Movimento e alimentazione per la salute di genere. Il ruolo della nutraceutica.

Filippo Ruzza

Farmacista
Dottore in Scienze della Nutrizione Umana
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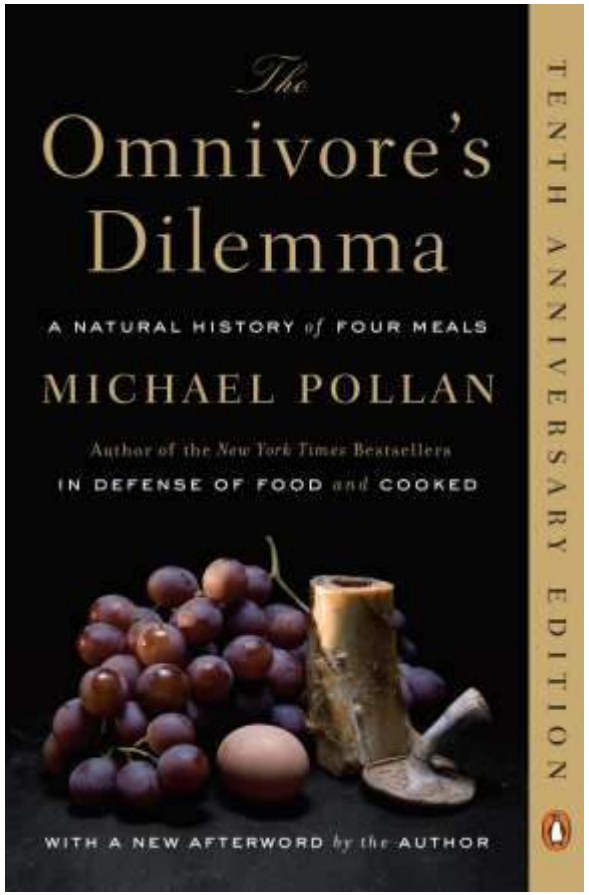


The Omnivore's Dilemma

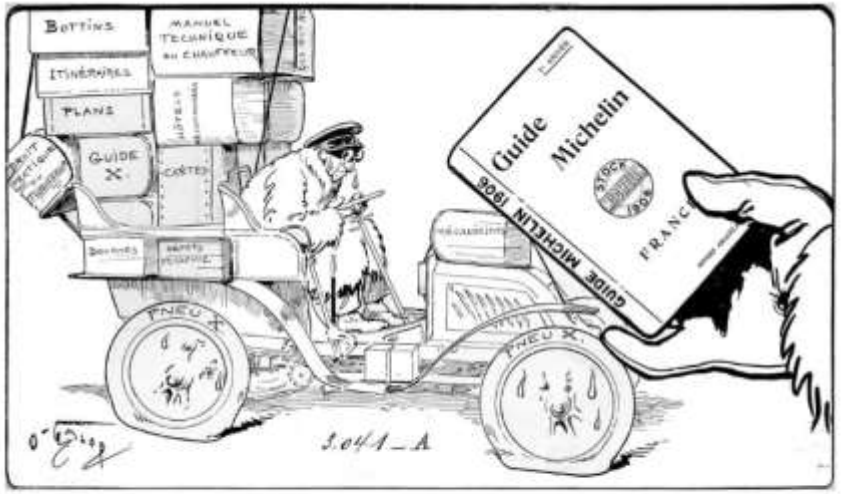
A Natural History of Four Meals

In this groundbreaking book, one of America's most fascinating, original, and elegant writers turns his own omnivorous mind to the seemingly straightforward question of what we should have for dinner. To find out, Pollan follows each of the food chains that sustain us—industrial food, organic or alternative food, and food we forage ourselves—from the source to a final meal, and in the process develops a definitive account of the American way of eating. His absorbing narrative takes us from Iowa cornfields to food-science laboratories, from feedlots and fast-food restaurants to organic farms and hunting grounds, always emphasizing our dynamic coevolutionary relationship with the handful of plant and animal species we depend on. Each time Pollan sits down to a meal, he deploys his unique blend of personal and investigative journalism to trace the origins of everything consumed, revealing what we unwittingly ingest and explaining how our taste for particular foods and flavors reflects our evolutionary inheritance.

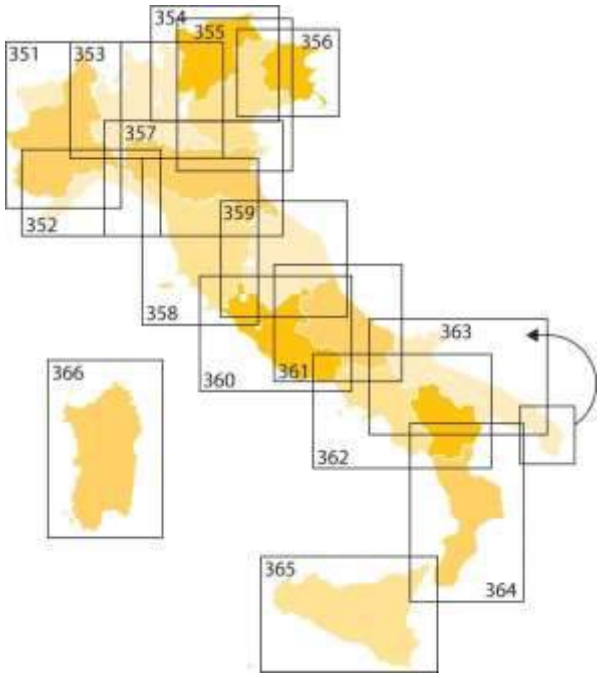
The surprising answers Pollan offers to the simple question posed by this book have profound political, economic, psychological, and even moral implications for all of us. Beautifully written and thrillingly argued, *The Omnivore's Dilemma* promises to change the way we think about the politics and pleasure of eating. For anyone who reads it, dinner will never again look, or taste, quite the same.

Rapporto dell'uomo con il cibo dipende da :

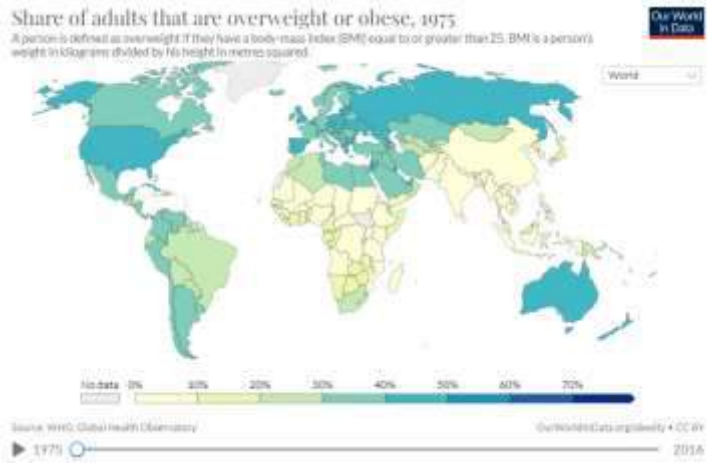
- Fattori ambientali e culturali

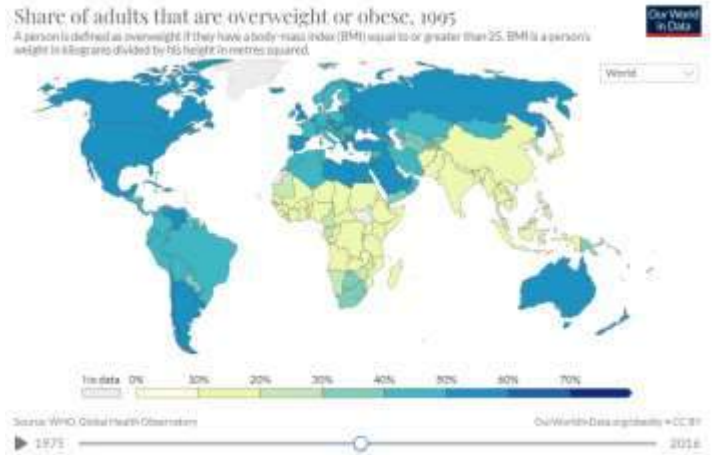


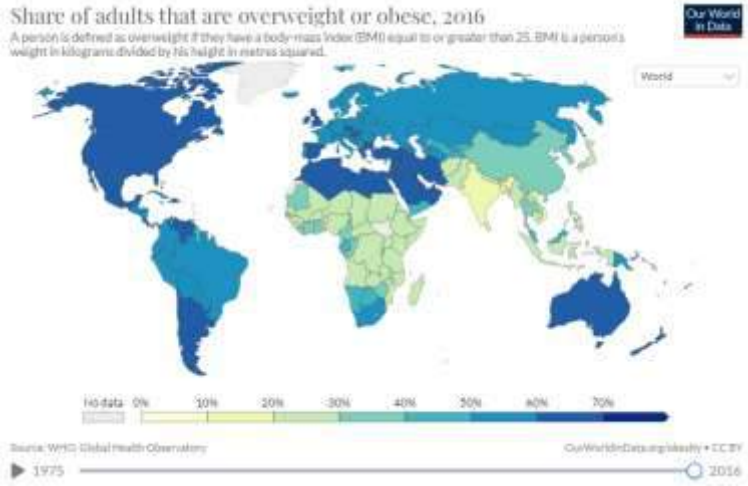
To encourage more road travel, and hence boost tire sales, they decided to create a comprehensive guide book for motorists which cataloged hotels, restaurants, mechanics and gas stations. In 1900, the very first edition of the Michelin Guide was published and 35,000 copies were given out for free.



MICHELIN







World Health Organization

Obesity and overweight

9 June 2021

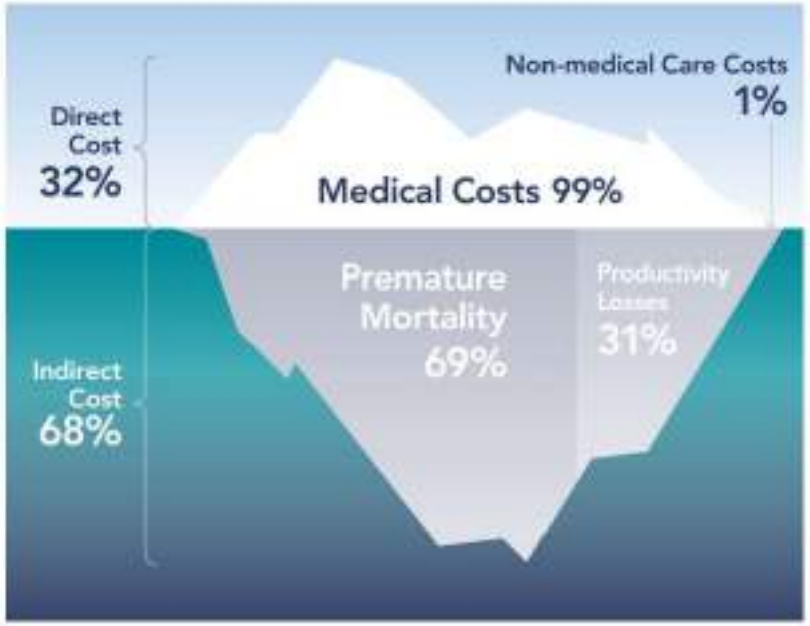
Key facts

- Worldwide obesity has nearly tripled since 1975.
- In 2016, more than 1.9 billion adults, 18 years and older, were overweight. Of these over 650 million were obese.
- 39% of adults aged 18 years and over were overweight in 2016, and 13% were obese.
- Most of the world's population live in countries where overweight and obesity kills more people than underweight.
- 39 million children under the age of 5 were overweight or obese in 2020.
- Over 340 million children and adolescents aged 5-19 were overweight or obese in 2016.
- Obesity is preventable.

