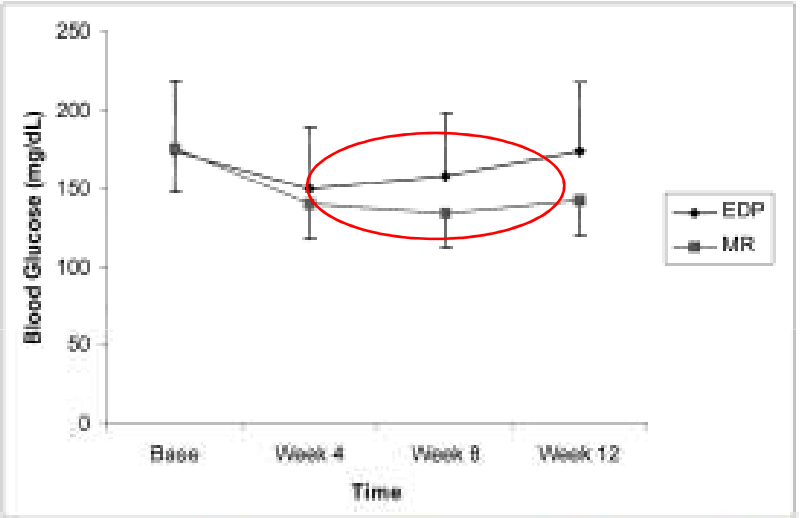


Figure 4: Serum glucose concentrations over time. Glucose levels in the MR group were significantly lower than those of the EDP group over time ($p = 0.012$). Error bars represent 1 SEM from the mean.

Table 3. Insulin and HbA1c concentrations

	MR† ($n = 41$)	EDP‡ ($n = 16$)
Insulin (pM)		
Baseline	107 ± 54	130 ± 79
Week 4	76 ± 56	95 ± 77
Week 8	65 ± 36	102 ± 83
Week 12	80 ± 50*	101 ± 62*
HbA1c		
Baseline	8.7 ± 1.3	9.3 ± 1.5
Week 8	7.7 ± 1.4	8.5 ± 1.5
Week 12	7.9 ± 1.4*	8.7 ± 1.6*

Means ± SD.
* $p < 0.05$.

Miglioramento significativo della glicemia nel gruppo con pasti sostitutivi

Long-term efficacy of soy-based meal replacements *vs* an individualized diet plan in obese type II DM patients: relative effects on weight loss, metabolic parameters, and C-reactive protein

Z Li[1]*, K Hong[1], P Saltsman[1], S DeShields[1], M Bellman[1], G Thames[1], Y Liu[1], H-J Wang[2], R Elashoff[2] and D Heber[1]

European Journal of Clinical Nutrition (2005) 59, 411–418

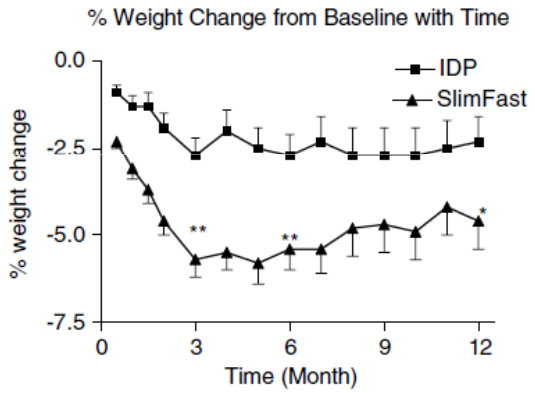


Figure 1 Percent of weight change during the study period. (▲) MR group, (■) IDP group. Mean±s.e., *$P<0.05$,**$P<0.01$.

