Dietoterapia: Obesidade

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Excesso de peso: 2,1 bilhões de indivíduos

Obesidade: 640 milhões de indivíduos

Prim Care Clin Office Pract 43:121–135, 2016

Alimentos com alta densidade calórica

Alta palatabilidade

Fácil absorção e digestão

Baixo poder sacietógeno

Obesidade

Efeito do estresse no apetite

Redução do sono e produção de melatonina

ABESO, 2016

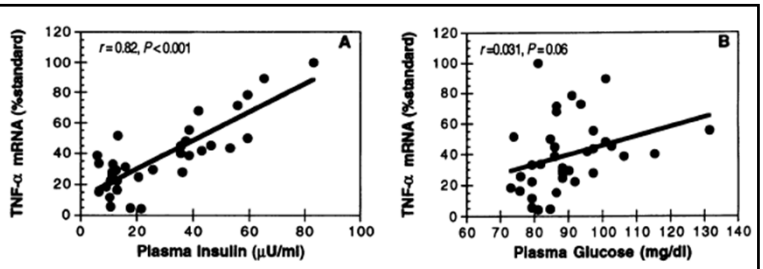
The Journal of Nutrition
Ingestive Behavior and Neurosciences

A Low Energy–Dense Diet in the Context of a Weight-Management Program Affects Appetite Control in Overweight and Obese Women

Nicola J Buckland,[1,2] Diana Camidge,[1] Fiona Croden,[1] Jacquelynne H Lavin,[3] R James Stubbs,[1] Marion M Hetherington,[1] John E Blundell,[1] and Graham Finlayson[1]

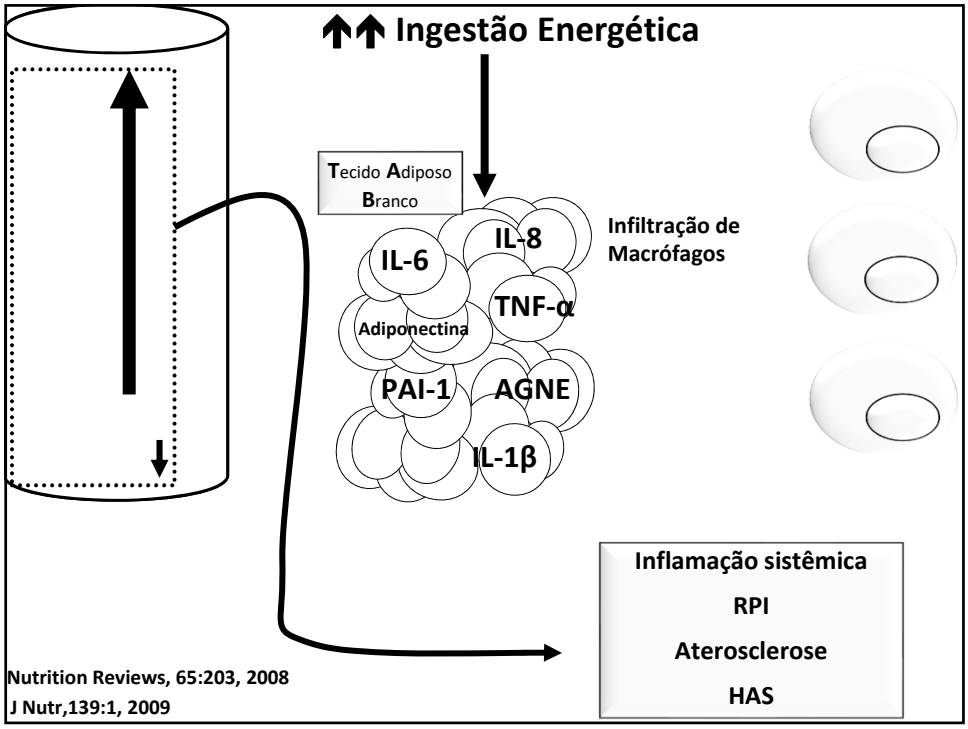
J Nutr 2018;148:798–806.

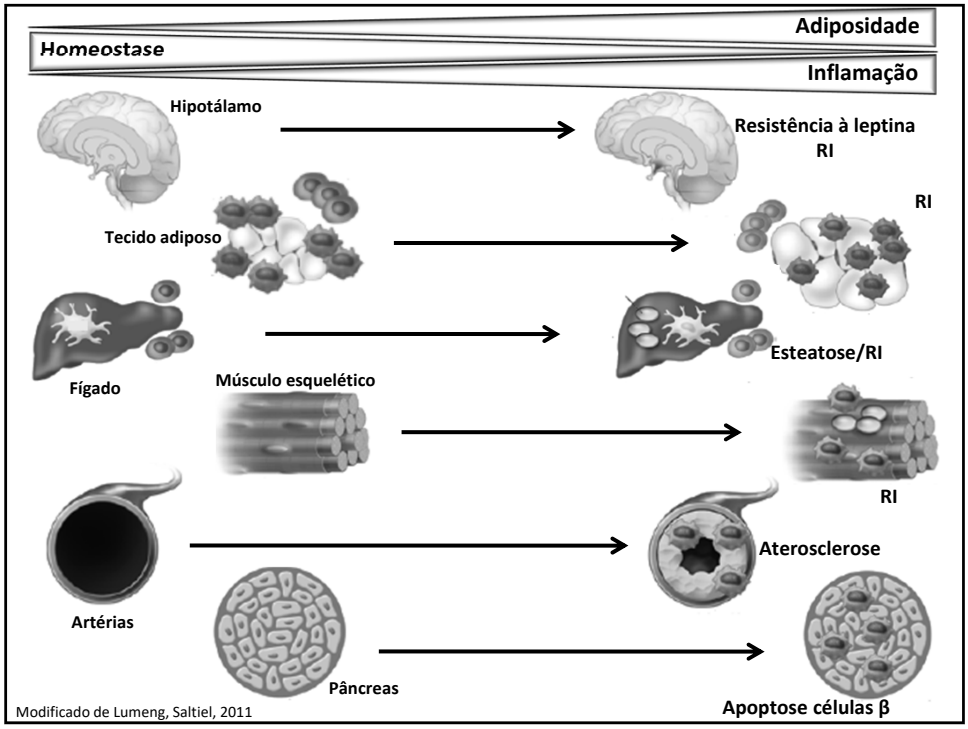
Adipócito



TNF-alfa

J. Clin. Investig. 95:2409–15, 1995


Ingestão Energética
Tecido Adiposo Branco
IL-8
IL-6
TNF-α
Adiponectina
PAI-1
AGNE
IL-1β
Infiltração de Macrófagos
Inflamação sistêmica
RPI
Aterosclerose
HAS
Nutrition Reviews, 65:203, 2008
J Nutr,139:1, 2009


Adiposidade
Homeostase
Inflamação
Hipotálamo
Resistência à leptina
RI
Tecido adiposo
RI
Fígado
Esteatose/RI
Músculo esquelético
RI
Artérias
Aterosclerose
Pâncreas
Apoptose células β
Modificado de Lumeng, Saltiel, 2011

Síndrome metabólica

Obesidade visceral (circunferência abdominal):

Europídeos: ≥ 94 cm (H); ≥ 80 cm (M)

Sul-africanos, Mediterrâneo Ocidental e Oriente Médio: ≥ 94 cm (H); ≥ 80 cm (M)

Sul-asiáticos e Chineses: ≥90 cm (H); ≥80 cm (M)

Sul-americanos e América Central: ≥90 cm (H); ≥80 cm (M)

Japoneses: ≥90 cm (H); ≥85 cm (M)

International Diabetes Federation, 2016

Síndrome metabólica

TAG ≥150mg/dl ou tratamento

HDL <40mg/dl (H); <50mg/dl (M)

PAS ≥130 ou PAD ≥85mmHg ou tratamento

Glicemia de jejum ≥100 mg/dl ou diagnóstico prévio de diabetes

International Diabetes Federation, 2016

Dietoterapia

Objetivos da dietoterapia

1. **Reduzir a gordura corporal**

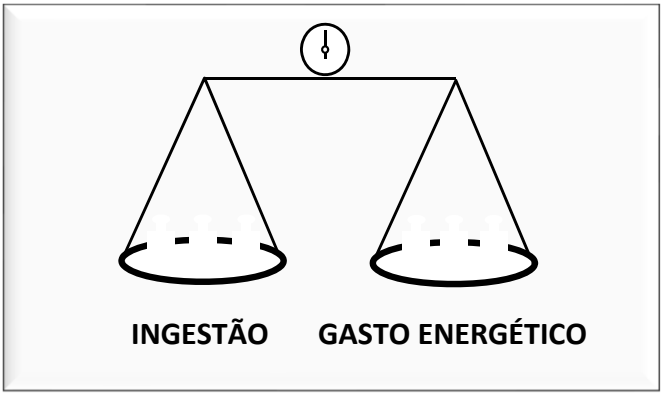
2. **Manutenção da massa corporal**

3. **Implementar hábitos e práticas saudáveis e adequados no que concerne à escolha dos alimentos, comportamentos alimentares e adequação do gasto energético**

