Nutraceutici come trattamenti di supporto nella sindrome metabolica

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Sindrome Metabolica

Obesità centrale e almeno due dei seguenti quattro fattori:

- Trigliceridi alti, bassi livelli di colesterolo HDL (HDL-C), pressione alta, o elevata glicemia a digiuno

International Diabetes Federation

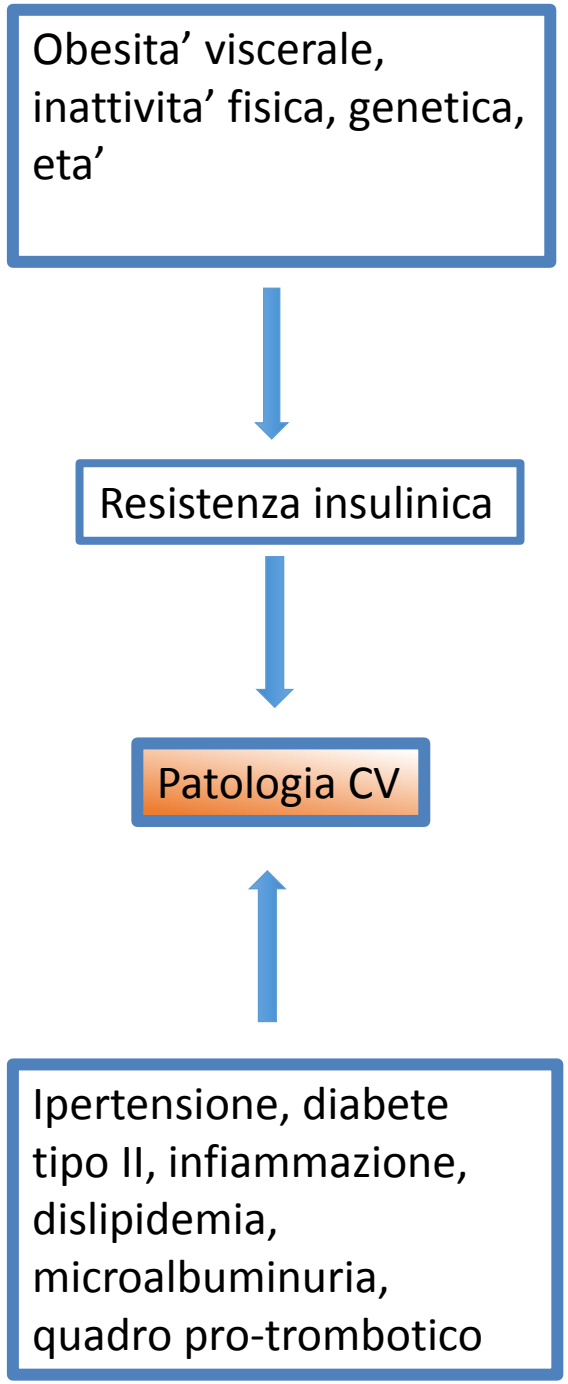
Sindrome Metabolica

Qualsiasi tre dei cinque fattori di rischio (Obesita' centrale, trigliceridi alti, bassi livelli di colesterolo HDL (HDL-C), pressione alta, o elevata glicemia a digiuno)

ATP-III

Importante

Proteina C reattiva (CRP) elevata in SM -> infiammazione come «fil rouge»


Obesita’ viscerale, inattivita’ fisica, genetica, eta’
Resistenza insulinica
Patologia CV
Ipertensione, diabete tipo II, infiammazione, dislipidemia, microalbuminuria, quadro pro-trombotico

Cause

FATTORI AMBIENTALI – STILI DI VITA

- Calorie, indice glicemico, esercizio fisico

Cause

Meccanismi ormonali

- Leptina, resistina, adiponectina, glucocorticoidi (?)