Table 4 Changes in metabolic profile from baseline

	Study period	*IDP*	*P-value comparison to baseline*	*MR*	*P-value comparison to baseline*	*P-value comparison between groups*
HbA1c (%)	3 months	−0.17	0.292	−1.00	**<0.0001**	**0.0008**
	6 months	−0.44	0.080	−0.95	**<0.0001**	0.110
	12 months	−0.15	0.563	−0.30	0.291	0.594
Glucose (mg/dl)	3 months	−12.98	0.124	−26.17	**0.0002**	**0.046**
	6 months	−12.97	0.167	−35.13	**<0.0001**	**0.0002**
	12 months	−7.86	0.331	−12.07	0.139	0.595
Insulin (μIU/ml)	3 months	−0.53	0.474	−1.48	**0.005**	0.651
	6 months	−0.04	0.935	0.19	0.783	0.376
	12 months	0.82	0.372	−0.42	0.439	0.394
Total cholesterol (mg/dl)	3 months	−11.04	**0.025**	−21.52	**<0.0001**	0.263
	6 months	−5.97	0.259	−12.80	**0.0037**	0.916
	12 months	5.26	0.396	−10.76	0.084	0.616
Triacylglycerol (mg/dl)	3 months	−51.01	**0.006**	−52.12	**<0.0001**	0.256
	6 months	−40.22	**0.024**	−36.33	**0.002**	0.427
	12 months	−28.89	0.119	−28.00	**0.038**	0.956
LDL (mg/dl)	3 months	−0.48	0.906	−11.04	**0.024**	**0.683**
	6 months	3.16	0.500	−5.53	0.149	0.849
	12 months	8.76	0.129	−6.10	0.255	0.615
HDL (mg/dl)	3 months	−0.40	0.656	−0.33	0.762	0.556
	6 months	−1.11	0.289	−0.48	0.535	0.307
	12 months	2.26	0.012	−0.97	0.345	0.410
hs-CRP (mg/l)	3 months	−0.23	0.486	−0.37	0.681	
	6 months	−0.26	0.338	−0.97	**0.019**	
	12 months	−0.68	0.179	−0.93	**0.028**	

P-value: comparison to baseline.

Miglioramento significativo della HbA1c e glicemia nel gruppo con pasti sostitutivi

Long-term efficacy of soy-based meal replacements *vs* an individualized diet plan in obese type II DM patients: relative effects on weight loss, metabolic parameters, and C-reactive protein

Z Li[1]*, K Hong[1], P Saltsman[1], S DeShields[1], M Bellman[1], G Thames[1], Y Liu[1], H-J Wang[2], R Elashoff[2] and D Heber[1]

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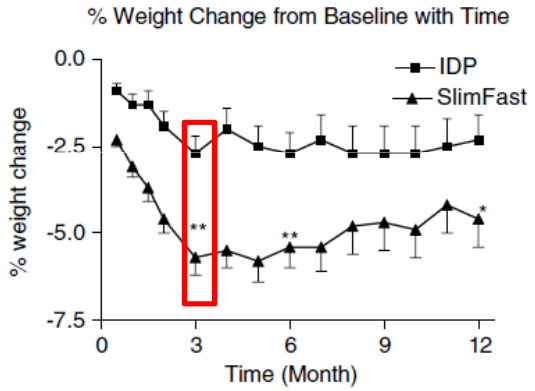

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	6 months	−0.44	0.080	−0.95	**<0.0001**	0.110
	12 months	−0.15	0.563	−0.30	0.291	0.594
Glucose (mg/dl)	3 months	−12.98	0.124	−26.17	**0.0002**	**0.046**
	6 months	−12.97	0.167	−35.13	**<0.0001**	**0.0002**
	12 months	−7.86	0.331	−12.07	0.139	0.595
Insulin (μIU/ml)	3 months	−0.53	0.474	−1.48	**0.005**	0.651
	6 months	−0.04	0.935	0.19	0.783	0.376
	12 months	0.82	0.372	−0.42	0.439	0.394
Total cholesterol (mg/dl)	3 months	−11.04	**0.025**	−21.52	**<0.0001**	0.263
	6 months	−5.97	0.259	−12.80	**0.0037**	0.916
	12 months	5.26	0.396	−10.76	0.084	0.616
Triacylglycerol (mg/dl)	3 months	−51.01	**0.006**	−52.12	**<0.0001**	0.256
	6 months	−40.22	**0.024**	−36.33	**0.002**	0.427
	12 months	−28.89	0.119	−28.00	**0.038**	0.956
LDL (mg/dl)	3 months	−0.48	0.906	−11.04	**0.024**	**0.683**
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	12 months	8.76	0.129	−6.10	0.255	0.615
HDL (mg/dl)	3 months	−0.40	0.656	−0.33	0.762	0.556
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	12 months	2.26	0.012	−0.97	0.345	0.410
hs-CRP (mg/l)	3 months	−0.23	0.486	−0.37	0.681	
	6 months	−0.26	0.338	−0.97	**0.019**	
	12 months	−0.68	0.179	−0.93	**0.028**	