The Economic Impact of Overweight & Obesity in 2020 and 2060

2nd Edition with Estimates for 161 Countries

Figure 4. Breakdown of the economic costs of obesity used for the current prediction of the economic costs of overweight and obesity (2019 data).



"People living with obesity should have the right to evidence-based care. They should be treated with respect and should be free to join and contribute to the useful life of their countries, regardless of whether or not they have larger bodies. People under treatment (medical and psychological) tend to make decisions that help them stay healthy."

Obesidades Mexico

Obesidades

"As patients, we don't want to be looked at as an economic statistic, or a burden. We are people living with a disease, so any measures taken as a result of looking at the costs of obesity should be with a call to action for better care, improved access to treatment, and the removal of bias from society."

Global Obesity Patient Alliance

GOPA | Global Obesity Patient Alliance

"The global economic and personal costs of obesity are important. We need to disrupt the outdated blame narrative and invest in action for healthier and happier people."

Weight Issues Network (Australia)

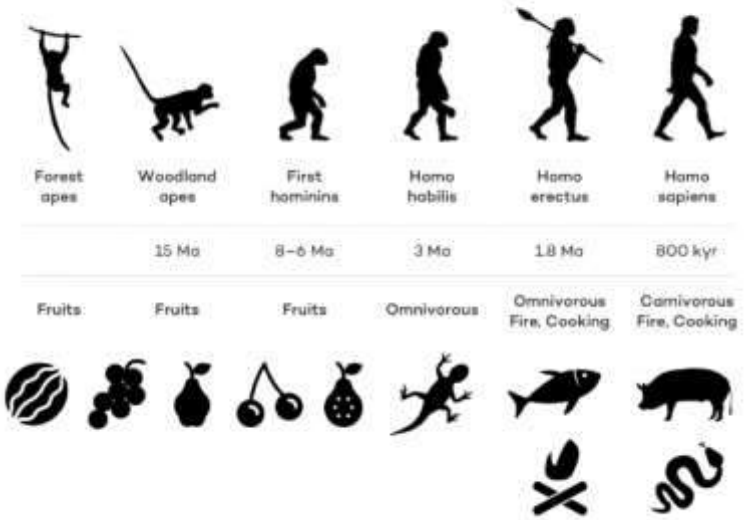
Weight Issues Network

- **R** Recognise obesity
- **O** Obesity monitoring
- **O** Obesity prevention
- **T** Treatment of obesity
- **S** Systems-based approach

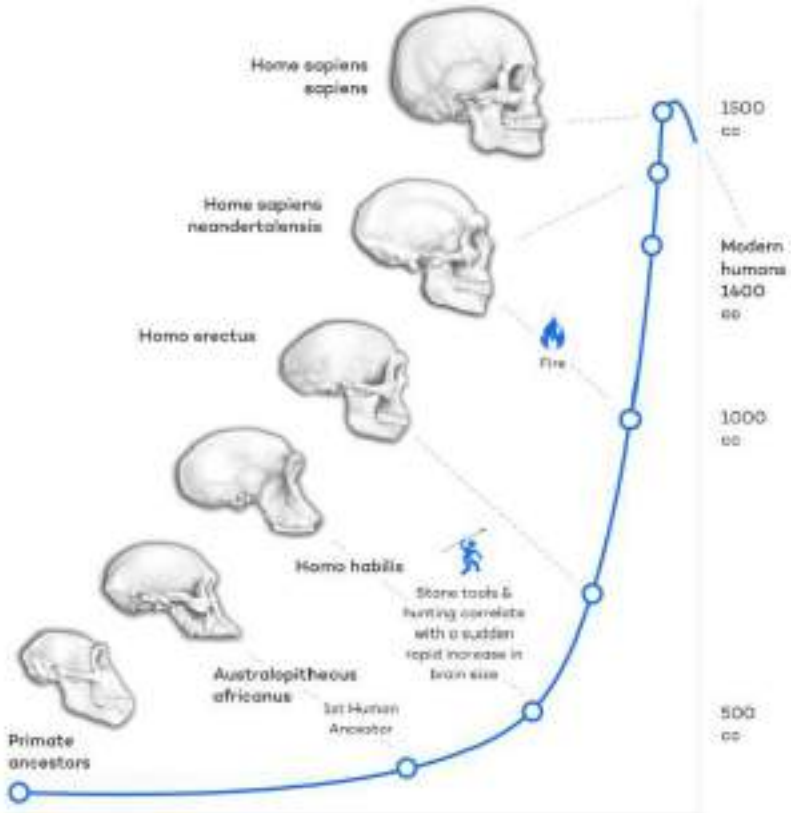
Rapporto dell'uomo con il cibo dipende da :

- Fattori ambientali e culturali
- Disponibilità oggettiva dei cibi

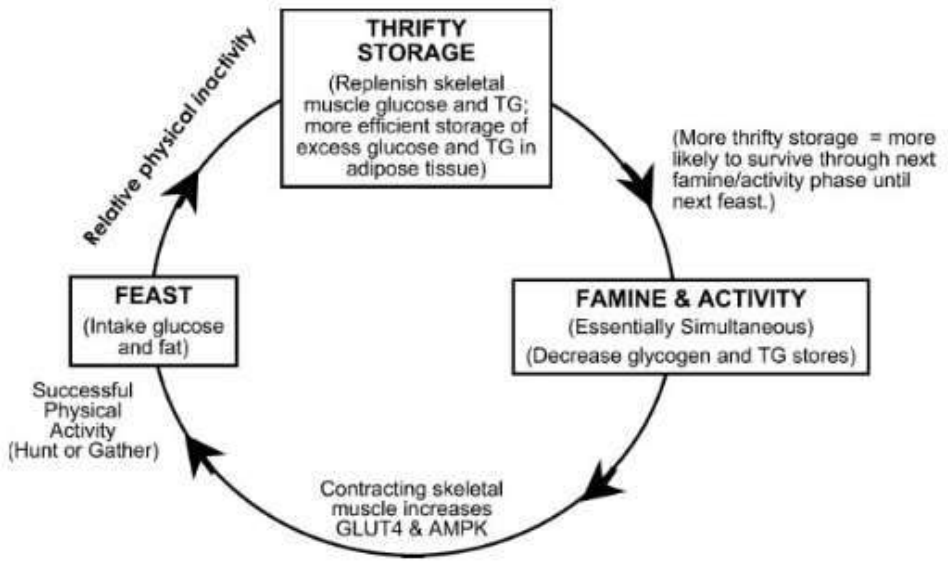
Evolution of human diet



Human evolution: increase in brain size



Ancient Genes, Modern Meals



- **Sospensione dell'alternanza tra digiuno e sazietà**
- **Ridotta capacità di preservare il glucosio per le funzioni vitali**
- **Sindrome Metabolica**

https://doi.org/10.1152/japplphysiol.00757.2003

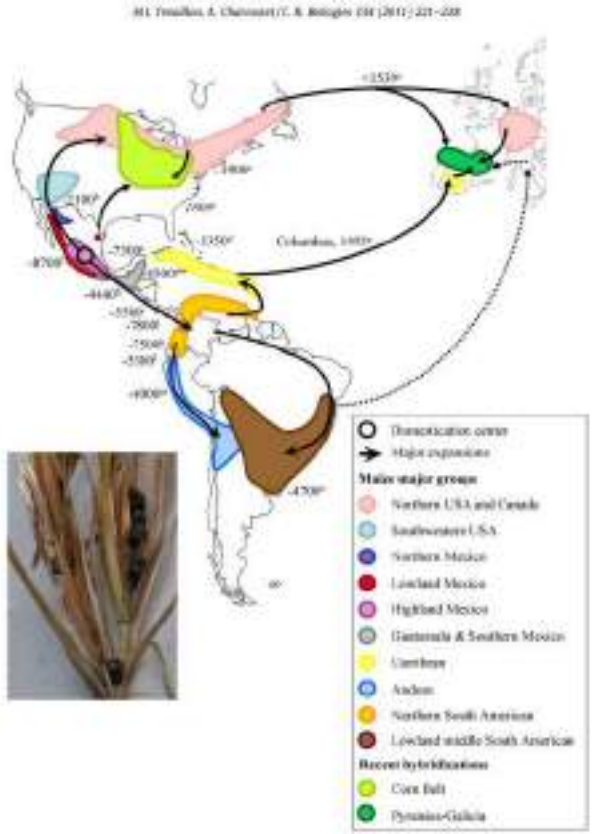
Rivoluzioni Alimentari

Review/Revue

A European perspective on maize history

L'histoire du maïs cultivé vue sous un angle européen

Maud Irène Tenaillon [a,b], Alain Charcosset [a,*]



«Ho voluto, lavorando, far capire che questa povera gente, che alla luce di una lampada mangia patate servendosi dal piatto con le mani, ha zappato essa stessa la terra dove quelle patate sono cresciute; il quadro, dunque, evoca il lavoro manuale e lascia intendere che quei contadini hanno onestamente meritato di mangiare ciò che mangiano. Non vorrei assolutamente che tutti si limitassero a trovarlo bello o pregevole»