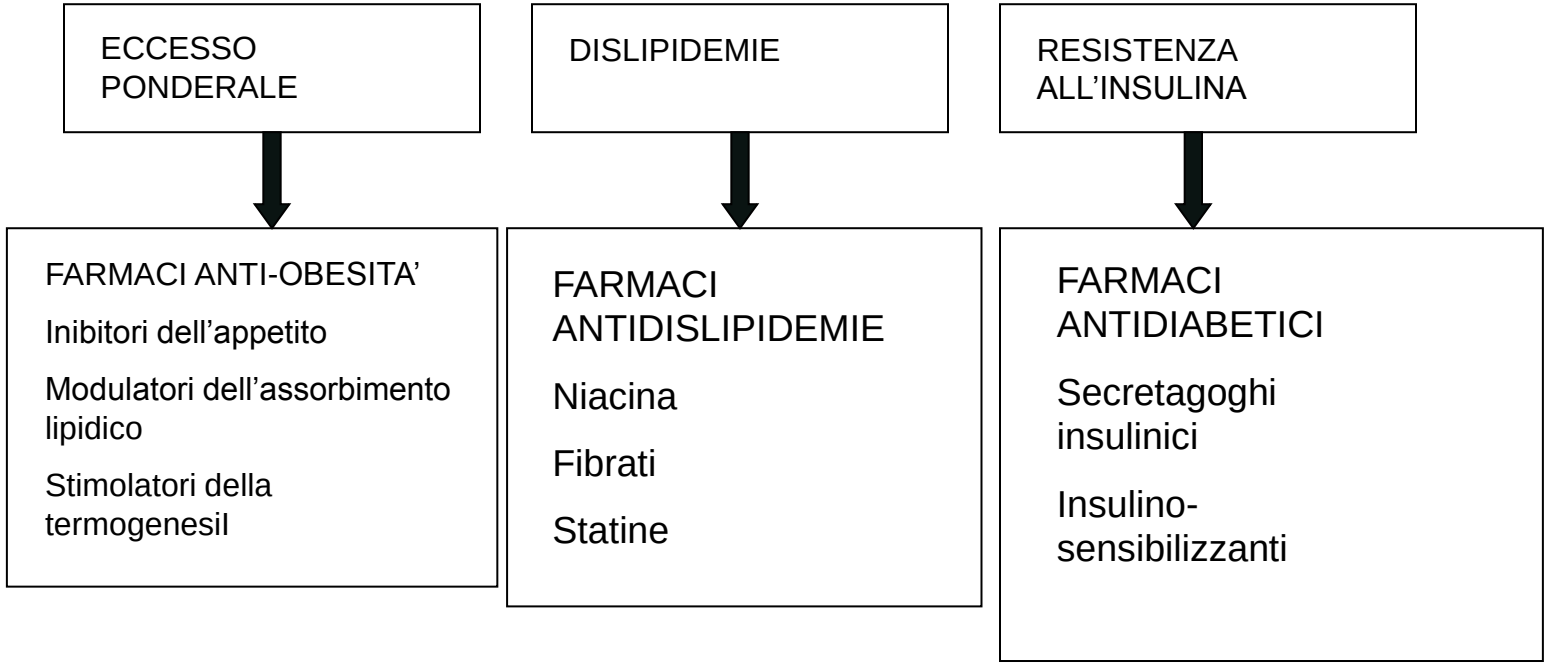
Cause

Meccanismi metabolici

- Insulino-resistenza

Rimedi

Trattamento farmacologico della sindrome metabolica



Rimedi

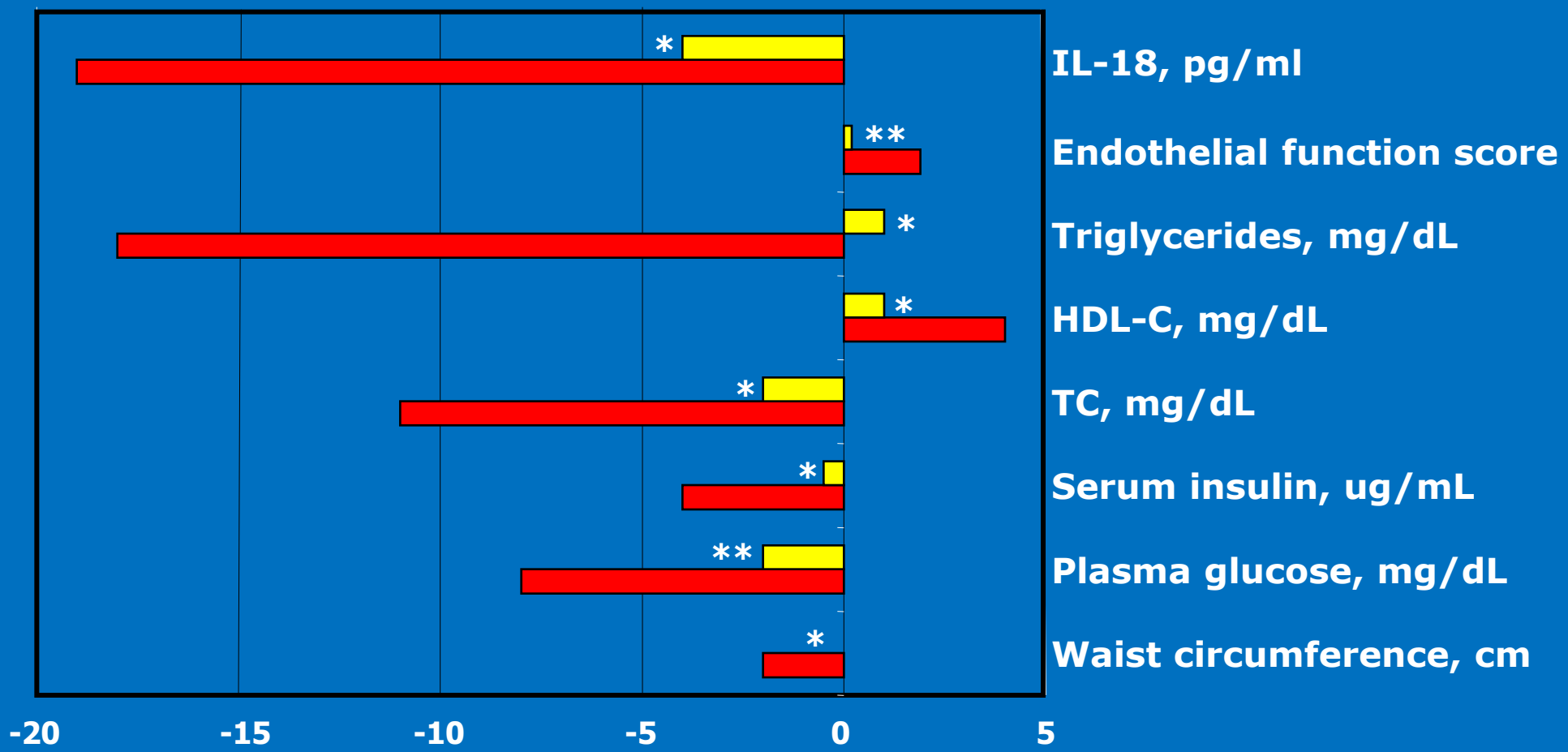
PREVENZIONE

Mediterranean-Style Diet and Metabolic Syndrome

- Subjects: 180 patients (99 males and 81 females) with the metabolic syndrome as defined by the ATPIII.
- Intervention: Mediterranean-style diet with increased amounts of whole grain, fruits, vegetables, nuts and olive oil.
- Main outcome measures: nutrient intake, endothelial function score, lipid and glucose parameters, insulin sensitivity, CRP and interleukins.

Esposito, JAMA 2004

Changes in assessed variables after 2 years of intervention (n=90) and control (n=90) diet, in patients with metabolic syndrome



Esposito., JAMA 2004

Changes in CRP levels (mg/dL) after 2 years of intervention (n=90) and control (n=90) diet, in patients with metabolic syndrome