P-value: comparison to baseline.

Ma anche riduzione significativa della PCR!

The Diabetes Educator
http://tde.sagepub.com/

Efficacy of Meal Replacements Versus a Standard Food-Based Diet for Weight Loss in Type 2 Diabetes : A Controlled Clinical Trial

Lawrence J. Cheskin, Amy M. Mitchell, Ami D. Jhaveri, Andrea H. Mitola, Lisa M. Davis, Rebecca A. Lewis, Mary A. Yep and Thomas W. Lycan

The Diabetes Educator 2008 34: 118

		Group[b]			Group[c]	
Measurement	Week	PCD (n = 31)	SD (n = 17)	Week	PCD (n = 16)	SD (n = 8)
High-density lipoprotein, mg/dL (mmol/L)[a]	0	46.79 ± 11.99 (1.21 ± 0.31)	49.11 ± 10.44 (1.27 ± 0.27)	0	50.27 ± 14.3 (1.30 ± 0.37)	50.27 ± 16.24 (1.30 ± 0.42)
	34	50.27 ± 13.15 (1.30 ± 0.34)	52.2 ± 11.99 (1.35 ± 0.31)	86	58.3 ± 17.0 (1.50 ± 0.44)	66.55 ± 31.32 (1.72 ± 0.81)
P		.012	.049		007	.128
Low-density lipoprotein, mg/dL (mmol/L)[a]	0	110.21 ± 20.10 (2.85 ± 0.52)	123.74 ± 25.52 (3.20 ± 0.66)	0	108.28 ± 18.95 (2.80 ± 0.49)	116.0 ± 22.04 (3.00 ± 0.57)
	34	119.87 ± 28.62 (3.10 ± 0.74)	121.81 ± 29.0 (3.15 ± 0.75)	86	107.1 ± 30.16 (2.77 ± 0.78)	114.85 ± 17.1 (2.97 ± 0.45)
P		.082	.880		945	.533
Triglycerides, mg/dl (mmol/L)[a]	0	178.03 ± 93.9 (2.01 ± 1.06)	225.86 ± 130.2 (2.55 ± 1.47)	0	174.5 ± 92.12 (1.97 ± 1.04)	178.9 ± 124 (2.02 ± 1.40)
	34	143.48 ± 72.65 (1.62 ± 0.82)	234.09 ± 193.97 (2.63 ± 2.19)	86	176.23 ± 105.95 (1.99 ± 1.23)	166.63 ± 81.49 (1.87 ± 0.92)
P		.0031	.953		0.942	.770
Insulin, µU/mL (pmol/L)[a,f]	0	13.49 ± 7.56 (93.7 ± 52.5)	13.49 ± 6.77 (93.7 ± 47.0)	0	13.29 ± 6.59 (92.3 ± 45.8)	11.8 ± 6.6 (81.95 ± 45.8)
	34	10.53 ± 6.15 (73.1 ± 42.7)	14.57 ± 9.79 (101.2 ± 68.0)	86	12.6 ± 10.01 (87.5 ± 69.5)	5.20 ± 3.8 (36.1 ± 26.4)
P		.012	.436		829	.137
Fasting glucose, mg/dL (mmol/L)[a]	0	149.9 ± 42.70 (8.32 ± 2.37)	148.62 ± 45.94 (8.25 ± 2.55)	0	136.0 ± 29.0 (7.55 ± 1.61)	145.38 ± 39.3 (8.07 ± 2.18)
	34	127.72 ± 31.53 (7.09 ± 1.75)	137.45 ± 68.46 (7.63 ± 3.80)	86	129.35 ± 38.55 (7.19 ± 2.14)	139.97 ± 48.28 (7.77 ± 2.68)
P		.001	.394		623	.614
Hemoglobin A1C, % total hemoglobin[a]	0	6.99 ± 1.33	7.64 ± 1.79	0	6.70 ± 0.99	8.30 ± 1.70
	34	6.70 ± 1.09	7.96 ± 2.30	86	6.70 ± 1.50	7.10 ± 1.30
P		.065	.168		968	.293