4. **Redução do risco ou tratamento de outras doenças crônicas não transmissíveis associadas à obesidade**

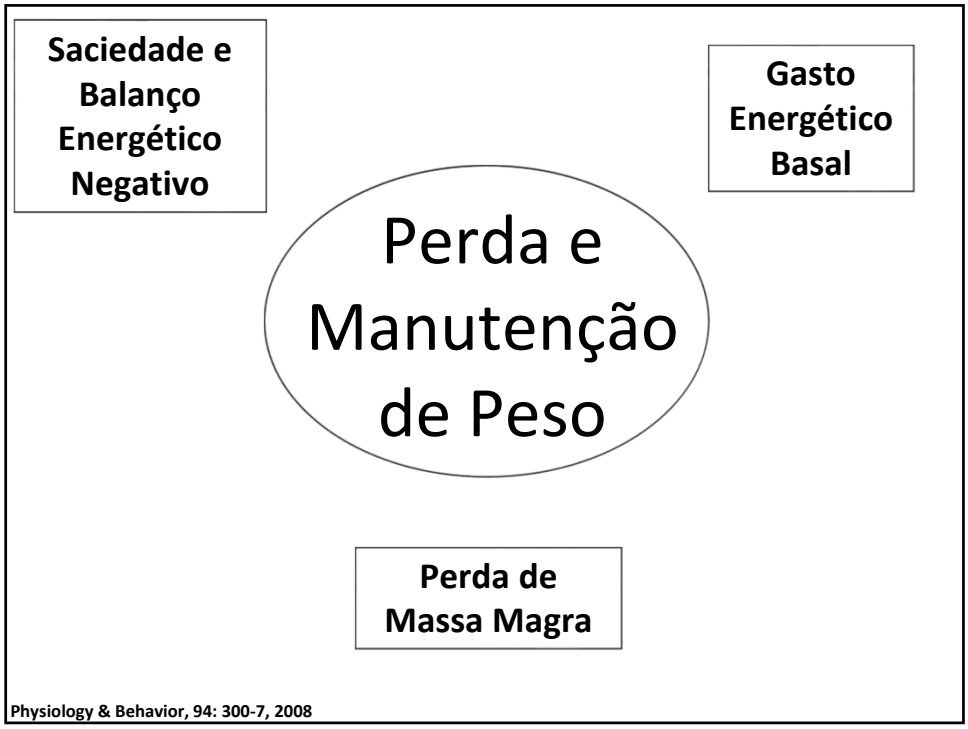
História Clínica

- Peso elevado desde a infância
- Família obesa
- Fator emocional desencadeante
- Sintomas de depressão
- Ansiedade
- Isolamento social (única diversão é comer)



PERDA DE PESO:

INGESTÃO	↓	GASTO ENERGÉTICO	→
INGESTÃO	→	GASTO ENERGÉTICO	↑
INGESTÃO	↓	GASTO ENERGÉTICO	↑



Características da dieta

VET

Published in final edited form as:
Circulation. 2014 June 24; 129(25 Suppl 2): S102–S138. doi:10.1161/01.cir.0000437739.71477.ee.

2013 AHA/ACC/TOS Guideline for the Management of Overweight and Obesity in Adults:

A Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines and The Obesity Society

EXPERT PANEL MEMBERS, Michael D. Jensen, MD [Co-Chair], Donna H. Ryan, MD [Co-Chair], Caroline M. Apovian, MD, FACP, Jamy D. Ard, MD, Anthony G. Comuzzie, PhD, Karen A. Donato, SM*, Frank B. Hu, MD, PhD, FAHA, Van S. Hubbard, MD, PhD*, John M. Jakicic, PhD, Robert F. Kushner, MD, Catherine M. Loria, PhD, FAHA*, Barbara E. Millen, DrPH, RD, Cathy A. Nonas, MS, RD, F. Xavier Pi-Sunyer, MD, MPH, June Stevens, PhD, Victor J. Stevens, PhD, Thomas A. Wadden, PhD, Bruce M. Wolfe, MD, Susan Z. Yanovski, MD*, **METHODOLOGY MEMBERS**, Harmon S. Jordan, ScD, Karima A. Kendall, PhD, Linda J. Lux, Roycelynn Mentor-Marcel, PhD, MPH, Laura C. Morgan, MA, Michael G. Trisolini, PhD, MBA, Janusz Wnek, PhD, **ACC/AHA TASK FORCE MEMBERS**, Jeffrey L. Anderson, MD, FACC, FAHA [Chair], Jonathan L. Halperin, MD, FACC, FAHA [Chair-Elect], Nancy M. Albert, PhD, CCNS, CCRN, FAHA, Biykem Bozkurt, MD, PhD, FACC, FAHA, Ralph G. Brindis, MD, MPH, MACC, Lesley H. Curtis, PhD, FAHA, David DeMets, PhD, Judith S. Hochman, MD, FACC, FAHA, Richard J. Kovacs, MD, FACC, FAHA, E. Magnus Ohman, MD, FACC, Susan J. Pressler, PhD, RN, FAAN, FAHA, Frank W. Sellke, MD, FACC, FAHA, Win-Kuang Shen, MD, FACC, FAHA, **SUBCOMMITTEE ON PREVENTION GUIDELINES**, Sidney C. Smith Jr, MD, FACC, FAHA [Chair], and Gordon F. Tomaselli, MD, FACC, FAHA [Co-Chair]

HHS Public Access
Author manuscript
Circulation. Author manuscript; available in PMC 2018 February 20.

Published in final edited form as:
Circulation. 2014 June 24; 129(25 Suppl 2): S102–S138. doi:10.1161/01.cir.0000437739.71477.ee.

2013 AHA/ACC/TOS Guideline for the Management of Overweight and Obesity in Adults:

A Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines and The Obesity Society

Ad libitum approaches, in which a formal energy deficit target is not prescribed, but lower calorie intake is achieved by restriction or elimination of particular food groups or provision of prescribed foods.

Características da dieta

VET

Redução de 500 a 750 kcal por dia em relação ao GET

ou déficit de 30% em relação ao GET

Em uma semana: déficit de 500 kcal/dia

↓ 3.500 kcal ⟶ ↓ 450 g gordura corporal

Arquivos Brasileiros de Cardiologia - Volume 84, Suplemento I, Abril 2005

1 kg de Tecido Adiposo ⟹ **7.700 kcal**

Exemplo:

Mulher, 80 kg, 1,61 m

Meta inicial : redução de 8 kg

1 semana ---------- 0,5% redução de peso ---------- 400 g/sem---------- 57 g/dia

Redução de 1.000 g de peso ——— Retirada de 7.700 kcal

Redução de 57 g de peso ——— x

X = 439 kcal/dia

Ministério da Saúde, 2006

Obesity 3

Lancet, 2011, 378(9793):826-37

Quantification of the effect of energy imbalance on bodyweight

Kevin D Hall, Gary Sacks, Dhruva Chandramohan, Carson C Chow, Y Claire Wang, Steven L Gortmaker, Boyd A Swinburn

HOMENS

Déficit Calórico para atingir a perda de peso de 5% em 6 meses (kcal/dia)

25 kg/m²	⇒	– 230 kcal/dia
30 kg/m²	⇒	– 290 kcal/dia
35 kg/m²	⇒	– 350 kcal/dia
40 kg/m²	⇒	– 410 kcal/dia

Obesity 3

Lancet, 2011, 378(9793):826-37

Quantification of the effect of energy imbalance on bodyweight

Kevin D Hall, Gary Sacks, Dhruva Chandramohan, Carson C Chow, Y Claire Wang, Steven L Gortmaker, Boyd A Swinburn