	Baseline	2 years
Control diet	**2.9**	**2.8**
Intervention diet	**2.8**	**1.7 * §**

*** p≤0.01 2y *vs* baseline**

§ p ≤ 0.01 intervention *vs* control diet at 2 y

Esposito., JAMA 2004

Nutraceutici

Nutraceuticals - examples

- Omega 3 fatty acids (long chain EPA and DHA, maybe short chain ALA)

Curcumin

Hydroxytyrosol as anti-inflammatory agent

1. In vitro

INHIBITION OF LEUKOCYTE LEUKOTRIENE B_4 PRODUCTION BY AN OLIVE OIL-DERIVED PHENOL IDENTIFIED BY MASS-SPECTROMETRY

Anna Petroni, Milena Blasevich, Nadia Papini, Marco Salami, Angelo Sala and Claudio Galli
Institute of Pharmacological Sciences, University of Milan, Milan, Italy

Thrombosis Research, Vol. 87, No. 3, pp. 315–322, 1997

Inhibition of Leukocyte 5-Lipoxygenase by Phenolics from Virgin Olive Oil

Rocio de la Puerta,† Valentina Ruiz Gutierrez‡ and J. Robin S. Hoult*§*

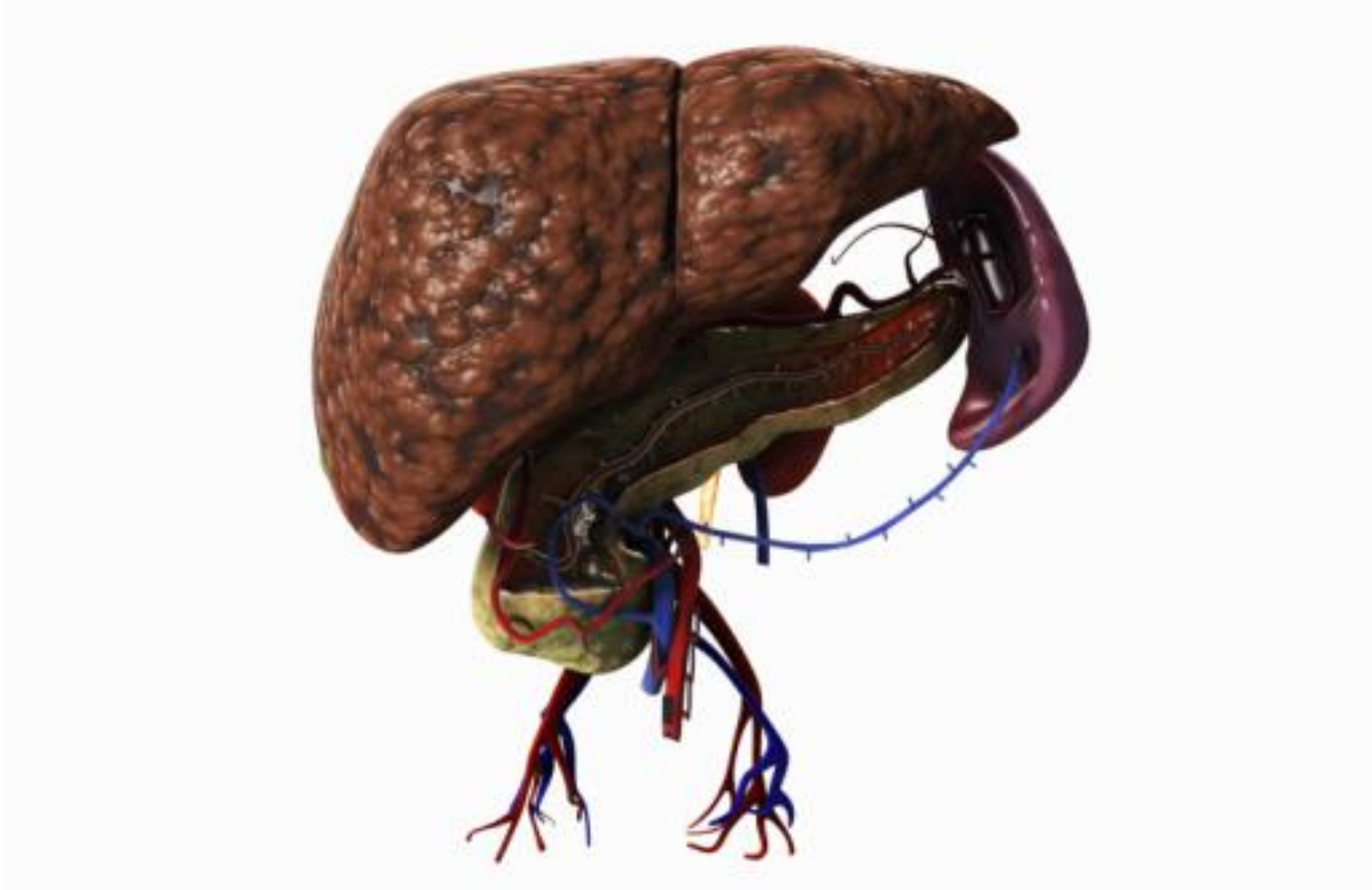
Biochemical Pharmacology, Vol. 57, pp. 445–449, 1999.