[a] Data are presented as the mean ± standard deviation and *P* values represent within-group differences.
[b] $P < .05$ for percentage change on PCD versus SD at 34 weeks of the active weight loss phase.
[c] $P < .05$ for percentage change on the PCD versus SD at 86 weeks.
[d] n = 16 (PCD) and 8 (SD) at 86 weeks.
[e] n = 13 and 5 at 86 weeks.
[f] Marginally significant ($P < .1$) for percentage change between PCD versus SD at 34 weeks.
[g] n = 12 and 4 at 86 weeks.

Miglioramento significativo delle HDL , TG , insulina e glicemia nel gruppo con pasti sostitutivi in pz sovrappeso con diabete tipo II

Clinical Study

Meal Replacements for Weight Loss in Type 2 Diabetes in a Community Setting

Jennifer B. Keogh[1] and Peter M. Clifton[2]

Journal of Nutrition and Metabolism
Volume 2012, Article ID 918571, 7 pages

Table 5: HbA1c.

Baseline		3 months		6 months	
MR	DB	MR	DB	MR	DB
7.3 ± 1.0%	7.1 ± 1.0%	6.8 ± 0.8%*	7.0 ± 1.1%	7.0 ± 1.0%	6.9 ± 0.9%

Data are mean ± SD.
MR: $n = 40$, DB: $n = 34$.
*$P < 0.05$ time by diet interaction at 3 months.

Miglioramento significativo della HbA1c nel gruppo con pasti sostitutivi nel sovrappeso e diabete tipo II

Clinical Study

Meal Replacements for Weight Loss in Type 2 Diabetes in a Community Setting

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Table 6: Lipids and glucose at baseline and 3 months.

	Baseline		3 months	
	MR	DB	MR	DB
Total cholesterol (mmol/L)*	4.12 ± 1.12	4.22 ± 0.86	3.98 ± 1.06	4.06 ± 0.86
Triglycerides*	1.56 ± 0.50	1.57 ± 0.81	1.36 ± 0.58	1.48 ± 0.64
HDL cholesterol (mmol/L)	1.05 ± 0.23	1.20 ± 0.30	1.09 ± 0.29	1.15 ± 0.29
LDL cholesterol (mmol/L)*	2.36 ± 0.99	2.34 ± 0.80	2.28 ± 0.97	2.23 ± 0.77
Glucose (mmol/L)*	7.80 ± 1.63	7.65 ± 1.46	7.24 ± 1.49	7.33 ± 1.73

Data are mean ± SD.
MR: $n = 47$, DB: $n = 40$.
*$P < 0.05$ main effect of time

Table 7: Lipids and glucose at baseline and 6 months.

	Baseline		6 months	
	MR	DB	MR	DB
Total cholesterol (mmol/L)	4.10 ± 1.15	4.20 ± 0.87	4.31 ± 1.15	4.18 ± 0.89
Triglyceride (mmol/L)	1.56 ± 0.54	1.57 ± 0.84	1.66 ± 0.75	1.58 ± 0.79
HDL cholesterol (mmol/L)	1.05 ± 0.22	1.22 ± 0.30	1.09 ± 0.26	1.21 ± 0.31
LDL cholesterol (mmol/L)	2.34 ± 1.01	2.30 ± 0.82	2.46 ± 0.99	2.25 ± 0.72
Glucose (mmol/L)*	7.85 ± 1.70	7.66 ± 1.52	7.48 ± 2.02	7.08 ± 1.30