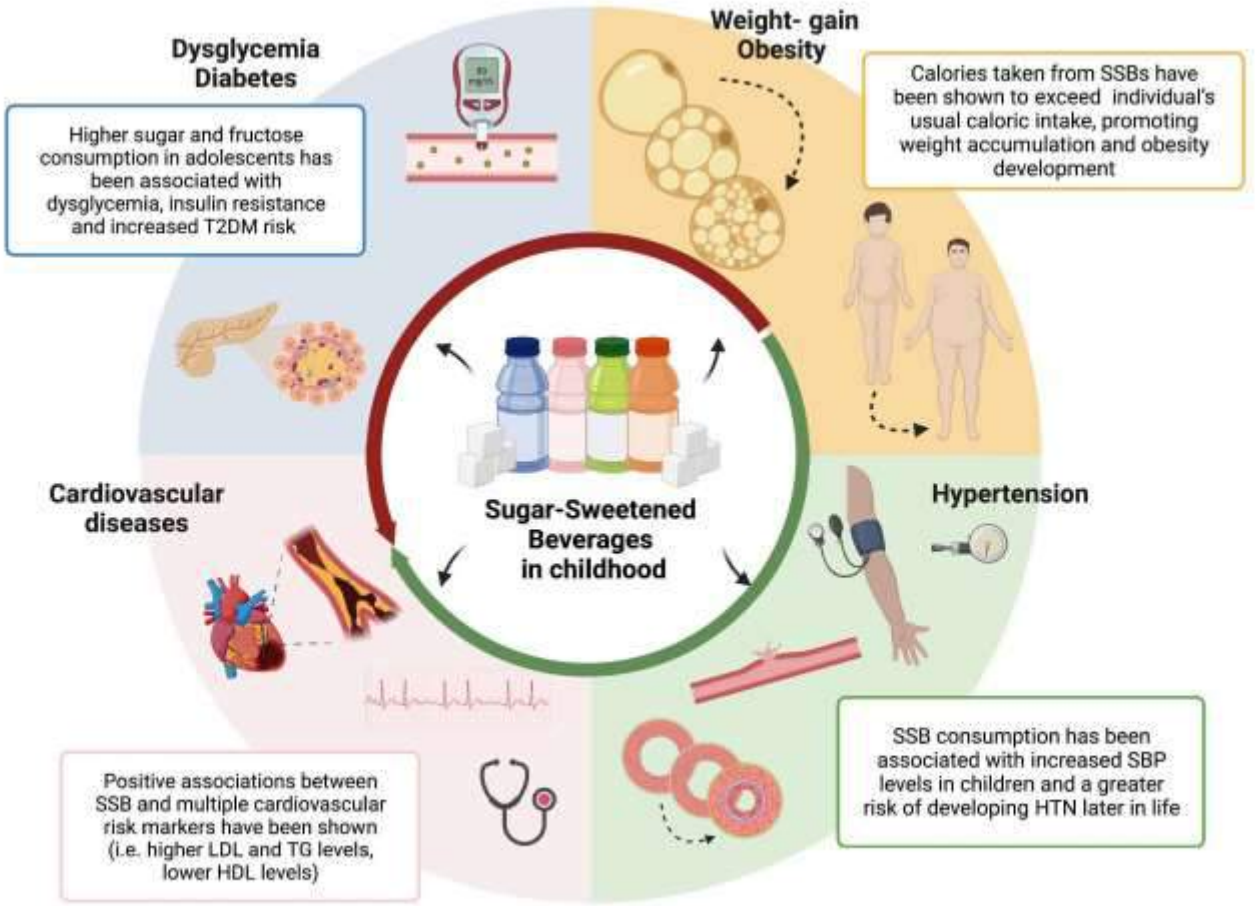
(«I mangiatori di patate» Vincent van Gogh, 1885)

Rivoluzioni Alimentari

A history of sugar – the food nobody needs, but everyone craves

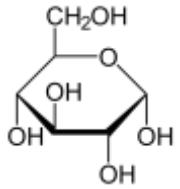
"The diet industry is polarized around simple debates such as fat vs sugar because there are huge amounts of money at stake. Farmers, food manufacturers, lobbyists, scientists and authors of diet books need to defend one or other side."

- Dr. Alexander Van Tulleken, MD, The Sugar Blues

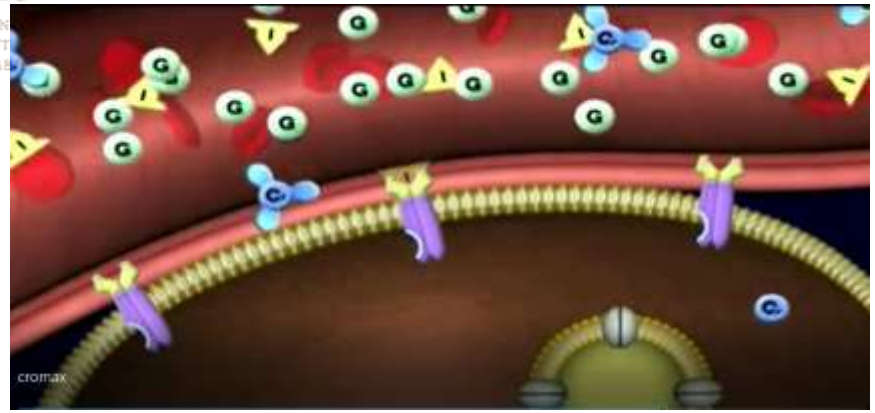


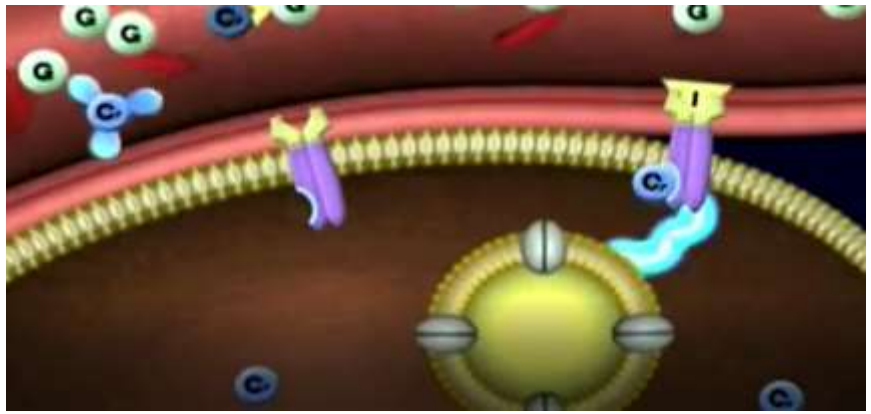
Calcaterra, V.; Cena, H.; Magenes, V.C.; Vincenti, A.; Comola, G.; Beretta, A.; Di Napoli, I.; Zuccotti, G. Sugar-Sweetened Beverages and Metabolic Risk in Children and Adolescents with Obesity: A Narrative Review. *Nutrients* **2023**, *15*, 702. https://doi.org/10.3390/nu15030702

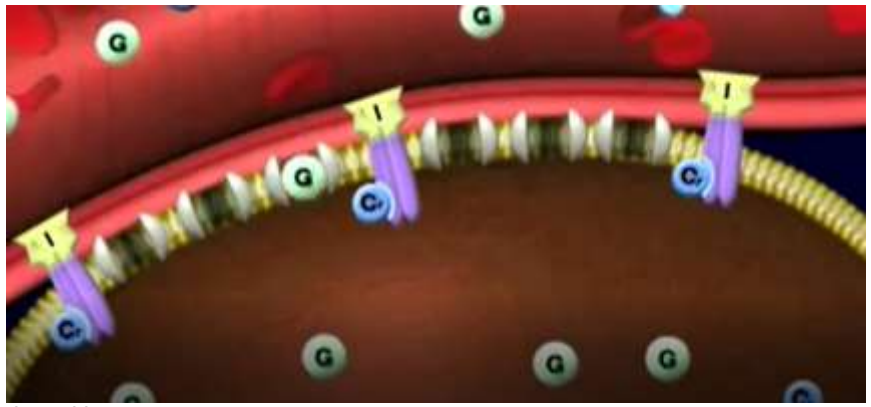
Il ruolo della nutraceutica.



Resveratrolo	100 mg, preferibilmente dopo un pasto. Dopo colazione.	Per 60gg per aumentati fabbisogni, nella regolazione del metabolismo. Ciclo integrativo ripetibile.
Cromo Picolinato	200 mcg, dopo pranzo.	Per 90 gg consecutivi, per regolazione del metabolismo.
Probiotici	*Lactobacillus acidophilus* LA-5® *Bifidobacterium lactis* BB-12® *Lacticaseibacillus rhamnosus* LGG® *Lacticaseibacillus paracasei* ATCC 55544 Distante dai pasti.	2,9 miliardi di microrganismi vitali 3 miliardi di microrganismi vitali 2,6 miliardi di microrganismi vitali 1,5 miliardi di microrganismi vitali Foundational Health – per periodi prolungati.







Il cromo picolinato ha un assorbimento migliore del cromo inorganico e facilita il legame dell'insulina al suo recettore inducendo più trasportatori GLUT sulle membrane **favorendo l'entrata di glucosio** dal circolo sanguigno nelle cellule.

Il Cromo una volta entrato a livello della cellula si lega ad un sito catalitico del recettore Tirosin-Chinasi dell'insulina.
Questo legame permette all'insulina la dimerizzazione e una volta legata si forma il complesso Insulina-Cromo-Recettore; il complesso attiva così una cascata di segnale per cui i trasportatori per il glucosio vengono esposti sulla membrana.
Solo a livello della membrana agiscono facendo entrare il glucosio dal circolo sanguigno all'interno della cellula per essere poi utilizzato in tutti i processi energetici.

Il supporto al metabolismo glucidico è quindi imputabile al miglioramento dell'attività insulinica, incrementando l'attività del pathway ormonale di fosforilazione intracellulare e l'uptake di glucosio.

Review

Polyphenols as Caloric Restriction Mimetics Regulating Mitochondrial Biogenesis and Mitophagy

CellPress REVIEWS

Sergio Davinelli,[1,2,*] Diego De Stefani,[3] Immacolata De Vivo,[1] and Giovanni Scapagnini[1]