Mulheres

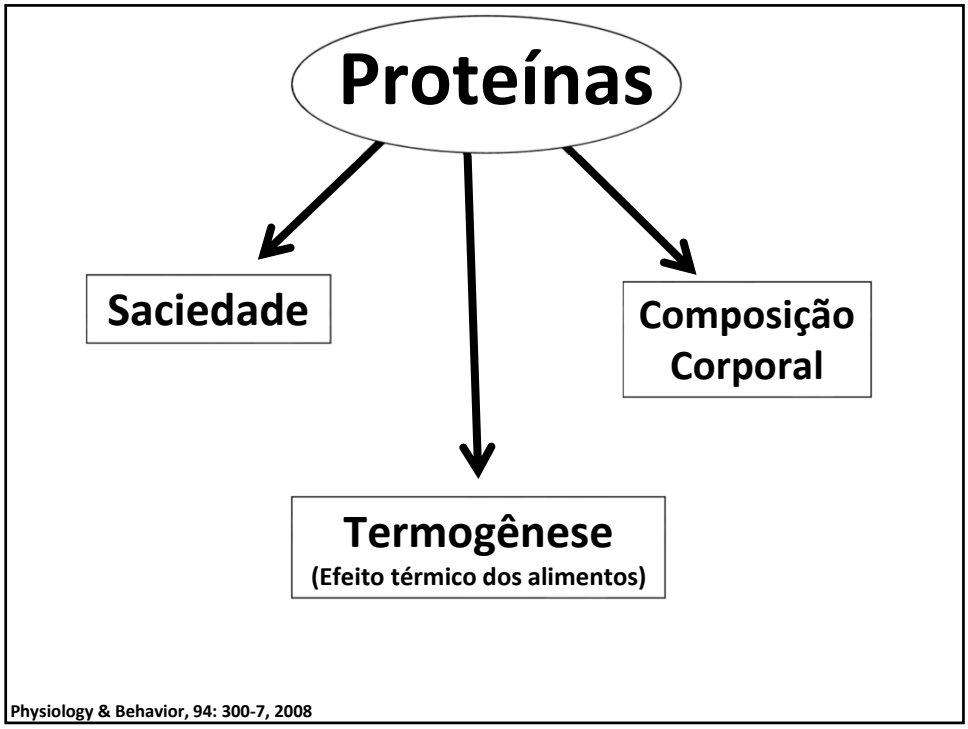
Déficit Calórico para atingir a perda de peso de 5% em 6 meses (kcal/dia)

25 kg/m²	⇒	– 200 kcal/dia
30 kg/m²	⇒	– 250 kcal/dia
35 kg/m²	⇒	– 300 kcal/dia
40 kg/m²	⇒	– 350 kcal/dia

Distribuição

5 a 6 refeições por dia

Distribuição de Macronutrientes



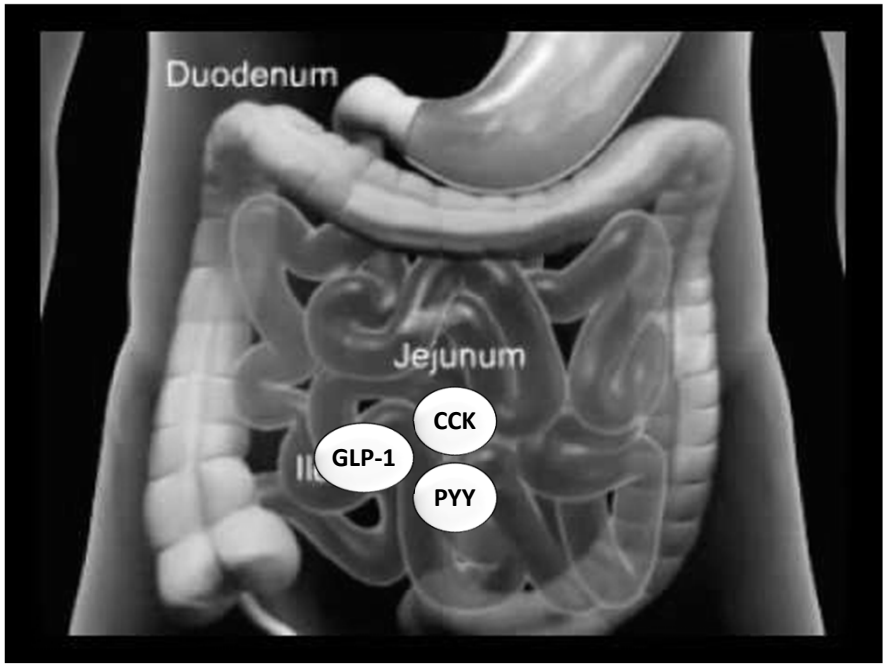
Physiology & Behavior, 94: 300-7, 2008

SACIEDADE

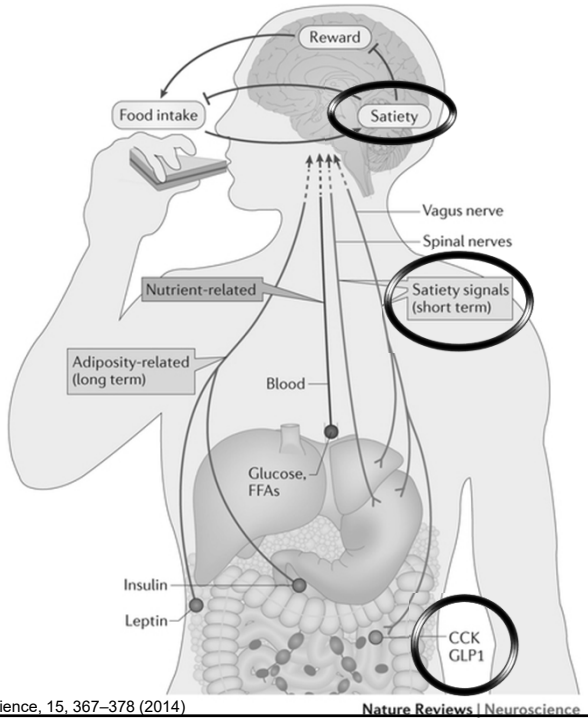
Proteínas > Carboidratos > Lipídios

Curr Opin Clin Nutr Metab Care (2003), 6, 635-638

Nutrition Research Reviews (2012), 25, 29-39



CCK, GLP1 e Saciedade



Nature Reviews Neuroscience, 15, 367–378 (2014)

Original Article
OBESITY BIOLOGY AND INTEGRATED PHYSIOLOGY

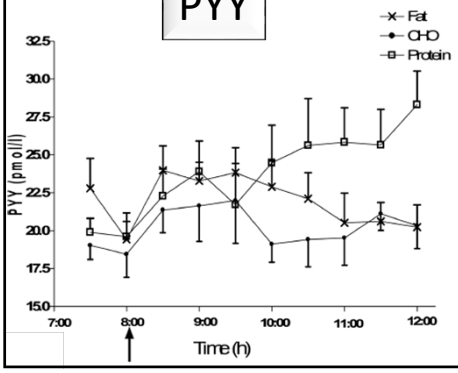
Obesity

High Protein Intake Stimulates Postprandial GLP1 and PYY Release

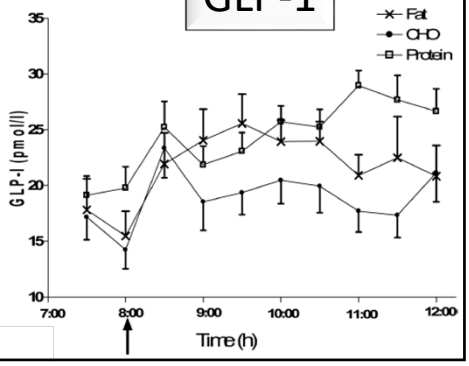
Agatha A. van der Klaauw[1], Julia M. Keogh[1], Elana Henning[1], Victoria M. Trowse[1], Waljit S. Dhillo[2], Mohammad A. Ghatei[2] and I. Sadaf Farooqi[1]