Inhibition of Arachidonate Lipoxygenase Activities by 2-(3,4-Dihydroxyphenyl)ethanol, a Phenolic Compound from Olives

Noriko KOHYAMA, Tadahiro NAGATA,* Shin-ichi FUJIMOTO, and Keizo SEKIYA†

Biosci. Biotech. Biochem., **61** (2), 347–350, 1997

N.B.



In vitro studies with parent compound

>10 μM

Hydroxytyrosol as anti-inflammatory agent

1. In vivo

Hydrolyzed Olive Vegetation Water in Mice Has Anti-Inflammatory Activity[1]

Catherine M. Bitler,[2] Tiffany M. Viale, Bassam Damaj,* and Roberto Crea

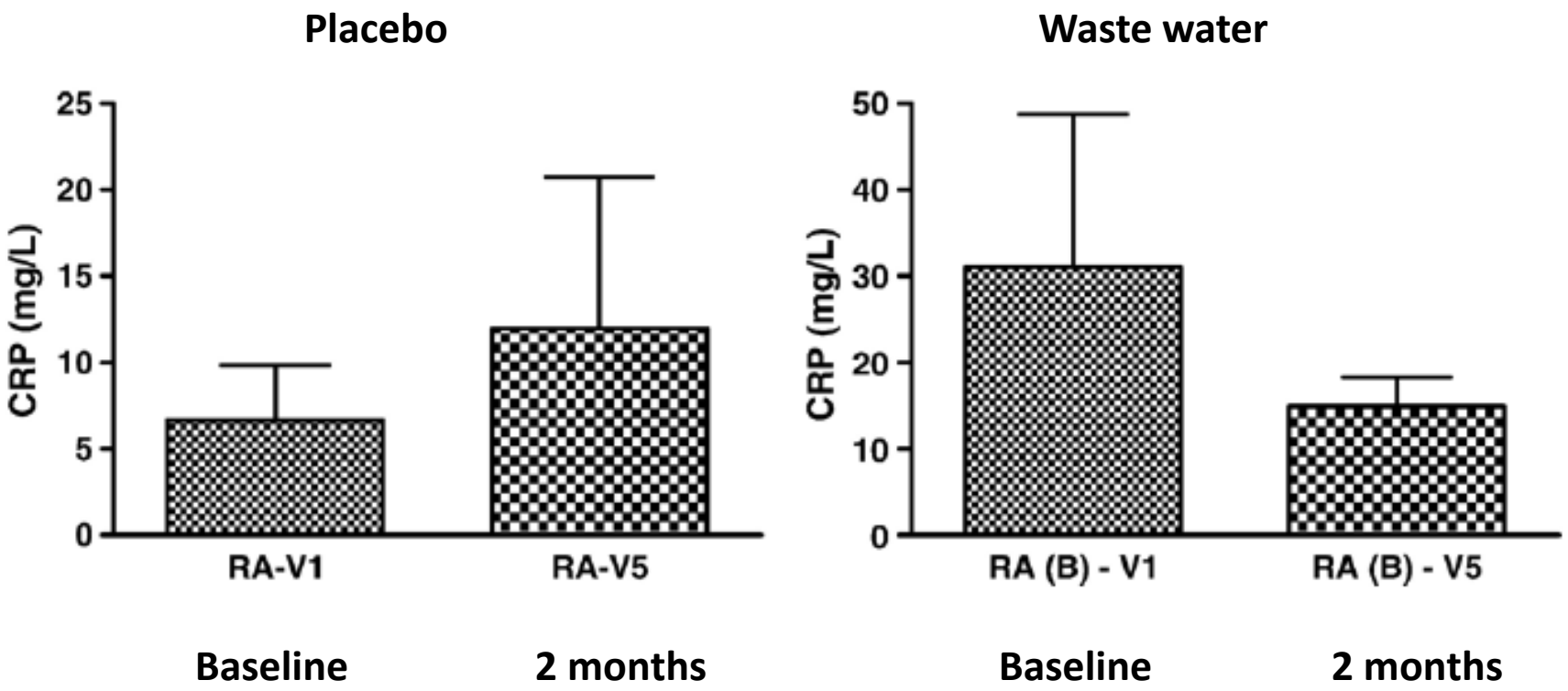
J. Nutr. 135: 1475–1479, 2005.