Data are mean ± SD.
MR: $n = 40$, DB: $n = 35$.
*$P < 0.05$ main effect of time

Miglioramento significativo del Col tot , Tg , LDL dopo 3 mesi e della glicemia dopo 3 e 6 mesi , nel gruppo con pasti sostitutivi nel sovrappeso e diabete tipo II

Effetti antisteatosi pretrapianto epatico

Treatment With Optifast Reduces Hepatic Steatosis and Increases Candidacy Rates for Living Donor Liver Transplantation

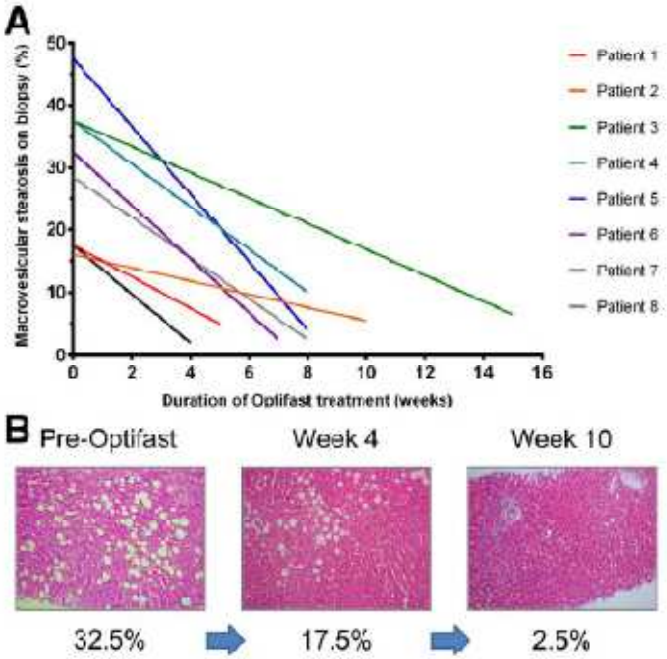


TABLE 3. Surgical Characteristics and Outcomes in Adult Recipients

	Adult Optifast Recipients (n = 13)	Adult Controls (n = 51)	*P* Value
Graft type			
Right lobe	13 (100)	47 (92)	0.76
Right posterior segment	—	3 (6)	
Left lobe	—	1 (2)	
Indication for transplant			
ESLD	9 (69)	33 (65)	0.76
HCC	4 (31)	18 (35)	
MELD score	18 (15-22)	19 (17-21)	0.76
Etiology of liver disease			
HCV	6 (46)	12 (24)	0.12
ETOH	3 (23)	9 (18)	
NASH	3 (23)	6 (12)	
AIH/PSC/PBC	1 (8)	16 (31)	
Other	—	8 (16)	
GWRW, %	1.0 (0.8-1.2)	1.0 (0.9-1.1)	0.80
Cold ischemia time, minutes	116 (84-148)	90 (78-102)	0.08
Warm ischemia time, minutes	50 (43-57)	42 (38-46)	0.06
Estimated blood loss, mL	417 (255-579)	358 (286-429)	0.47
Surgical complications, n patients	8 (62)	19 (37)	0.11
Biliary strictures, n	2	5	
Vessel thrombosis/stenosis, n	—	8	
Abdominal bleeding/infection/bile leak, n	6	13	
Wound complications, n	1	1	
DVT/PE, n	3	—	
Small-for-size syndrome, n	2	1	
Clavien score			
0-1	5 (38)	32 (63)	0.28
2	2 (15)	1 (2)	
3	6 (46)	17 (33)	
4	—	—	
5	—	1 (2)	
Length of stay, days	16 (7.8-24.7)	18 (11.4-23.9)	0.82
Retransplant	0 (0)	3 (6)	0.37
Chronic biliary obstruction, n	—	1	
Hepatic artery thrombosis, n	—	2	
90-day mortality	1 (8)	1 (2)	0.29
Infection, n	—	1	
Cardiac arrest, n	1	—	

NOTE: Data are given as mean (95% CI) or n (%) unless otherwise noted.