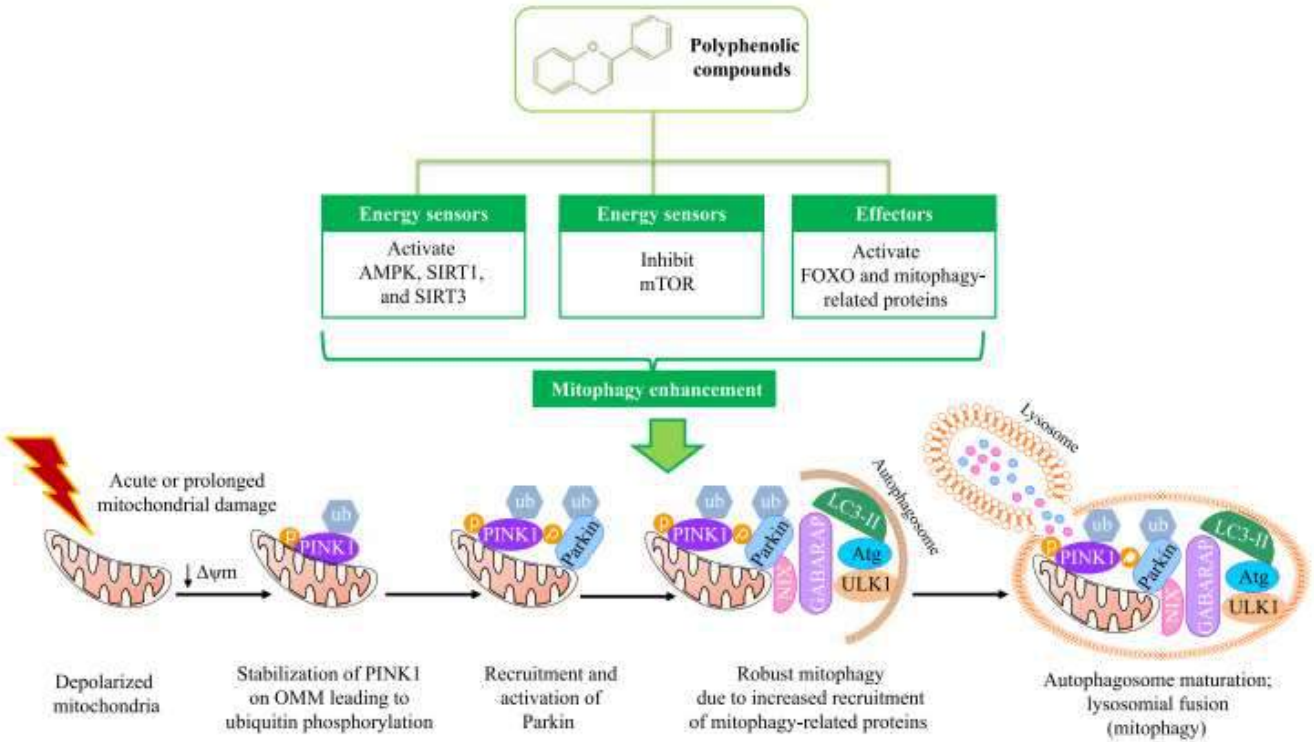


Figure 2. Mitophagy Regulation by Polyphenols

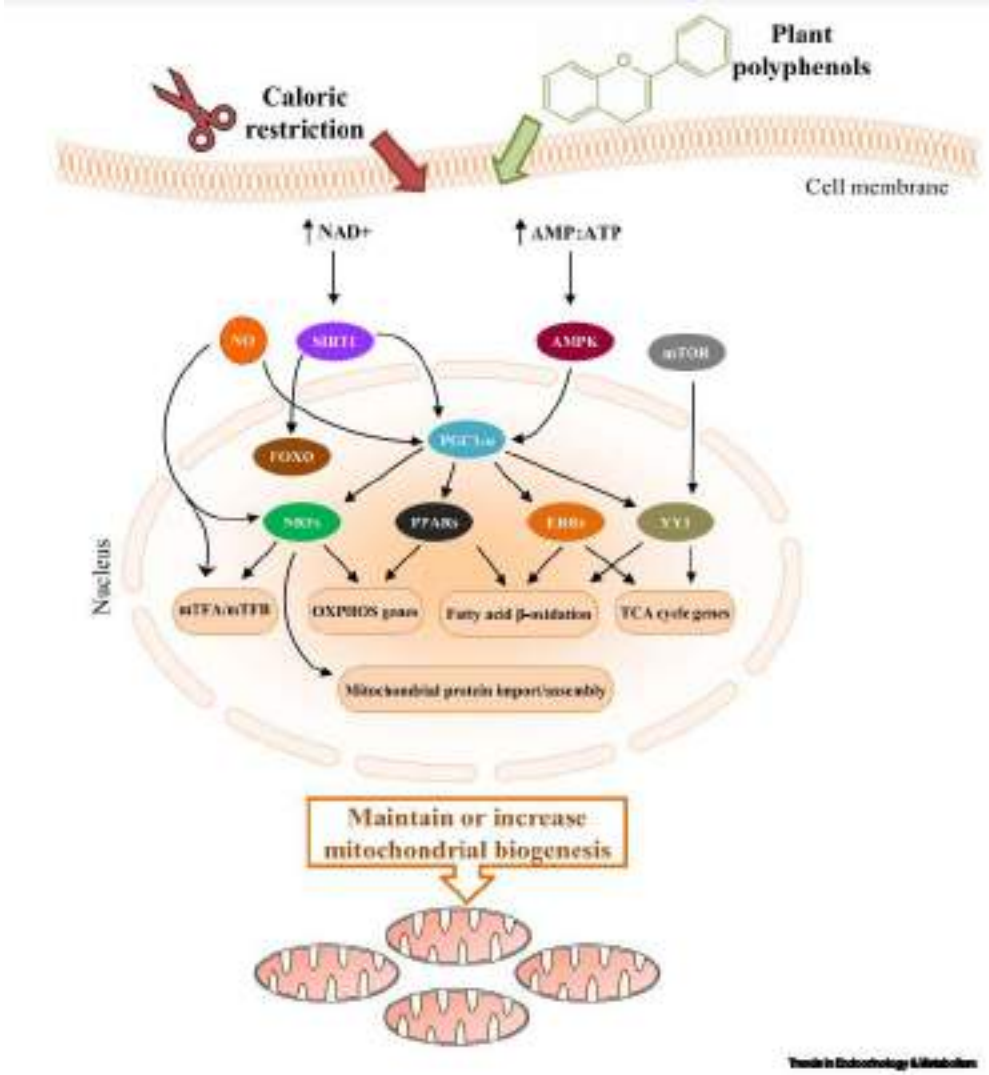
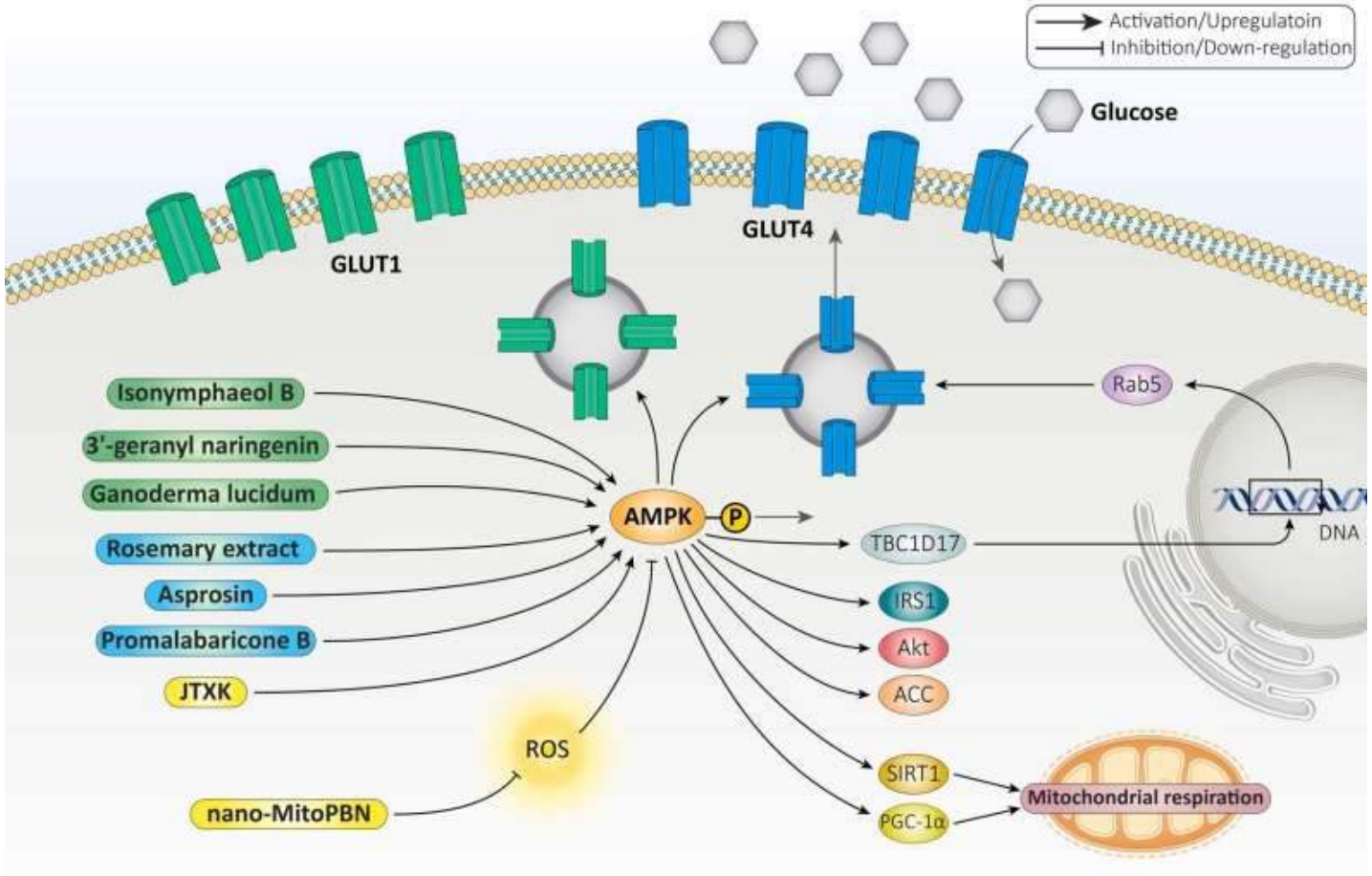
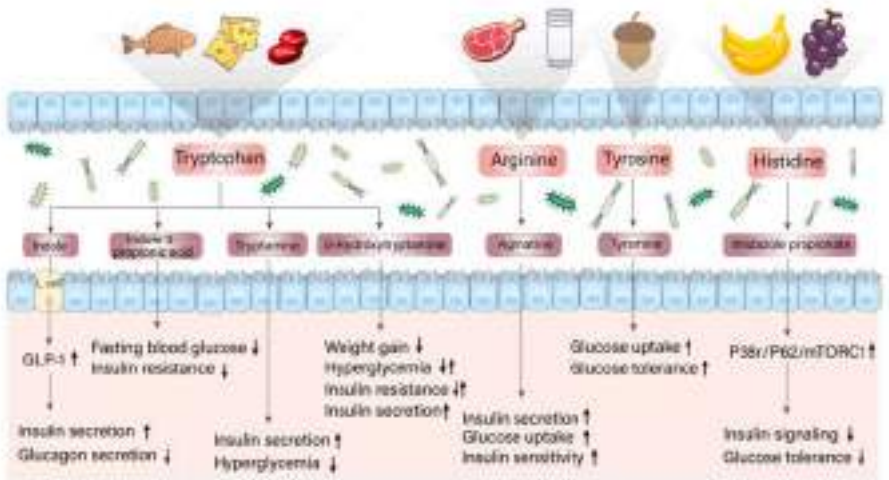


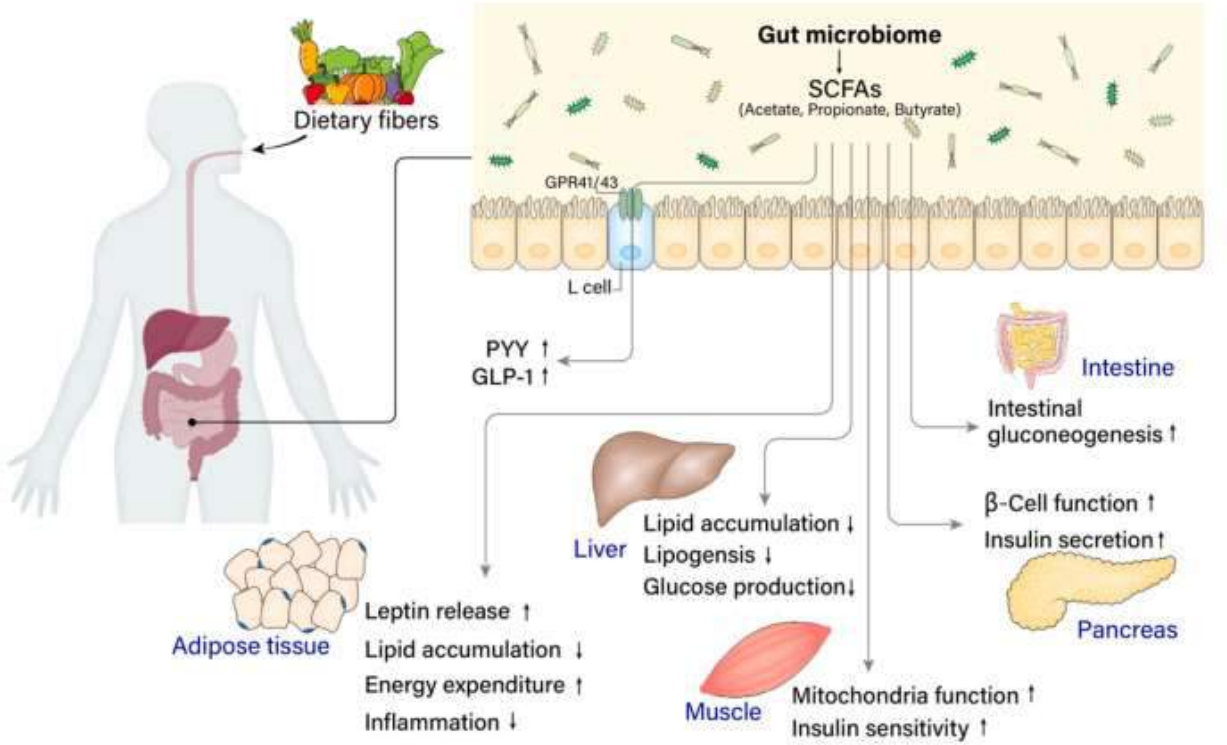
Figure 1. Key Players Involved in Mitochondrial Biogenesis