Obesity (2013) **21**, 1602-1607. doi:10.1002/oby.20154

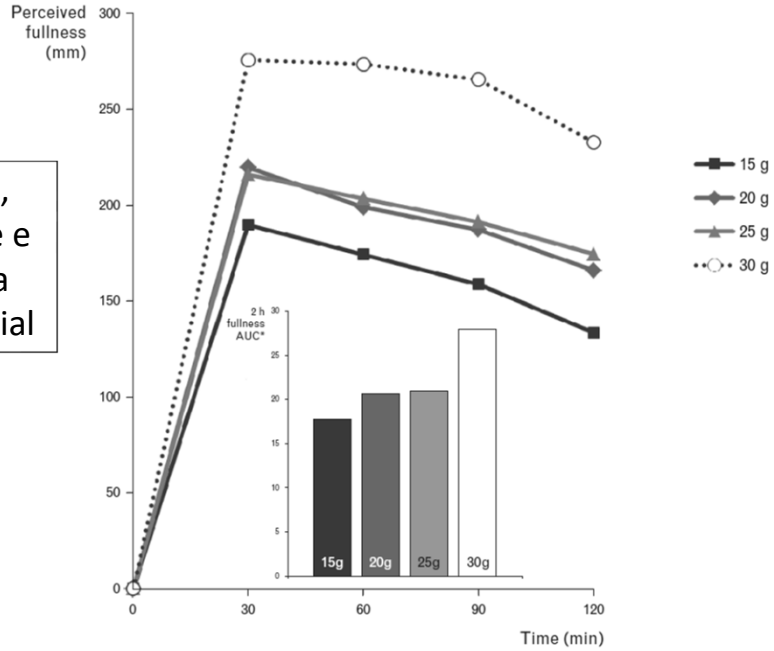
PYY



GLP-1



Proteína, Saciedade e Resposta Pós-Prandial



Curr Opin Clin Nutr Metab Care 2014, 17:5–11

Breakfast Skipping

Brief Cutting Edge Report
CLINICAL TRIALS AND INVESTIGATIONS

Obesity

A High-Protein Breakfast Prevents Body Fat Gain, Through Reductions in Daily Intake and Hunger, in "Breakfast Skipping" Adolescents

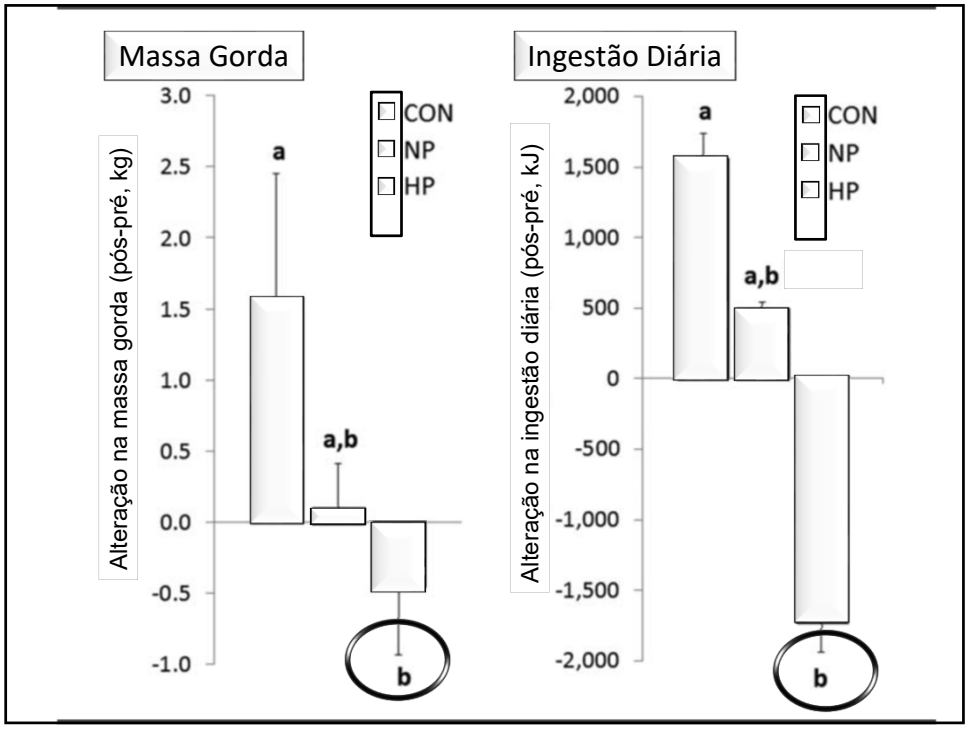
Heather J. Leidy[1], Heather A. Hoertel[1], Steve M. Douglas[1], Kelly A. Higgins[2], and Rebecca S. Shafer[1]

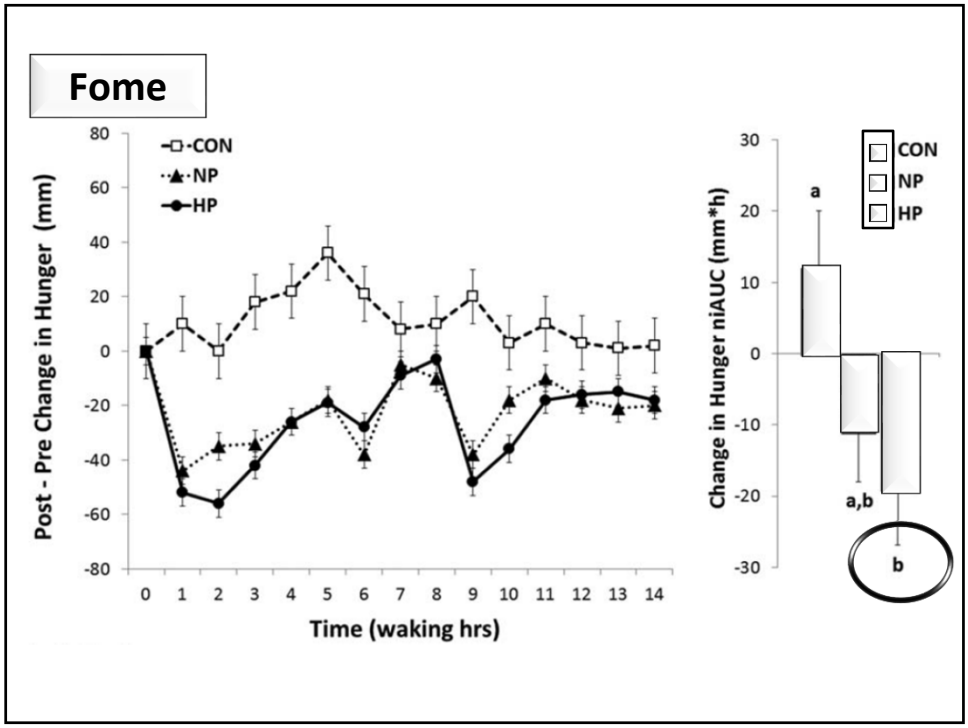
57 adolescentes (idade: 19 ± 1 anos)
IMC: 29,7 ± 4,6 kg/m^2

Café da manhã → 12 semanas

- "Skip"
- **13 g proteína**
- **35 g proteína**

Obesity (2015) 23, 1761–1764


Massa Gorda
Alteração na massa gorda (pós-pré, kg)
3.0
2.5
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
a
a,b
b
CON
NP
HP
Ingestão Diária
Alteração na ingestão diária (pós-pré, kJ)
2,000
1,500
1,000
500
0
-500
-1,000
-1,500
-2,000
a
a,b
b
CON
NP
HP


Fome
Post - Pre Change in Hunger (mm)
80
60
40
20
0
-20
-40
-60
-80
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
Time (waking hrs)
CON
NP
HP
Change in Hunger niAUC (mm*h)
30
20
10
0
-10
-20
-30
a
a,b
b
CON
NP
HP

Supplemental Material can be found at:
http://jn.nutrition.org/content/suppl/2015/08/12/jn.115.214551.DCSupplemental.html

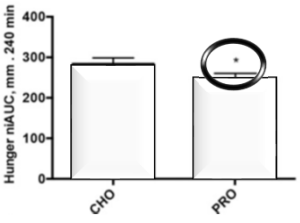
The Journal of Nutrition
Nutrient Physiology, Metabolism, and Nutrient-Nutrient Interactions

Breakfasts Higher in Protein Increase Postprandial Energy Expenditure, Increase Fat Oxidation, and Reduce Hunger in Overweight Children from 8 to 12 Years of Age[1–3]

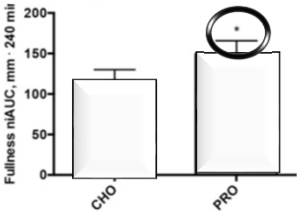
Jamie I Baum,[4]* Michelle Gray,[5] and Ashley Binns[5]

Departments of [4]Food Science and [5]Health, Human Performance, and Recreation, University of Arkansas, Fayetteville, AR