Olive extract supplement decreases pain and improves daily activities in adults with osteoarthritis and decreases plasma homocysteine in those with rheumatoid arthritis☆

Catherine M. Bitler[b,*], Kathleen Matt[a], Mary Irving[a], Ginger Hook[a], Joseph Yusen[a], Forrest Eagar[a], Ken Kirschner[a], Brian Walker[a], Roberto Crea[b]

Nutrition Research 27 (2007) 470–477

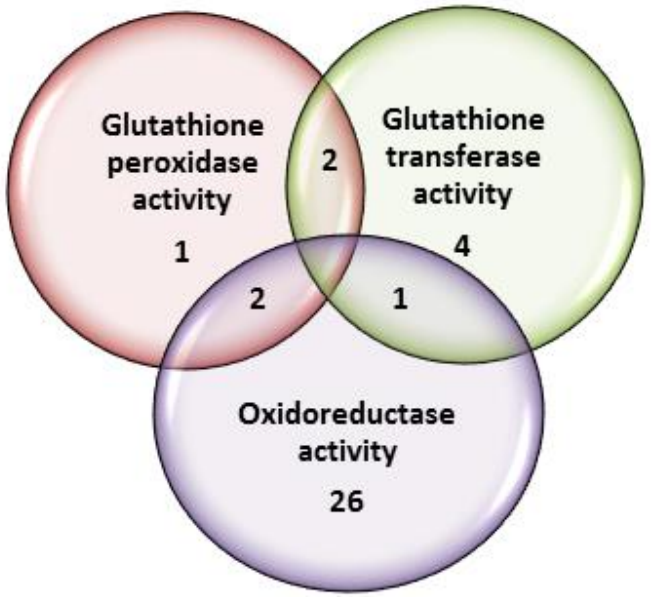
CRP levels in rheumatoid arthritis patients



Bitler et al, 2007

Chronic hydroxytyrosol feeding modulates glutathione-mediated oxido-reduction pathways in adipose tissue: A nutrigenomic study

E. Giordano, A. Dávalos, F. Visioli*



Giordano et al NMCD 2014

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Ortho molecular medicine

Linus Pauling

Tè verde

Weight and plasma lipid control by decaffeinated green tea

Doriane Richard[a,*], Kaouthar Kefi[a], Ullah Barbe[a], Andrea Poli[b], Pedro Bausero[a], Francesco Visioli[a]

Pharmacological Research 59 (2009) 351–354

Strong points

- Tea, not extracts.
- No caffeine $\Rightarrow$ distinguish the effects of catechins from those of caffeine.
- No caffeine $\Rightarrow$ no excitatory effects.

- 20 mice/group
- Leptin-deficient (*ob*/*ob*)
- C57BL/6J lean littermates
- 2% decaffeinated green tea, ad libitum