Biomedicine & Pharmacotherapy



Entezari M, Hashemi D, Taheriazam A, Zabolian A, Mohammadi S, Fakhri F, Hashemi M, Hushmandi K, Ashrafizadeh M, Zarrabi A, Ertas YN, Mirzaei S, Samarghandian S. AMPK signaling in diabetes mellitus, insulin resistance and diabetic complications: A pre-clinical and clinical investigation. Biomed Pharmacother. 2022 Feb;146:112563. doi: 10.1016/j.biopha.2021.112563. Epub 2021 Dec 29. PMID: 35062059.





Du L, Li Q, Yi H, Kuang T, Tang Y, Fan G. Gut microbiota-derived metabolites as key actors in type 2 diabetes mellitus. Biomed Pharmacother. 2022 May;149:112839. doi: 10.1016/j.biopha.2022.112839. Epub 2022 Mar 21. PMID: 35325852.

Review > Cell Metab. 2021 Dec 7;33(12):2316-2328. doi: 10.1016/j.cmet.2021.09.004. Epub 2021 Oct 6.

"Sweet death": Fructose as a metabolic toxin that targets the gut-liver axis

Mark A Febbraio [1], Michael Karin [2]

Affiliations + expand

PMID: 34619076 PMCID: PMC8665123 DOI: 10.1016/j.cmet.2021.09.004

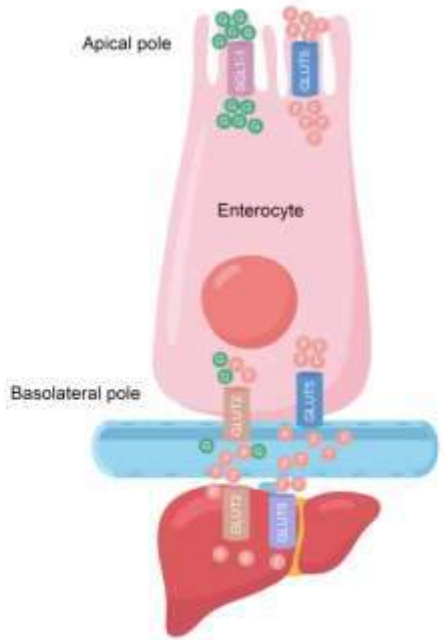


Figure 2. Fructose absorption at different sites

Fructose and glucose are absorbed at the apical pole of the enterocyte by glucose transp (GLUT) 5 and sodium-glucose co-transporter 1 (SGLT-1), respectively. The entry of fru from the basolateral pole of the enterocyte is facilitated by GLUT5 and possibly GLUT Fructose uptake by the liver is primarily due to the action of GLUT2, but GLUT8 may play a role in this process.

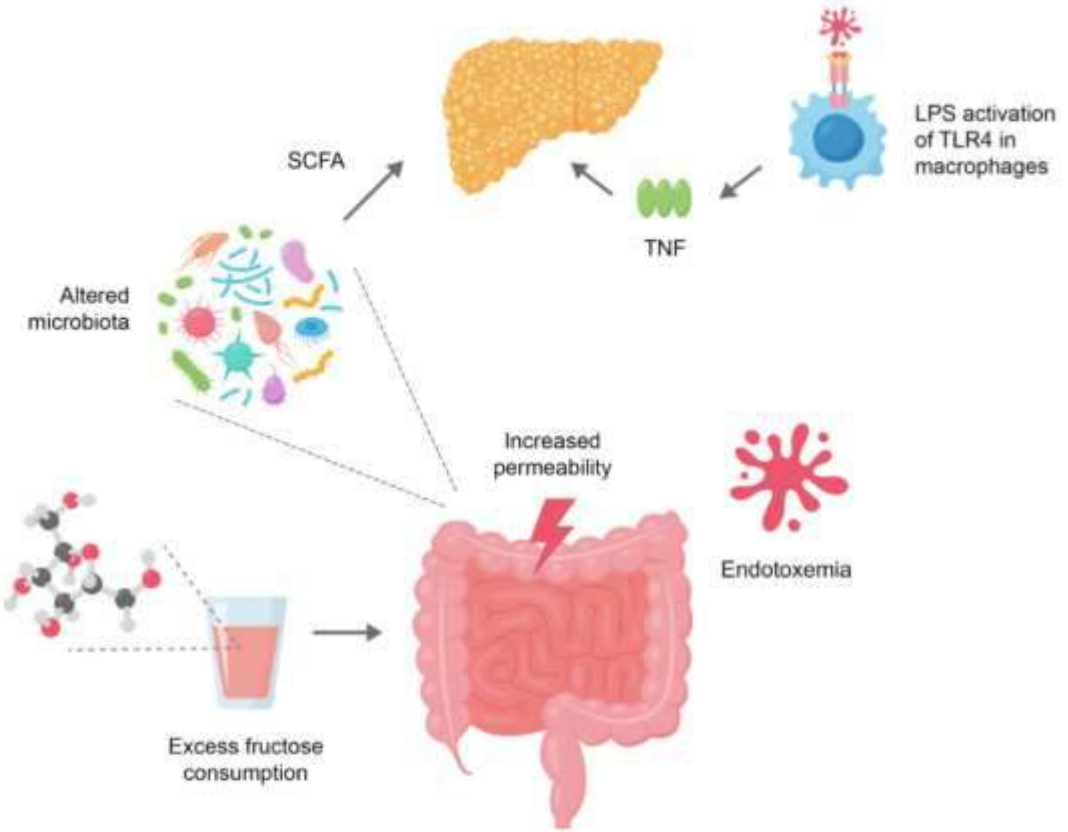


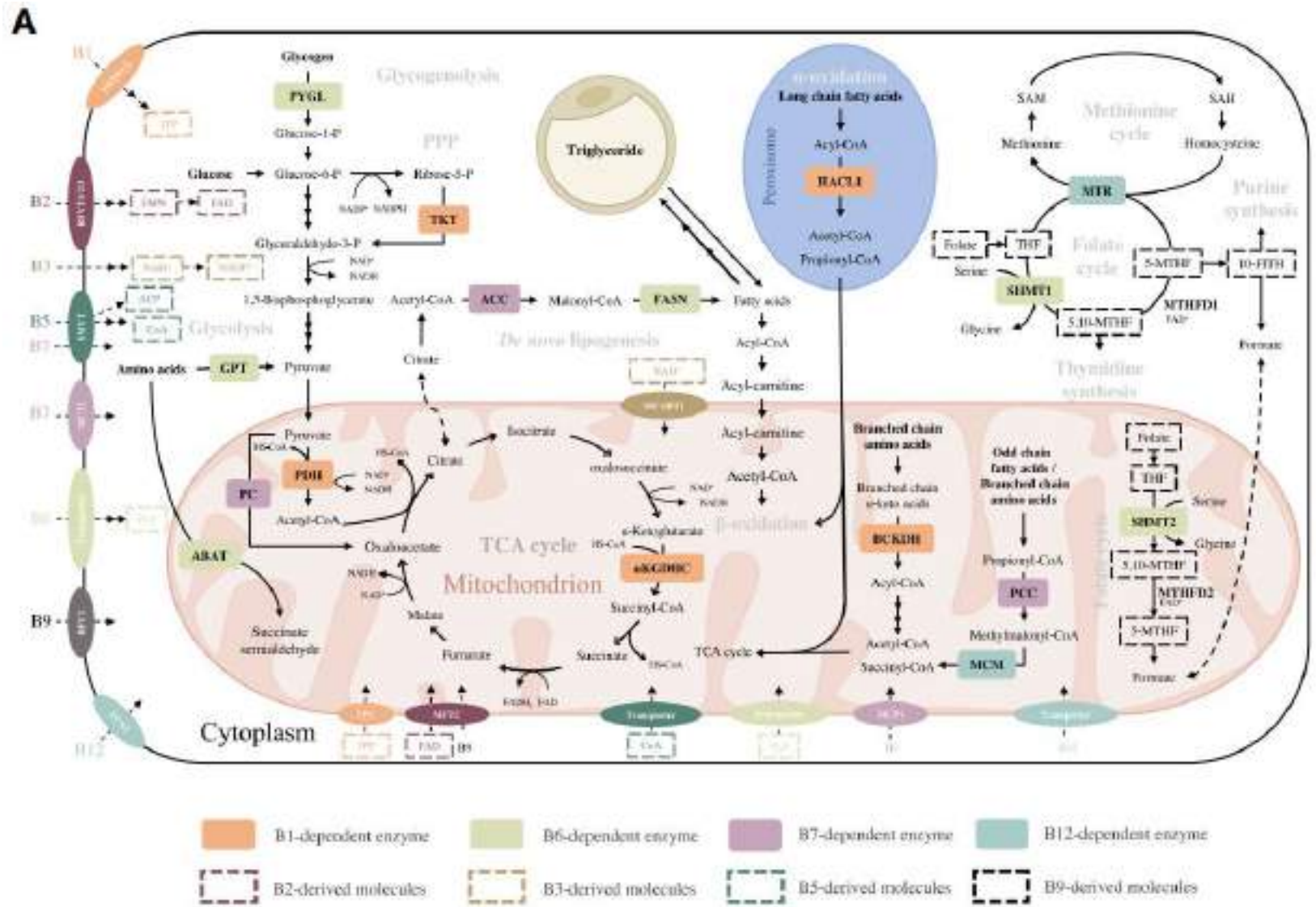
Figure 3. Schematic summary of proposed mechanisms for fructose-induced hepatosteatosis via the gut-liver axis

Excess fructose consumption can lead to altered microbiota and the production of short chain fatty acids that ultimately stimulate hepatosteatosis. Fructose can also disrupt gut barrier integrity, resulting in systemic endotoxemia, leading to the activation of an inflammatory cascade via macrophage toll-like receptor 4 (TLR4) signaling, thus resulting in tumor necrosis factor (TNF)-induced hepatosteatosis.