Doyle et al LIVER TRANSPLANTATION, September 2016

Pasti sostitutivi nel preparazione alla chirurgia bariatrica

- A large-scale study based on data from the Scandinavian Obesity Registry showed that weight loss of 9.5% before RYGB was associated with a marked reduction in important postoperative complications, such as anastomotic leakage, deep infection or abscess, and minor wound complications.
- “low-carbohydrate diet” was found to be more effective than a “low-fat diet” with regard to short-term weight loss, improvement in insulin sensitivity, and reduction in lipid concentrations.
- The former diet showed a positive effect, especially in patients with metabolic syndrome or nonalcoholic fatty liver disease

Nutritional Recommendations for Adult Bariatric Surgery Patients: Clinical Practice[1,2]

Adv Nutr 2017;8:382–94

Preoperative weight loss with a very-low-energy diet: quantitation of changes in liver and abdominal fat by serial imaging[1–3]

Susan L Colles, John B Dixon, Paul Marks, Boyd J Strauss, and Paul E O'Brien

Changes in measures of glucose metabolism, lipids, liver function, and a marker of inflammation before and after a 12-wk very-low-energy diet[1]

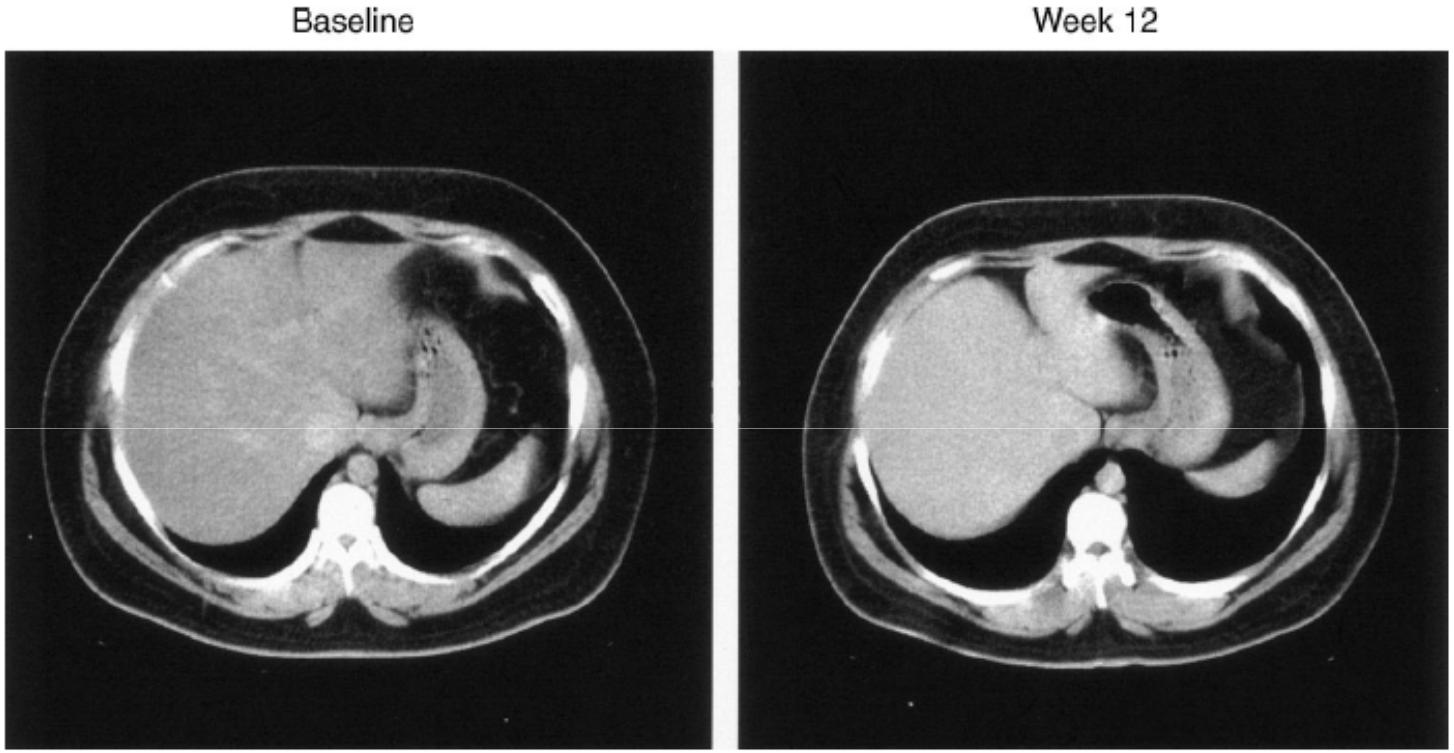
Characteristic	Baseline	After 12 wk	P^2
ALP (U/L)	93.2 ± 31.4 (59–211)[3]	84.5 ± 24.2 (52–159)	0.001
AST (U/L)	27.4 ± 12.7 (14–73)	24.8 ± 11.3 (11–59)	NS
ALT (U/L)	40.6 ± 23.6 (11–121)	32.8 ± 18.1 (9–105)	0.05
GGT (U/L)[4]	38.0 ± 39.0 (16–259)	30.0 ± 21.0 (10–227)	<0.001
Bilirubin (umol/L)	11.1 ± 6.5 (4–30)	13.0 ± 8.3 (6–45)	0.011
Fasting glucose (mmol/L)	7.6 ± 3.4 (4.5–17.2)	6.1 ± 11.7 (3.8–16.4)	0.011
Fasting insulin (mIU/L)[4,5]	24.0 ± 15.0 (11–164)	17.0 ± 13.0 (7–85)	<0.001
Glycated hemoglobin A_{1c} (%)	7.2 ± 1.8 (5.6–12.7)	6.3 ± 1.1 (5–9.6)	<0.001
Cholesterol (mmol/L)	5.0 ± 0.95 (3–6.8)	4.5 ± 1.2 (2.4–6.5)	<0.001
Triacylglycerol (mmol/L)[5]	1.8 ± 0.68 (0.8–3.1)	1.5 ± 0.69 (1–3)	0.043
HDL cholesterol (mmol/L)	1.3 ± 0.29 (0.8–2.3)	1.3 ± 0.25 (0.8–2.0)	NS
LDL cholesterol (mmol/L)	2.9 ± 0.87 (1.1–4.7)	2.5 ± 1.0 (0.8–4.5)	0.001
CRP (mg/L)	11.4 ± 9.6 (3–39.1)	10.8 ± 10.0 (1–43.6)	NS