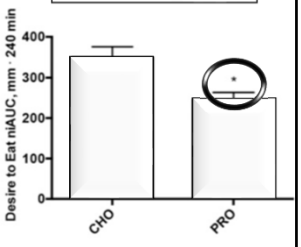
Fome



Saciedade



Desejo de comer



Metabolismo Proteico e Termogênese

Efeito Térmico dos Alimentos

5 - 10% GET

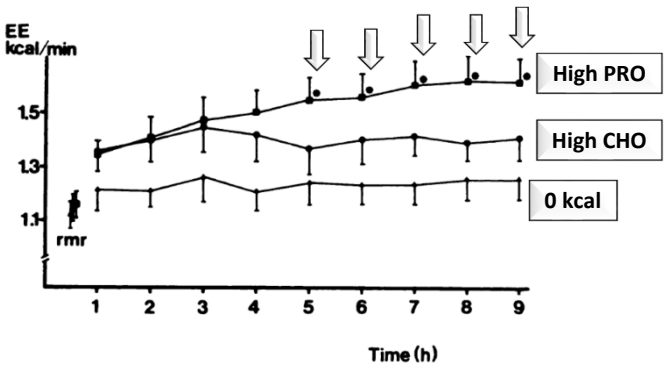
Proteína: 20 - 35%

Carboidrato: 5 - 15%

Lipídos: 0 - 5%

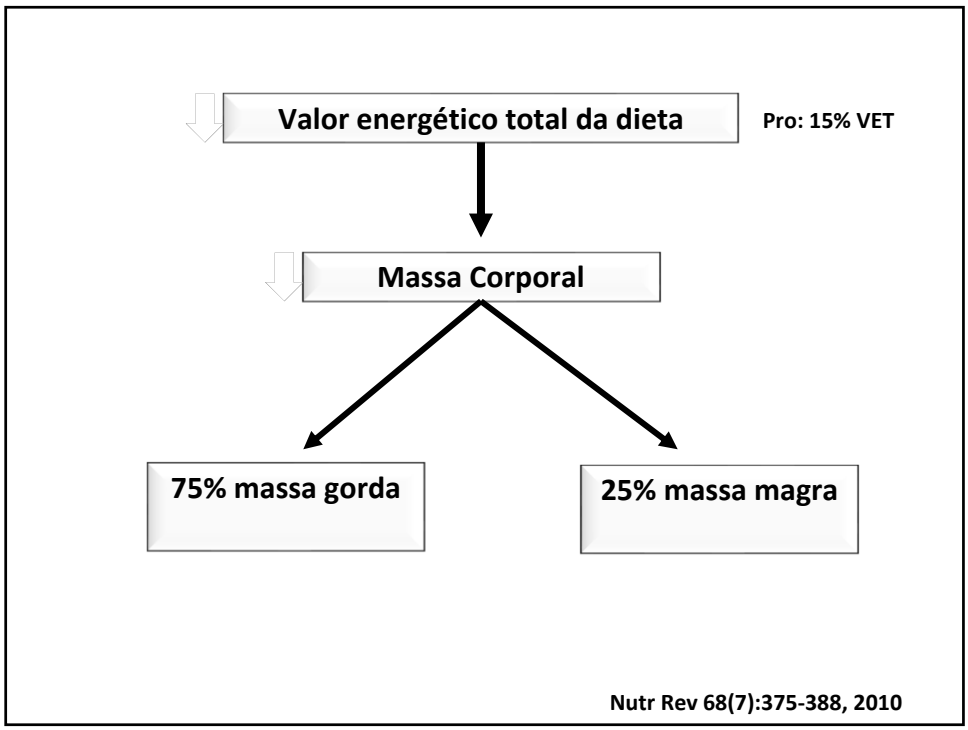
J Am Coll Nutr. 2004; 23:373-85 Nutr Rev. 1989; 47(5):129-37 Int J Obes. 1999; 23(3):287-92

Gasto Energético



Am J Clin Nutr, 1990; 52, 72-80

Proteínas e Composição Corporal



The FASEB Journal • Research Communication

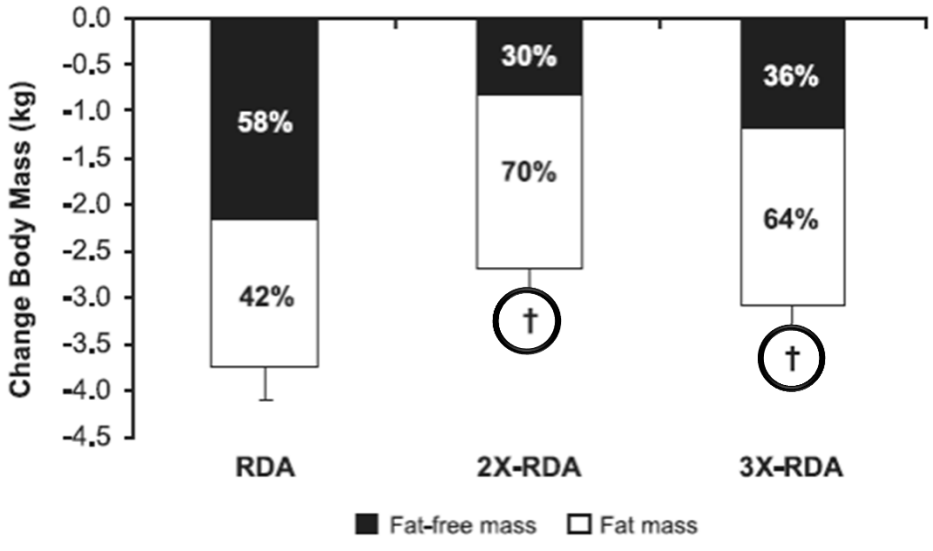
Effects of high-protein diets on fat-free mass and muscle protein synthesis following weight loss: a randomized controlled trial

Stefan M. Pasiakos,*,[1] Jay J. Cao,[†] Lee M. Margolis,* Edward R. Sauter,[‡] Leah D. Whigham,[†] James P. McClung,* Jennifer C. Rood,[§] John W. Carbone,[‖] Gerald F. Combs, Jr.,[†] and Andrew J. Young*

***FASEB J.* 27, 3837–3847 (2013)**

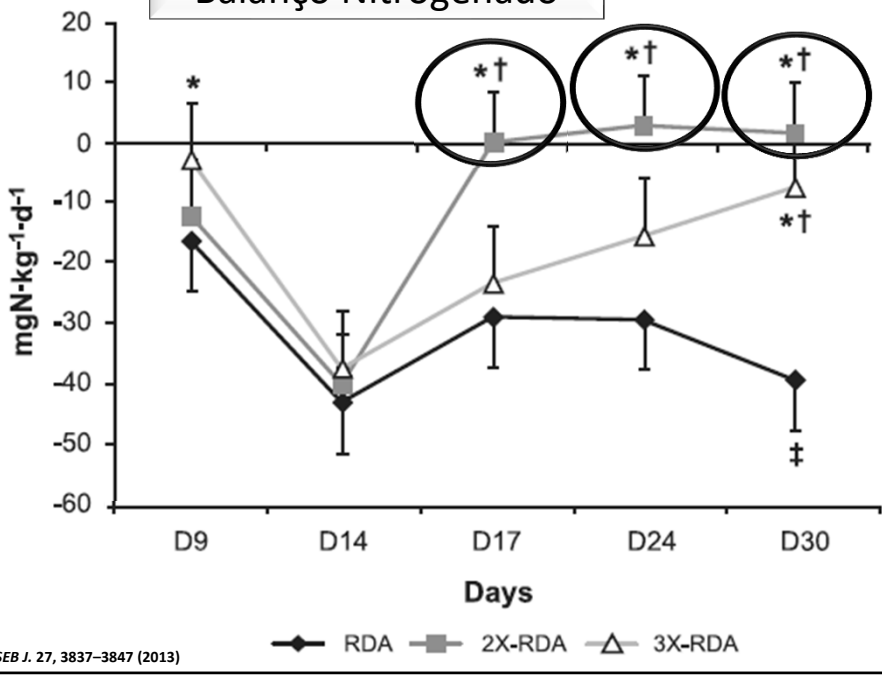
0,8 g proteína/kg/dia | **1,6 g proteína/kg/dia** | **2,4 g proteína/kg/dia**

Manutenção de peso (**10 dias**) → **40 % Restrição energética** (**21 dias**)



***FASEB J.* 27, 3837–3847 (2013)**

Balanço Nitrogenado



FASEB J. 27, 3837–3847 (2013)

The Journal of Nutrition
Nutrient Physiology, Metabolism, and Nutrient-Nutrient Interactions

J. Nutr. 141: 1626–1634, 2011

Increased Consumption of Dairy Foods and Protein during Diet- and Exercise-Induced Weight Loss Promotes Fat Mass Loss and Lean Mass Gain in Overweight and Obese Premenopausal Women[1–4]