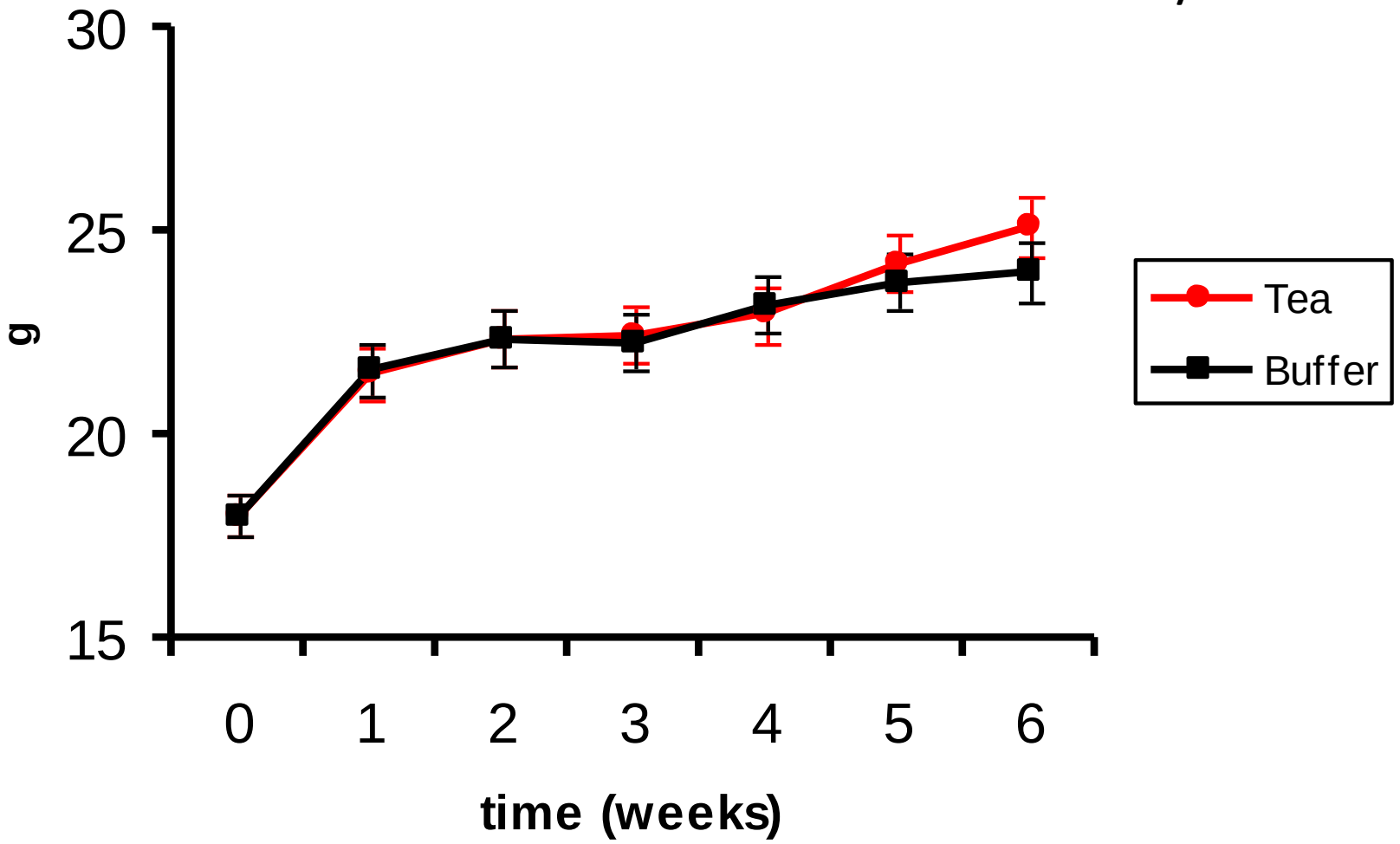
Decaffeinated green tea composition

71.75 mg total catechins per g of leaves (1.38 mg were catechin, 6.77 mg epicatechin, 4.45 mg gallocatechin, 32.21 mg epigallocatechin,
21.04 mg epigallocatechin gallate, 0.39 mg gallocatechin gallate, 5.51 mg epicatechin gallate, catechin gallate n.d.

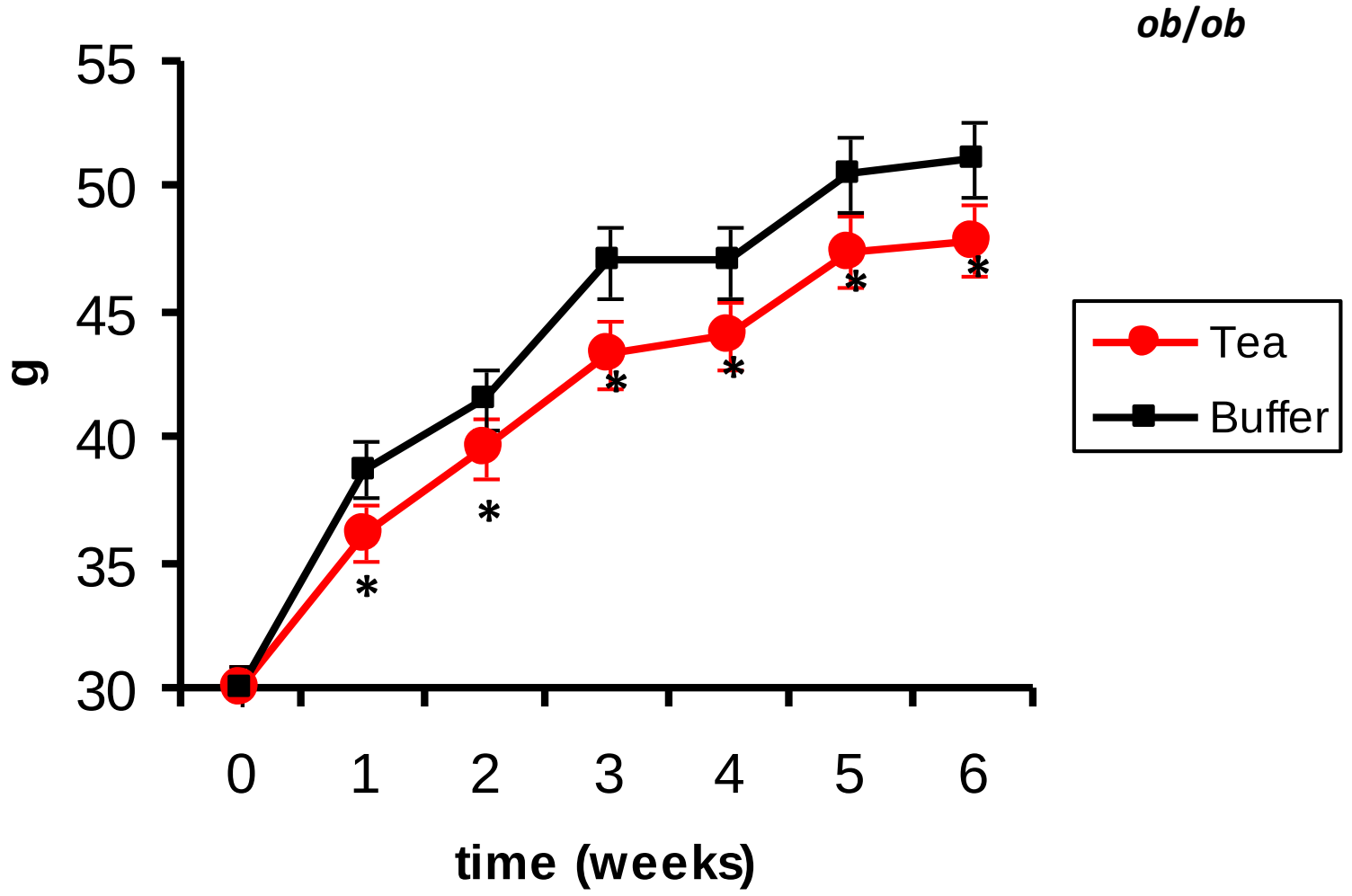
	Adiponectine	Cho	TG
	ng/ml	mg/dl	mg/dl
***ob/ob* eau**	1,569±0,1754	156,36±10,08	35,68±5,32
***ob/ob* thé**	**1,147±0,147**	**134,82±9,85**	**28,95±3,26**
C57BL/6J eau	0,761±0,437	84,77±9,83	23,68±9,61
C57BL/6J thé	0,617±0,351	91,54±8,27	22,08±3,88