Il ruolo della nutraceutica.

Funzionalità Epatica		
Inositolo / Colina / Metionina	1+1+1 g (dopo colazione)	Ciclo di integrazione di 30 giorni, da ripetere più volte.
Glutatione	250 mg dopo pranzo.	Ciclo di integrazione di 30 giorni, da ripetere più volte.

Supporto alla funzione depurativa		
Complesso vitamine B	Preferibilmente dopo colazione a stomaco pieno.	Ciclo di integrazione di 60gg. Ripetibile più volte. Supporto alla funzionalità epatica, tono ed energia.
Clorella	1560 mg, preferibilmente dopo pranzo.	Integrazione per 3 mesi continuativi come depurazione.



CellPress
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Minireview

Navigating the B vitamins: Dietary diversity, microbial synthesis, and human health

Figure 1. Importance of B group vitamins to health and diseases
(A) Representative enzymes or pathways for each B vitamin.
(B) Ridgeline plot showing inter-individual differences in B vitamins in the circulation (with mean circulating levels of each B vitamin indicated on the x axis) and associated disease risks in cases of deficiency.

Rapporto dell'uomo con il cibo dipende da :

- Fattori ambientali e culturali
- Disponibilità oggettiva dei cibi
- Automatismi biologici

Gordon C. Kennedy and the Lipostatic Control of Eating

KENNEDY, Gordon C.
The Role of Depot Fat in the Hypothalamic Control of Food Intake in the Rat. Proc R Soc B Biol Sci 1953;140:578–592.

The role of depot fat in the hypothalamic control of food intake in the rat

By G. C. Kennedy
National Institute for Medical Research, London, N.W. 7

(*Communicated by A. S. Parkes, F.R.S.—Received* 21 *March* 1952—*Revised* 31 *July* 1952)

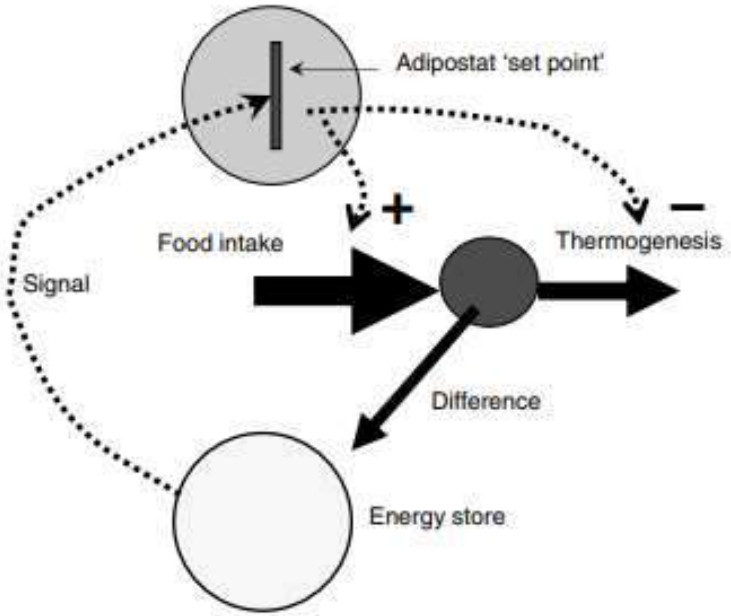


Fig. 1. The adipostat hypothesis for body-weight control. The scheme depicts a situation in which the 'signal' (normally considered to be leptin) indicates a level of body energy reserves lower than those required by the adipostat 'set point', which results in regulation of food intake (positively; +) and thermogenesis (negatively; −) to restore the desired level.

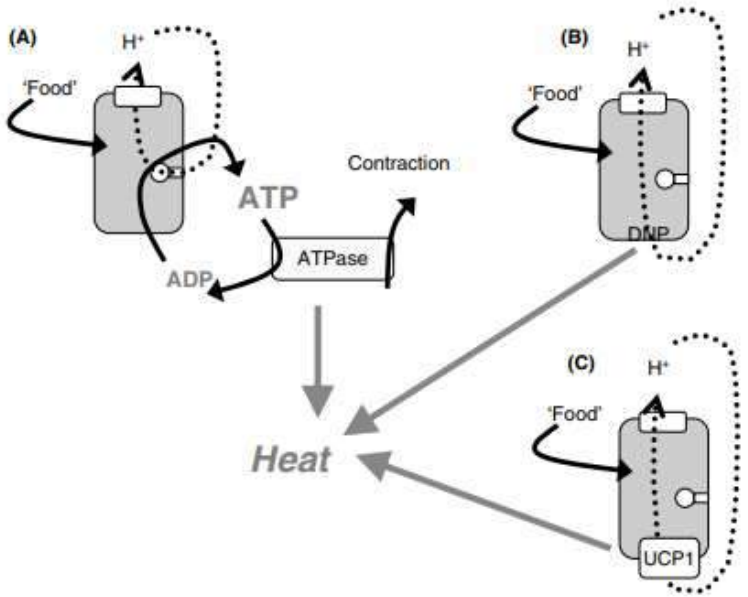


Fig. 2. Mitochondrial coupling and chemical and physiological uncouplers. (A) 'Normal' mitochondria in which protons from the respiratory chain are only allowed into the mitochondria in order to drive ATP synthesis; when the ATP is later hydrolysed, thermogenesis occurs (as in exercise or shivering thermogenesis). The mitochondria may become 'uncoupled' through an artificial uncoupler (dinitrophenol (DNP); B) or through the physiological uncoupler (uncoupling protein 1 (UCP1); C).

Tabella 4.1 – ALCUNE MOLECOLE COINVOLTE NELLA REGOLAZIONE DELL'ALIMENTAZIONE, DEL METABOLISMO E DEL PESO CORPOREO

Nome italiano	Nome inglese	Acronimo
Adiponectina	*Adiponectin*	
Apelina	*Apelin*	APLN
Bombesina	*Bombesin*	
Cartonectina	*Cartonectin*	
Chemerina	*Chemerin*	
Colecistochinina	*Cholecystokinin*	CCK
Endocannabinoidi	*Endocannabinoids*	
Endorfine	*Endorphins*	
Fattore di necrosi tumorale alfa	*Tumor necrosis factor-α*	TNF-α
Galanina	*Galanin*	GAL
Grelina (peptide di rilascio dell'ormone della crescita)	*Ghrelin (growth hormon releasing peptide)*	
Insulina	*Insulin*	
Interleuchina 6	*Interleukin 6*	IL-6
Leptina	*Leptin*	LEP
Melanocortina o ormone melanocitastimolante	*Melanocortin o a-melanocyte stimulating hormone*	a-MSH
Neuropeptide Y	*Neuropeptide Y*	NPY
Orexina-A e orexina-B	*Orexin-A and orexin-B*	
Ormone concentrante la melanina	*Melanin concentrating hormone*	MCH
Ormone di rilascio della corticotropina	*Corticotropin-releasing hormone*	CRH
Peptide 1 glucagone simile	*Glucagon-like peptide 1*	GLP-1
Peptide 2 glucagone simile	*Glucagon-like peptide 2*	GLP-2
Peptide YY	*Peptide YY*	PYY
Polipeptide pancreatico	*Pancreatic polypeptide*	PP
Proopiomelanocortina (precursore α-MSH)	*Proopiomelanocortin*	POMC
Proteina agouti correlata	*Agouti related protein*	AGRP
Proteina disaccoppiante o termogenina	*Uncoupling protein*	UCP
Recettore dell'ormone concentrante la melanina	*Melanin concentrating hormone receptor*	SLC-1
Recettore β-3-adrenergico	*β-3-adrenergic receptor*	β3A-R
Recettore della melanocortina di tipo 4	*Melanocortin-4 receptor*	MC-4R
Recettori del neuropeptide Y	*Neuropeptide Y receptors*	NPY-R
Recettori della leptina	*Leptin receptors*	LEP-R
Resistina	*Resistin*	
Trascritto regolato dalla cocaina e dall'anfetamina	*Cocaine and amphetamine regulated transcript*	CART
Visfatina	*Visfatin*	

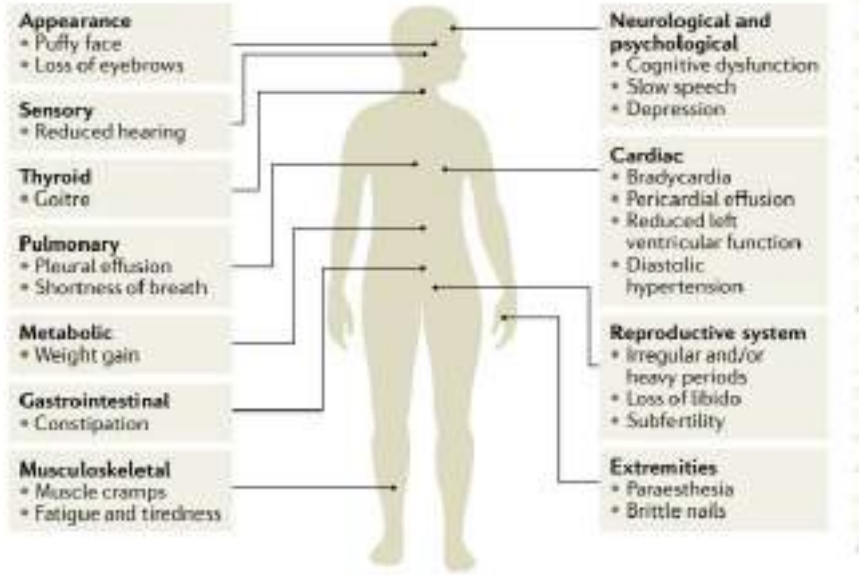
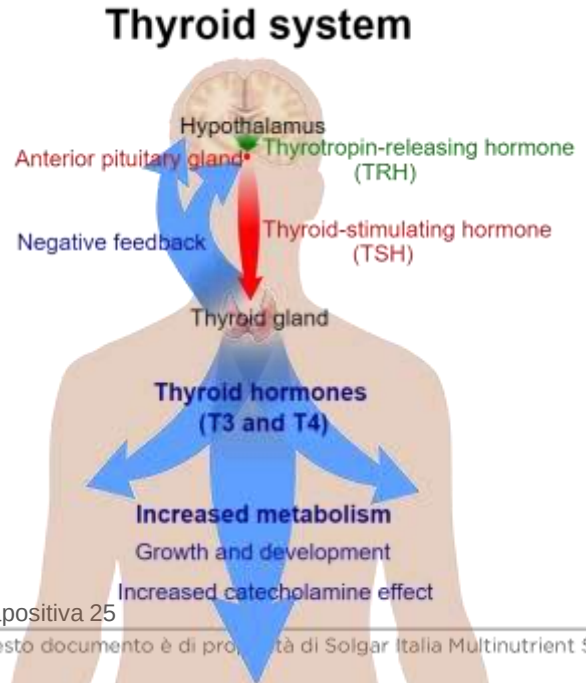


Fig. 1 | **Common symptoms and signs associated with hypothyroidism.** Most symptoms