Andrea R. Josse,[5] Stephanie A. Atkinson,[6] Mark A. Tarnopolsky,[7] and Stuart M. Phillips[5]*

Participantes

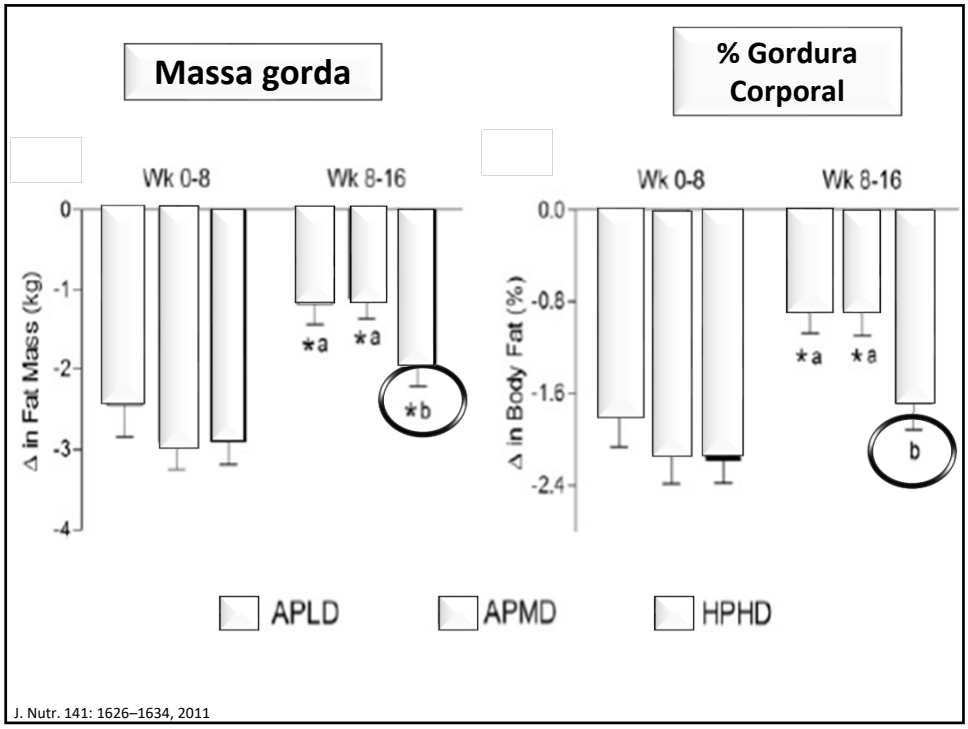
IMC: 27 - 40 kg/m²

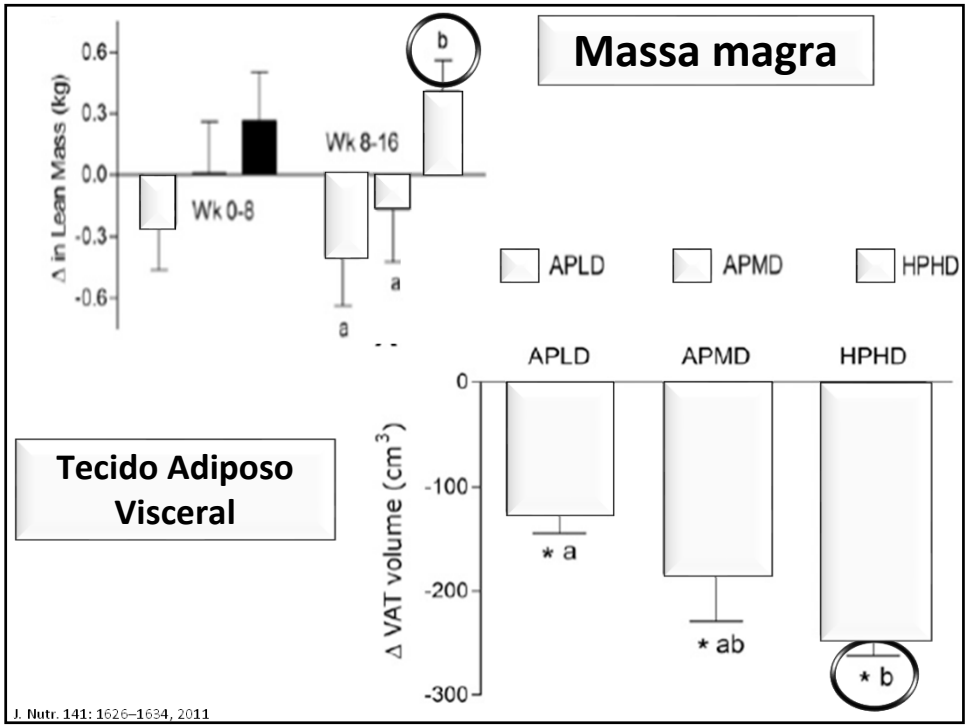
Idade: 19 - 45 anos

Dieta: - 500 Kcal

Exercício: - 250 Kcal

% VCT proteína		% VCT proteína oriunda de leite e derivados	
30%	**HPHD**	15%	**1,33 g/(kg.d)**
15%	**APMD**	7,5%	**0,84 g/(kg.d)**
15%	**APLD**	< 2%	**0,72 g/(kg.d)**


Massa gorda
% Gordura Corporal
Wk 0-8
Wk 8-16
Δ in Fat Mass (kg)
Δ in Body Fat (%)
*a
*b
b
APLD
APMD
HPHD
J. Nutr. 141: 1626–1634, 2011


Massa magra
Δ in Lean Mass (kg)
Wk 0-8
Wk 8-16
b
a
APLD
APMD
HPHD
Tecido Adiposo Visceral
Δ VAT volume (cm3)
* a
* ab
* b
J. Nutr. 141: 1626–1634, 2011

Effects of energy-restricted high-protein, low-fat compared with standard-protein, low-fat diets: a meta-analysis of randomized controlled trials[1–3]

Thomas P Wycherley, Lisa J Moran, Peter M Clifton, Manny Noakes, and Grant D Brinkworth

Am J Clin Nutr 2012;96:1281–98. Printed in USA. © 2012 American Society for Nutrition

24 estudos

1.063 indivíduos (IMC > 25 kg/m^2)

Duração: 12 ± 9 semanas

Proteína: 27-35% VCT

1,07–1,60 g/kg peso/dia

High-Protein Diet

↓ Massa corporal

↓ Massa gorda

↓ TAG plasmático

↑ Saciedade

Atenua perda de massa magra

AJCN. First published ahead of print April 29, 2015 as doi: 10.3945/ajcn.114.084038.

The role of protein in weight loss and maintenance[1–5]

Heather J Leidy, Peter M Clifton, Arne Astrup, Thomas P Wycherley, Margriet S Westerterp-Plantenga, Natalie D Luscombe-Marsh, Stephen C Woods, and Richard D Mattes

Quantidade de Proteína

1,2 - 1,6 g proteína/kg de peso/dia

25- 30 g proteína/refeição

Am J Clin Nutr, 101: 1320S-1329S, 2015

Carboidratos

45% – 60% do VCT

Fibras Alimentares

FIBRAS ALIMENTARES

20 g – 30 g/dia

Selecionar alimentos integrais ou minimamente processados com baixo IG

Energy digestibility has been shown to decrease by 3–4% following 20- to 25-g/d increases in dietary fiber intake, a reduction equivalent to ~418 kJ/d (100 kcal/d)