Richard et al. 2009

C57BL/6J



Richard et al. 2009



Richard et al. 2009

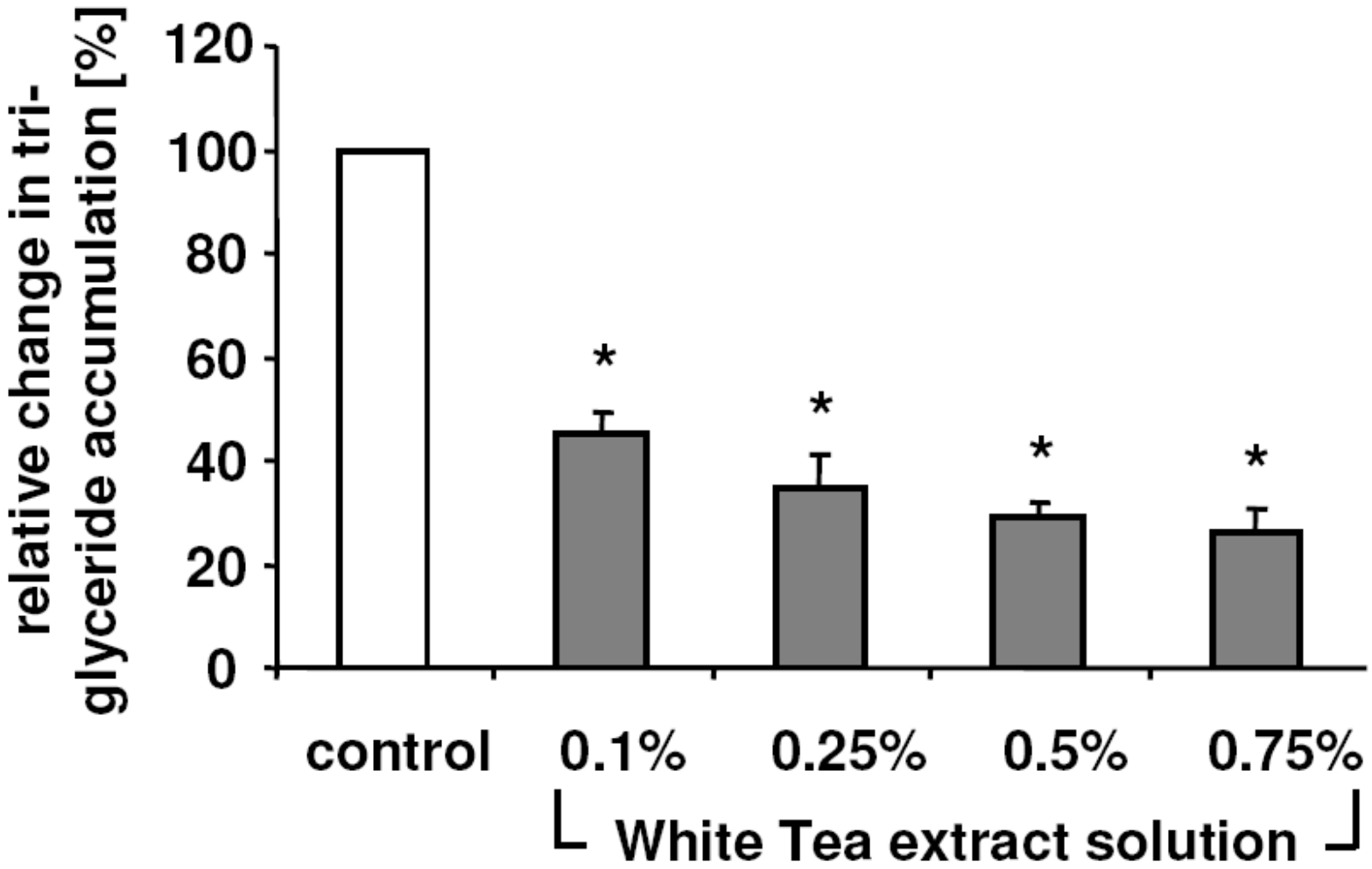
Several mechanisms

White Tea extract induces lipolytic activity and inhibits adipogenesis in human subcutaneous (pre)-adipocytes

Jörn Söhle, Anja Knott, Ursula Holtzmann, Ralf Siegner, Elke Grönniger, Andreas Schepky, Stefan Gallinat, Horst Wenck, Franz Stäb and Marc Winnefeld*