[1] $n = 31$ paired results. ALP, alanine phosphatase; AST, aspartate aminotransferase; ALT, alanine aminotransferase; GGT, γ glutamyltransferase; CRP,

Am J Clin Nutr 2006;84:304 –11.

Preoperative weight loss with a very-low-energy diet: quantitation of changes in liver and abdominal fat by serial imaging[1–3]

Susan L Colles, John B Dixon, Paul Marks, Boyd J Strauss, and Paul E O'Brien



change in liver volume with weight loss in a 35-y-old man with an initial liver volume of 3.7 L and a final liver volume of 2.4 L.

A 35% reduction in liver size and a weight loss of 18 kg were observed.

Am J Clin Nutr 2006;84:304 –11.

CONCLUSIONI

Alla luce delle evidenze di letteratura L'EFSA (European Food Safety Authority) ha dato parere positivo alla possibilità di scrivere sulle confezioni di questi alimenti i claims: "utili per la perdita e per il mantenimento del peso ".

Inseriti all'interno di una dieta varia e equilibrata che preveda giornalmente il consumo di frutta e verdura e di altri alimenti tradizionali, abbinati ad un'attività fisica costante nel tempo, i sostituti del pasto rappresentano uno strumento utile all'interno di una strategia di perdita del peso e soprattutto di mantenimento del peso perso e l'acquisizione di buone e corrette abitudini alimentari, migliorando in modo significativo i parametri di sindrome metabolica.

ringraziamenti

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Appuntamento

http://www.xfilesgenova.it