Adv Nutr. 2012;3(5):697-707

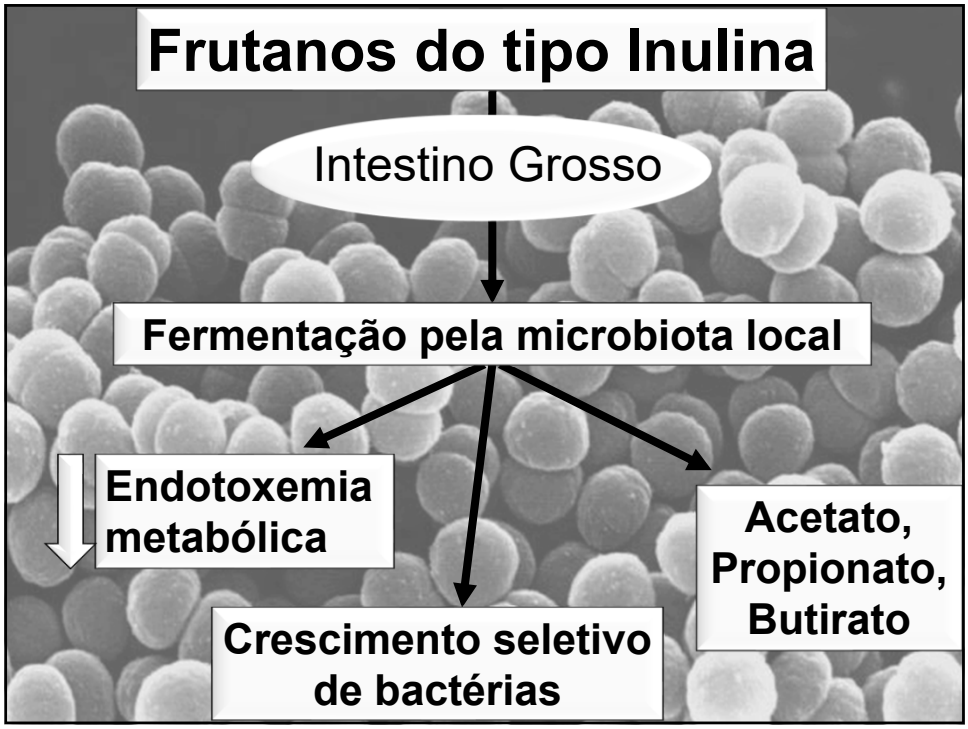
Efeitos Fisiológicos das Fibras Alimentares

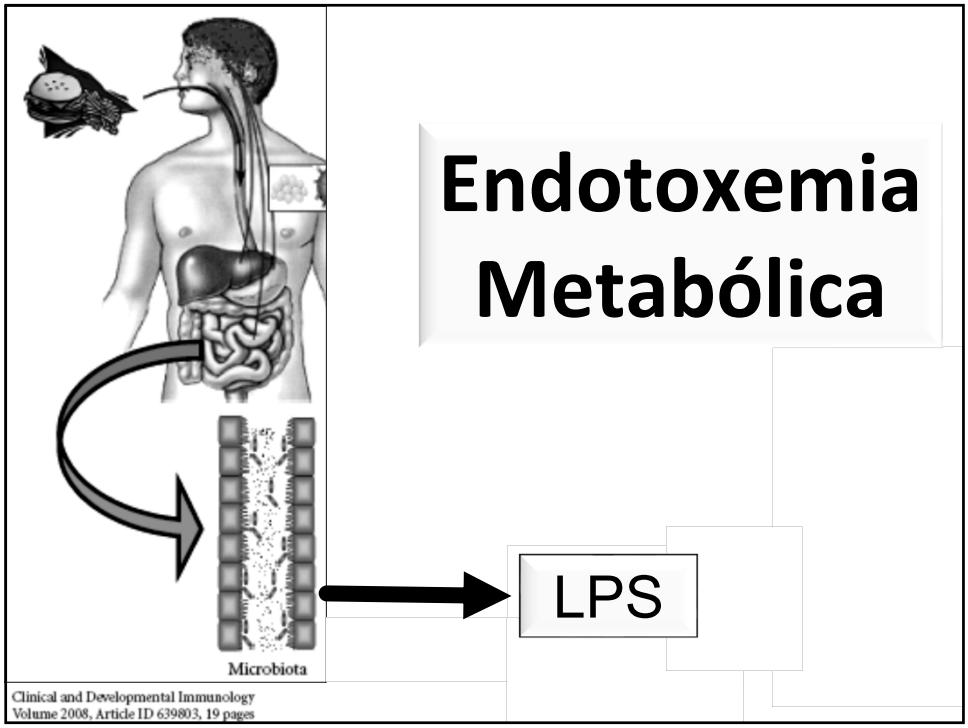
- **Colesterol Total e LDL-col**
- **Controle Glicêmico e insulinêmico**
- **Função Intestinal**
- **Prebióticos**
- **Saciedade**

Frutanos do Tipo Inulina

Frutanos do tipo Inulina

British Journal of Nutrition (2002), 87, Suppl. 2, S139–S143


Frutanos do tipo Inulina
Intestino Grosso
Fermentação pela microbiota local
Endotoxemia metabólica
Acetato, Propionato, Butirato
Crescimento seletivo de bactérias


Endotoxemia Metabólica
LPS
Microbiota
Clinical and Developmental Immunology
Volume 2008, Article ID 639803, 19 pages

Nutrition 30 (2014) 418–423

Contents lists available at ScienceDirect

Nutrition

journal homepage: www.nutritionjrnl.com

Applied nutritional investigation

Oligofructose-enriched inulin improves some inflammatory markers and metabolic endotoxemia in women with type 2 diabetes mellitus: A randomized controlled clinical trial

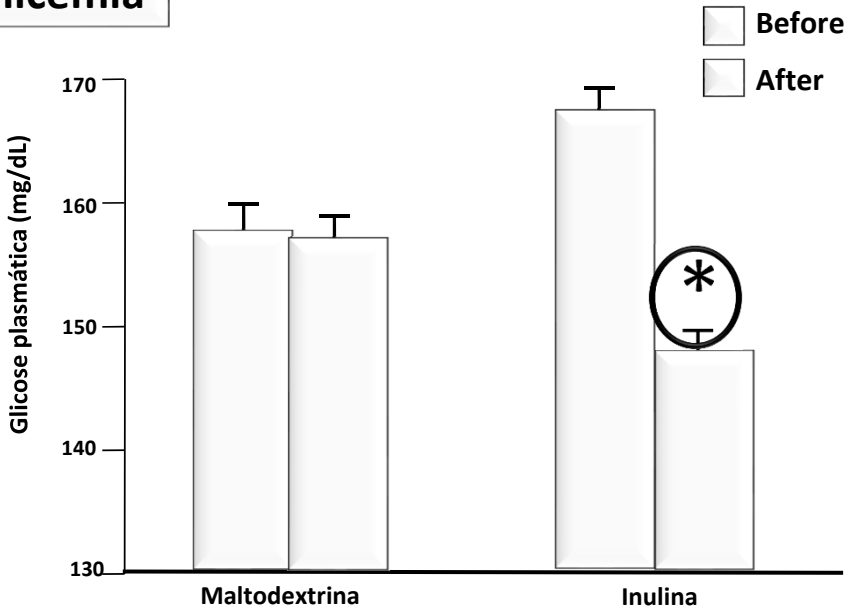
52 mulheres
DM tipo 2
IMC: 25-35 kg/m²

8 semanas

10 g/dia Inulina enriquecida com Oligofrutose (n=27)

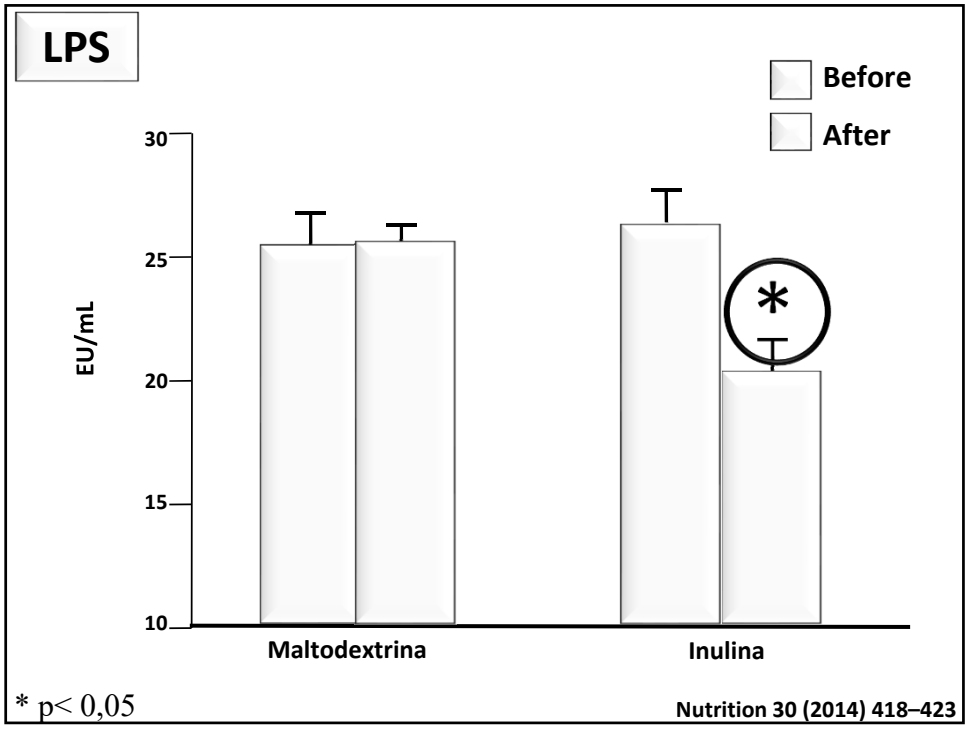
10 g/dia maltodextrina (n=25)