Hypothyroidism

Legal Choker[1,2,3], Salmaa Bano[1], Isabela M. Benseñor[1], Fereidoun Azizi[4], Elizabeth N. Pearce[5] and Robin P. Peeters[2,3]

nature reviews endocrinology

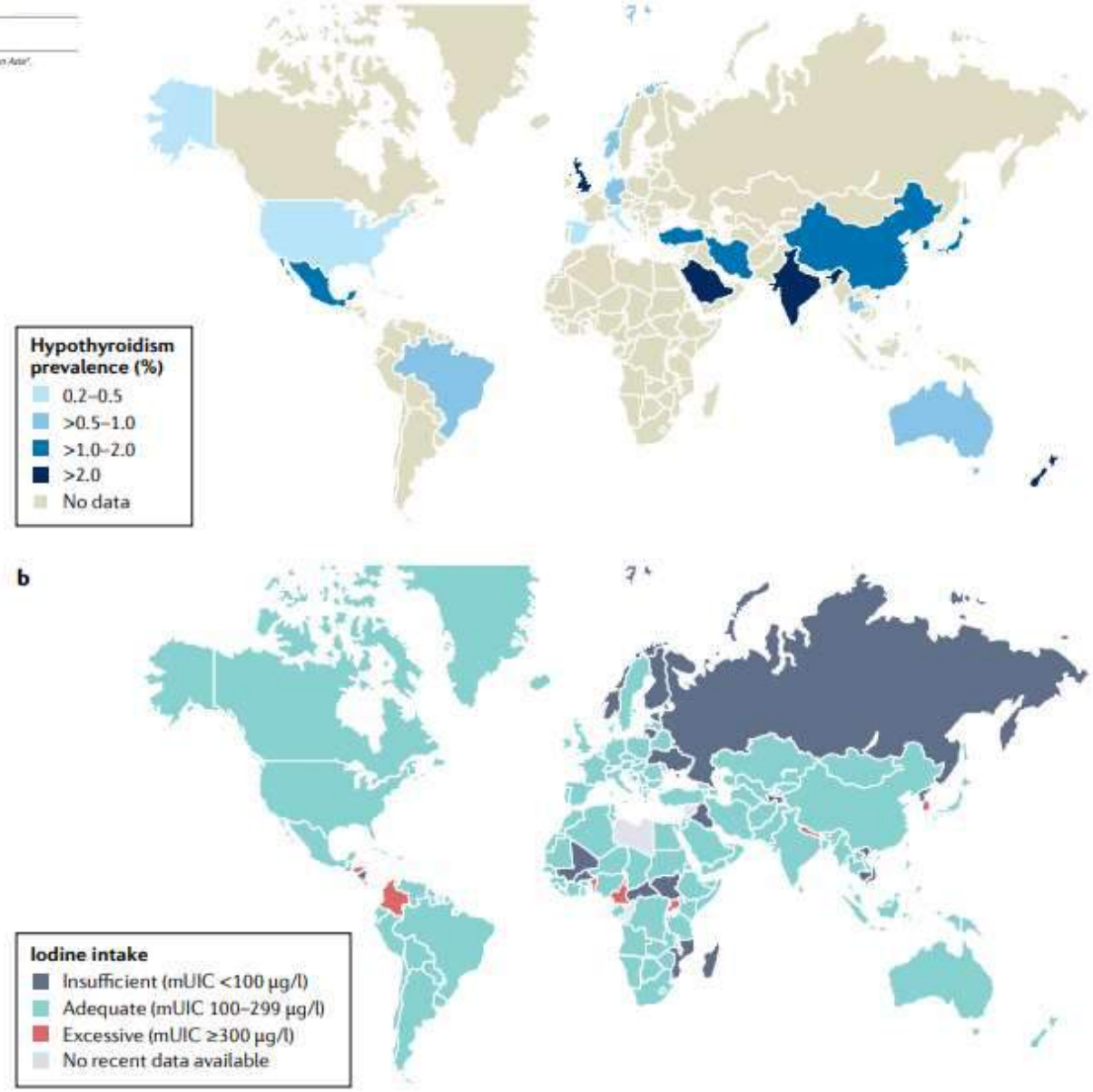


Fig. 2 | **Global prevalence of overt hypothyroidism and iodine status. a** | Worldwide prevalence of overt hypothyroidism based on epidemiological studies (Supplementary Table 1). The median value was calculated for countries for which data are available from multiple studies. **b** | Global iodine nutrition status in 2021 (REF.[188]) based on iodine intake in the general population as assessed by median urinary iodine concentration (mUIC) in school-aged children from studies conducted between 2005 and 2020.

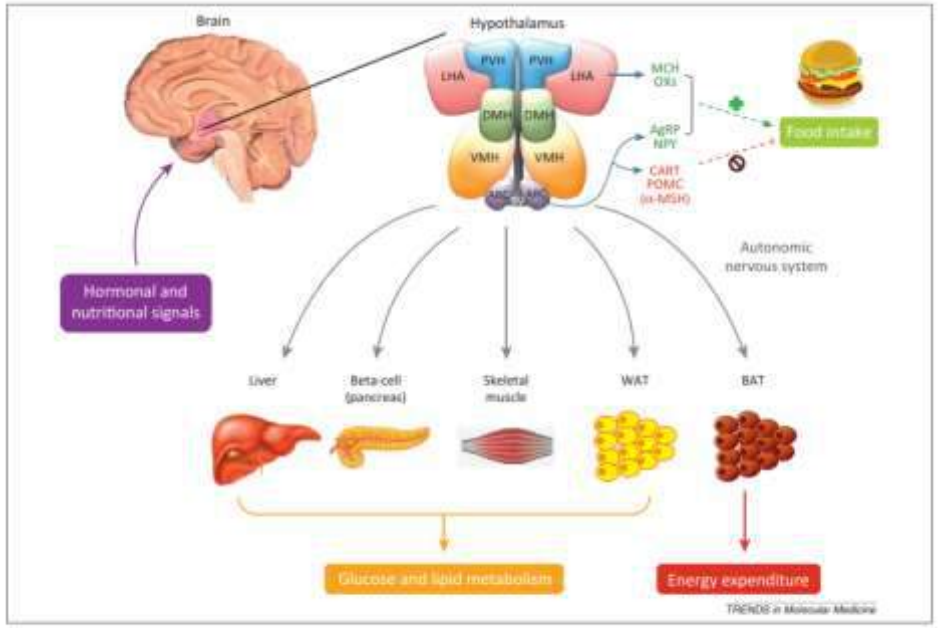
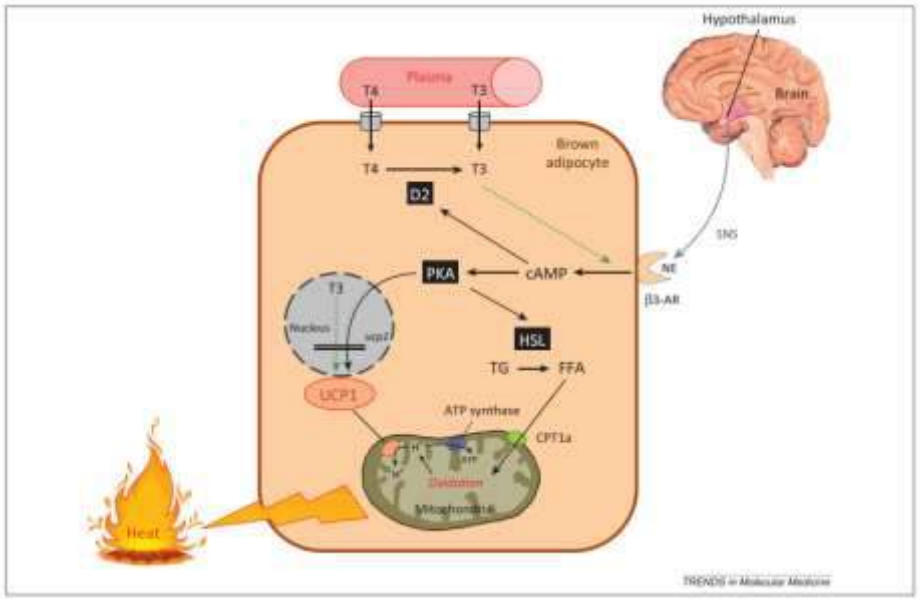


Figure 2. Hypothalamic regulation of whole-body energy balance and metabolism. There exists a complex and dynamic interplay between the peripheral metabolic environment and the central brain machanisms that regulate it. Specific nuclei in the hypothalamus respond to alterations in food availability, energy stores, and nutritional requirements and communicate hormonally and via the autonomous nervous system (ANS) to elicit functional changes in a range of tissues including the liver, pancreatic beta cell, muscle, white adipose tissue (WAT), and brown adipose tissue (BAT). This homeostatic loop modulates whole-body energy homeostasis and metabolism.



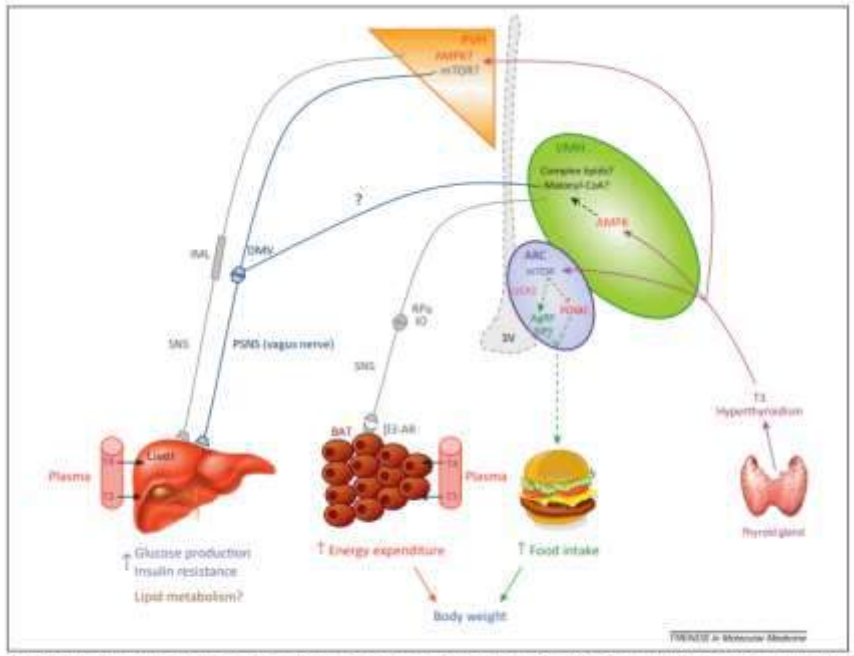


Figure 3. Central actions of thyroid hormones (THs): energy balance and peripheral metabolism. THs exert dissociated actions on hypothalamic metabolic sensors. While central T3 regulates feeding through mammalian target of rapamycin (mTOR) and uncoupling protein 2 (UCP2) in the arcuate nucleus of the hypothalamus (ARC), it modulates the thermogenic program in the brown adipose tissue (BAT) via AMP-activated protein kinase (AMPK) in the ventromedial nucleus of the hypothalamus (VMH). Central T3 acting in the paraventricular nucleus of the hypothalamus (PVH) also modulates hepatic glucose homeostasis in the liver, although the molecular details of this interaction at this level remain unknown. Functional changes in those hypothalamic energy sensors (i.e., impaired lipid metabolism in the VMH) are associated with activation of the parasympathetic and the sympathetic nervous system (PSNS and SNS) through changes in brainstem nuclei, such as the dorsal motor nucleus of the vagus (DMV), the inferior olive (IO), and the raphe pallidus (RPa), as well as the intermediolateral column (IML) in the spinal cord. While both sympathetic and parasympathetic outflow from the PVH modulate hepatic glucose metabolism, BAT function is modulated in the VMH only through the SNS. If central T3 modulates hepatic lipid metabolism is currently unknown.