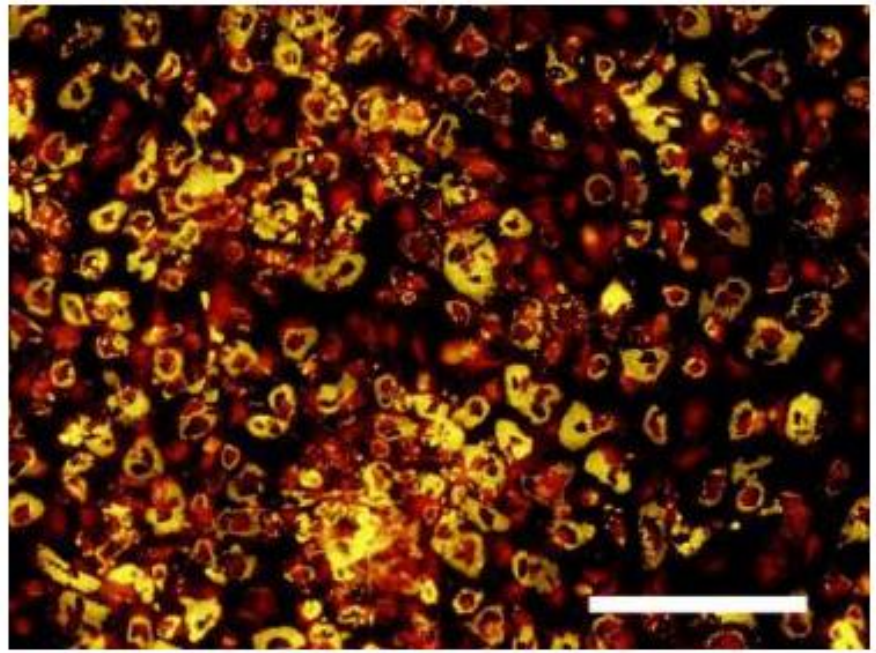
Nutrition & Metabolism 2009, **6**:20

Reduced accumulation of TG in adipocytes

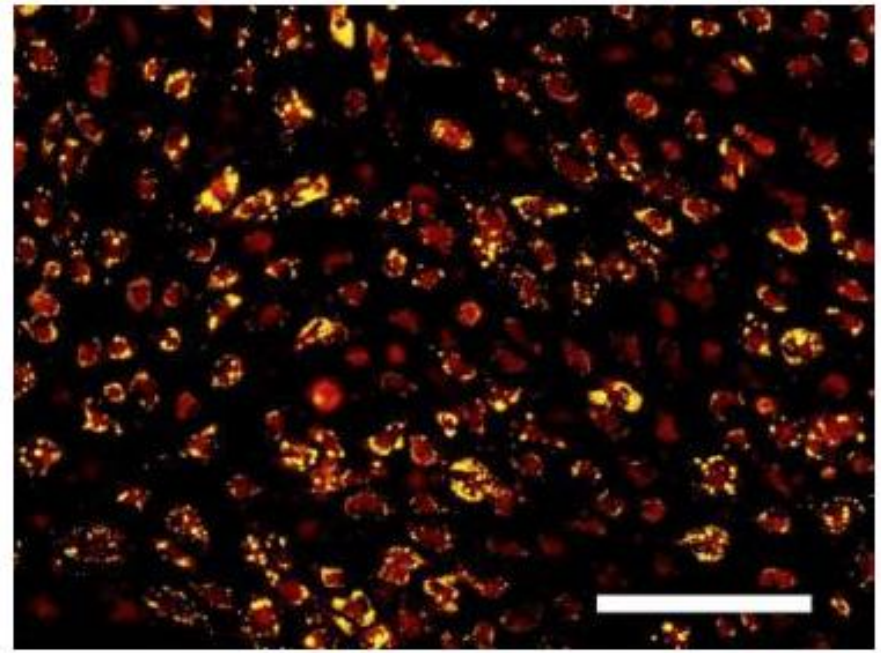


Söhle, 2009

control



0.5% White Tea extract solution



Söhle, 2009

Fibre solubili

Beta-glucani, gomme, mucillagini (ad esempio, psillio), pectine, ed alcune emicellulose

FDA: prodotti alimentari contenenti almeno 0,75 g/porzione di fibra solubile da avena: "La fibra solubile da alimenti come crusca di avena, come parte di una dieta a basso contenuto di grassi saturi e colesterolo, può ridurre il rischio di infarto"

Una meta-analisi che ha combinato i risultati di 67 studi clinici controllati ha riportato che anche un aumento modesto (10 g al giorno) di assunzione di fibre viscose comporta una riduzione media del colesterolo LDL di 22 mg/dL (0,57 mmol/L) e una riduzione media dei livelli di colesterolo totale di 17 mg/dL (0,45 mmol/L)

Brown et al 1999

Interazione tra fibre e biodisponibilita’

Conclusioni

SM diffusa (NHANES: 5% among the subjects of normal weight, 22% among the overweight, and 60% among the obese).
Prevenzione!
Terapia farmacologica affiancata a integrazione nutrizionale.

The use of functional foods reduces drug therapy

Conclusioni

Ricorda: Integratori ≠ Farmaci

Conclusioni

Utili complementi alla terapia farmacologica


Thank
You!

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