Glicemia



* p< 0,05

Nutrition 30 (2014) 418–423



Frutanos do Tipo Inulina e Saciedade

European Journal of Clinical Nutrition (2006) 60, 567–572
© 2006 Nature Publishing Group All rights reserved 0954-3007/06 $30.00
www.nature.com/ejcn

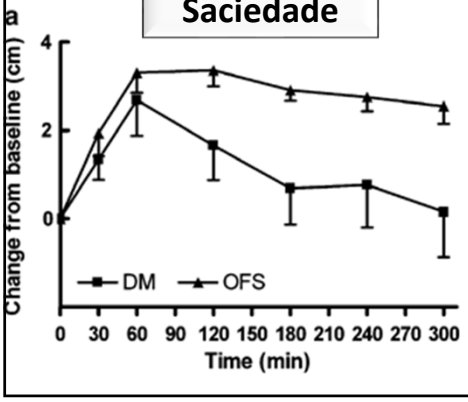
ORIGINAL ARTICLE

Oligofructose promotes satiety in healthy human: a pilot study

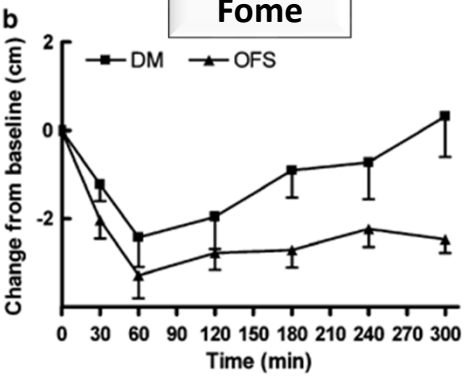
PD Cani[1], E Joly[1], Y Horsmans[2] and NM Delzenne[1]

16 g oligofrutose/dia

Saciedade



Fome



Lipídios

20% – 30% das calorias totais

Ácidos graxos saturados

< 10% das calorias totais

Recomendar até 7% se [LDL-colesterol] for > 100 mg/dL

↑ 1% VCT como AGS → ↑ 2% concentração COL plasma

ABESO, 2016

Ácidos graxos Poliinsaturados

Até 10% das calorias totais

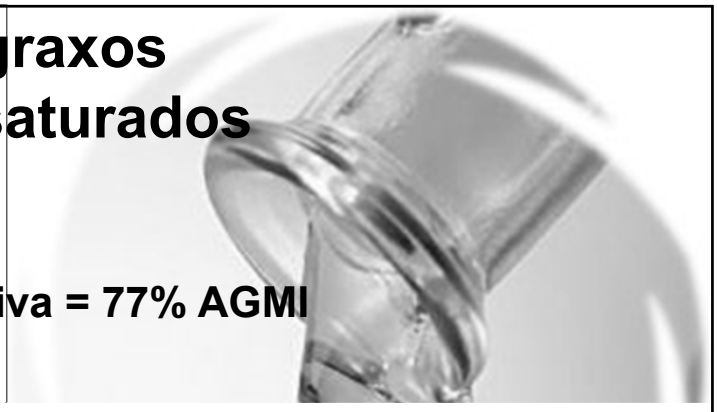
Arquivos Brasileiros de Cardiologia - Volume 84, Suplemento I, Abril 2005

α-Linolênico

EPA e DHA

100g	EPA + DHA (g)	Alfa linolênico (%)
Cavala	2,5	-
Sardinha	1,7	-
Arenque	1,6	-
Salmão	1,0	-
Truta	0,5	-
Bacalhau	0,2	-
Óleo de canola	-	9,0
Óleo de soja	-	7,08

Ácidos graxos Monoinsaturados



Azeite de oliva = 77% AGMI

Adherence to the Mediterranean diet, long-term weight change, and incident overweight or obesity: the Seguimiento Universidad de Navarra (SUN) cohort[1–5]

Am J Clin Nutr 2010;92:1484–93.

Juan-José Beunza, Estefaníá Toledo, Frank B Hu, Maira Bes-Rastrollo, Manuel Serrano-Martínez, Almudena Sánchez-Villegas, J Alfredo Martínez, and Miguel A Martínez-González

SUPLEMENTOS

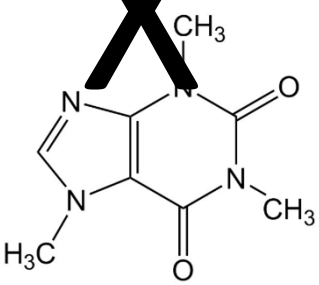
NUTRICIONAIS: ausência

de efeito!!

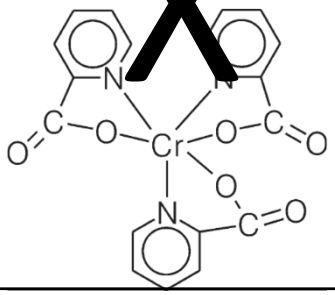
Ácido linoleico conjugado

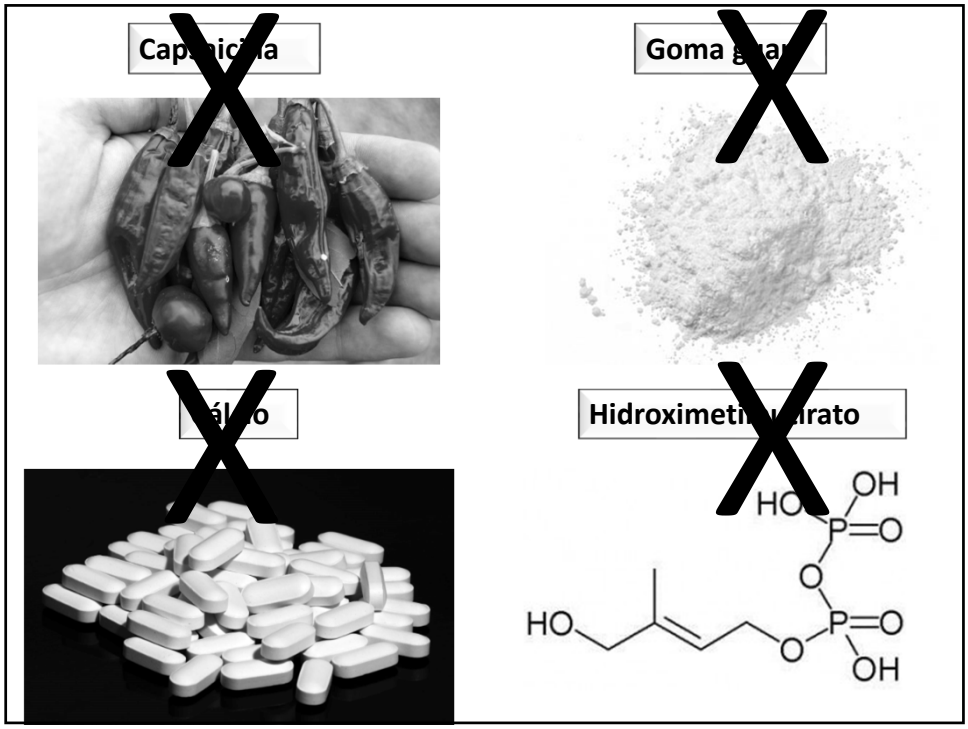
Óleo de coco

Cafeína



Cromo





Inadequate Hydration, BMI, and Obesity Among US Adults: NHANES 2009-2012

Tammy Chang, MD, MPH, MS[1-3]
Nithin Ravi, MPH[3]
Melissa A. Plegue, MA[1]
Kendrin R. Sonneville, ScD, RD[4]
Matthew M. Davis, MD, MAPP[1,3,4]

ABSTRACT

PURPOSE Improving hydration is a strategy commonly used by clinicians to prevent overeating with the goal of promoting a healthy weight among patients. The relationship between weight status and hydration, however, is unclear. Our objective was to assess the relationship between inadequate hydration and BMI and inadequate hydration and obesity among adults in the United States.

Ann Fam Med, 2016; 14(4):320-4.

Hidratação

40 and 50 mL/kg/dia

Eur J Clin Nutr. 2012;66(12):1282-1289