López M, Alvarez CV, Nogueiras R, Diéguez C. Energy balance regulation by thyroid hormones at central level. Trends Mol Med. 2013 Jul;19(7):418-27.doi:10.1016/j.molmed.2013.04.004.

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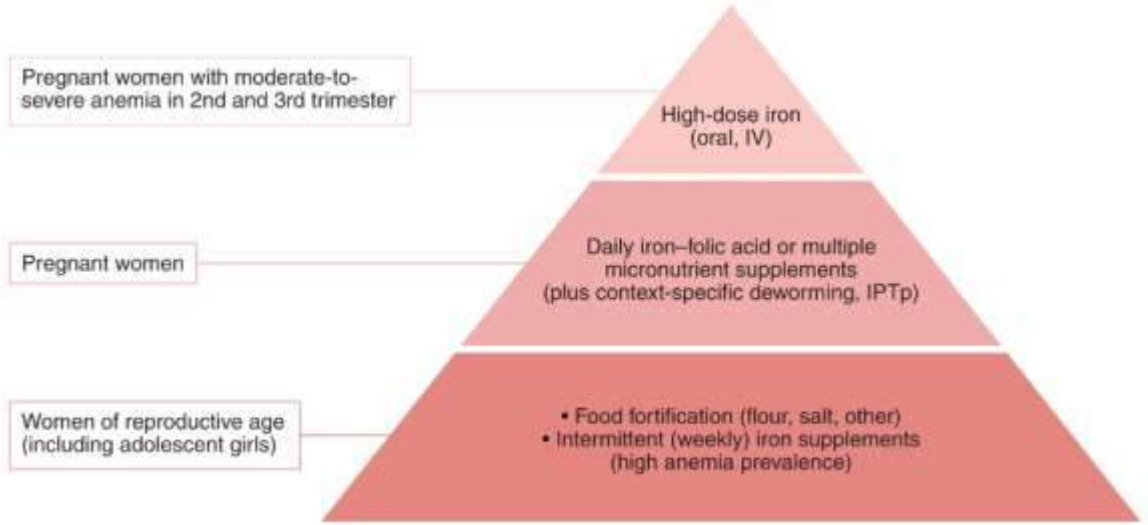
Il ruolo della nutraceutica.

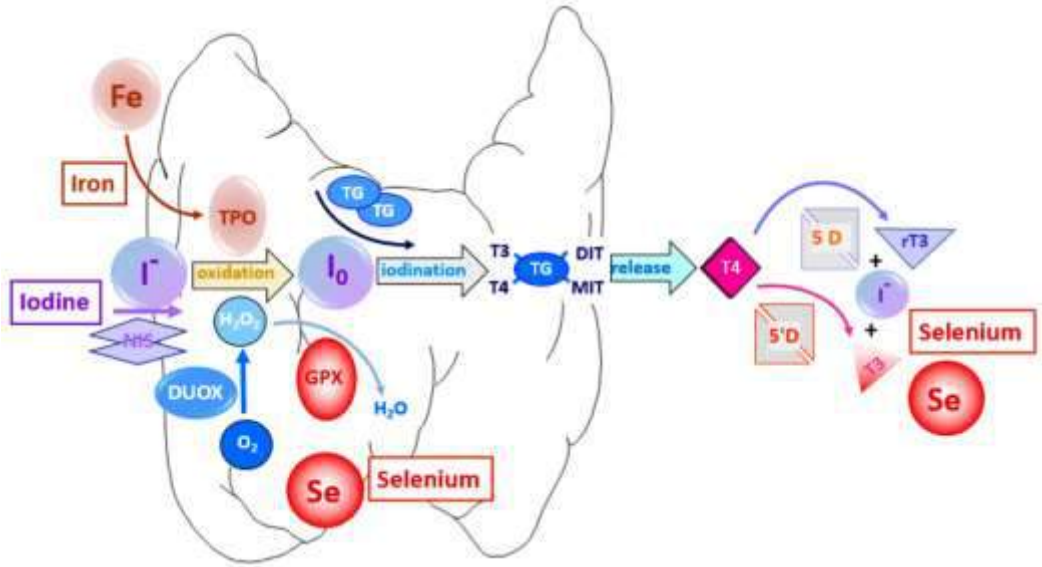
Tirosina	500 mg distante dai pasti, prima mattina.	Fino a 50 gg di integrazione. Supporto alla funzionalità tiroidea
Ferro Bisglicinato	20 mg dopo pranzo, stomaco pieno.	A seconda delle esigenze fino a 3 mesi consecutivi. Ciclo ripetibile.
Selenio	100 mcg preferibilmente al pasto (pranzo, cena)	Ciclo di integrazione per 3 mesi consecutivi. 1 mese di pausa.
Whitania somnifera	600 mg dopo un pasto, a seconda delle esigenze (colaz. pranzo cena)	Integrazione per periodi da 30 a 60 giorni consecutivi. Ciclo ripetibile.

nature medicine

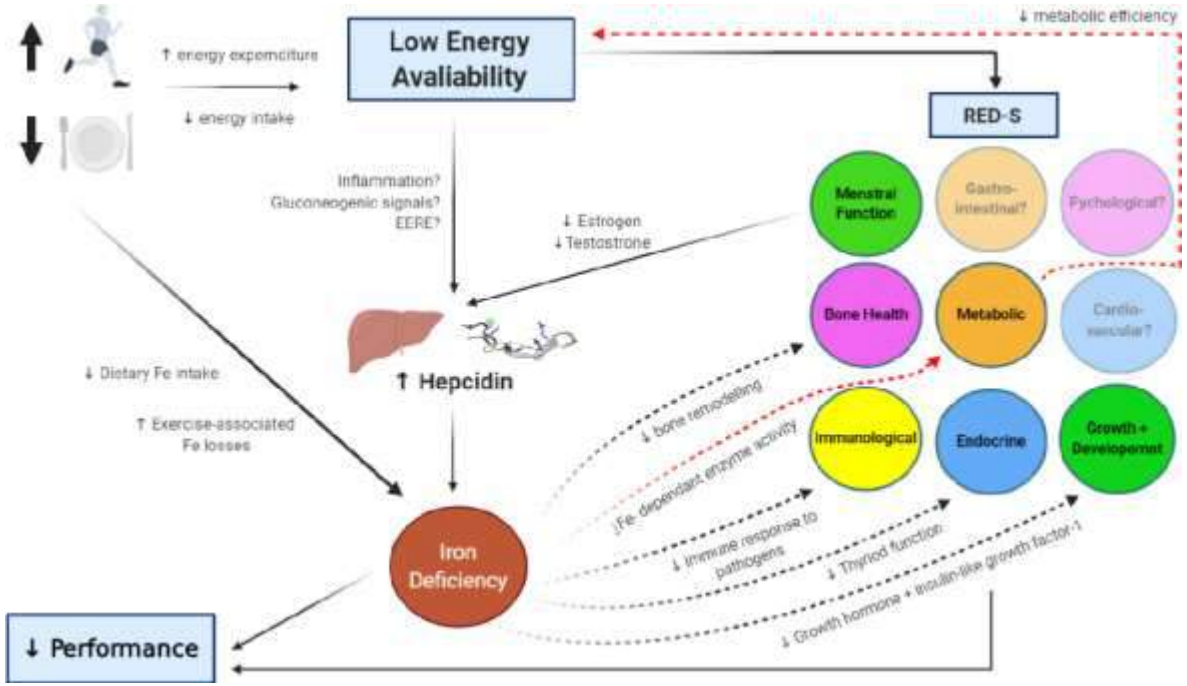
Christian, Parul. “Anemia in women - an intractable problem that requires innovative solutions.” *Nature medicine* vol. 27,10 (2021): 1675-1677. doi:10.1038/s41591-021-01514-3



IV, intravenous; IPTp, intermittent preventive treatment during pregnancy.



Köhrle, Josef. “Selenium, Iodine and Iron-Essential Trace Elements for Thyroid Hormone Synthesis and Metabolism.” *International journal of molecular sciences* vol. 24,4 3393. 8 Feb. 2023, doi:10.3390/ijms24043393



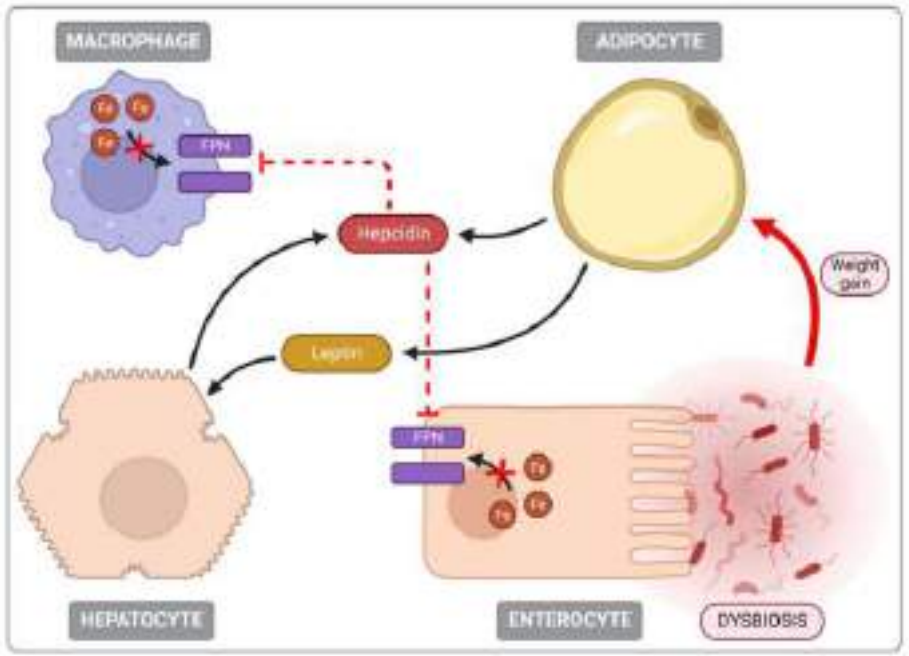


Figure 6. Iron deficiency in people with obesity. FPN—ferroportin, dashed line—inhibition.

McKay, Alannah K A et al. "Iron Metabolism: Interactions with Energy and Carbohydrate Availability." *Nutrients* vol. 12,12 3692. 30 Nov. 2020, doi:10.3390/nu12123692

Rapporto dell'uomo con il cibo dipende da :

- Fattori ambientali e culturali
- Disponibilità oggettiva dei cibi
- Automatismi biologici
- Processi cognitivi ed emotivi