Associazione Medici Endocrinologi

Primo Congresso Interregionale AME Sud - Italia

INFLUENZA DEL MODELLO DI ALIMENTAZIONE SUI LIVELLI CIRCOLANI DI VITAMINA D

Ambulatorio di Nutrizione Clinica

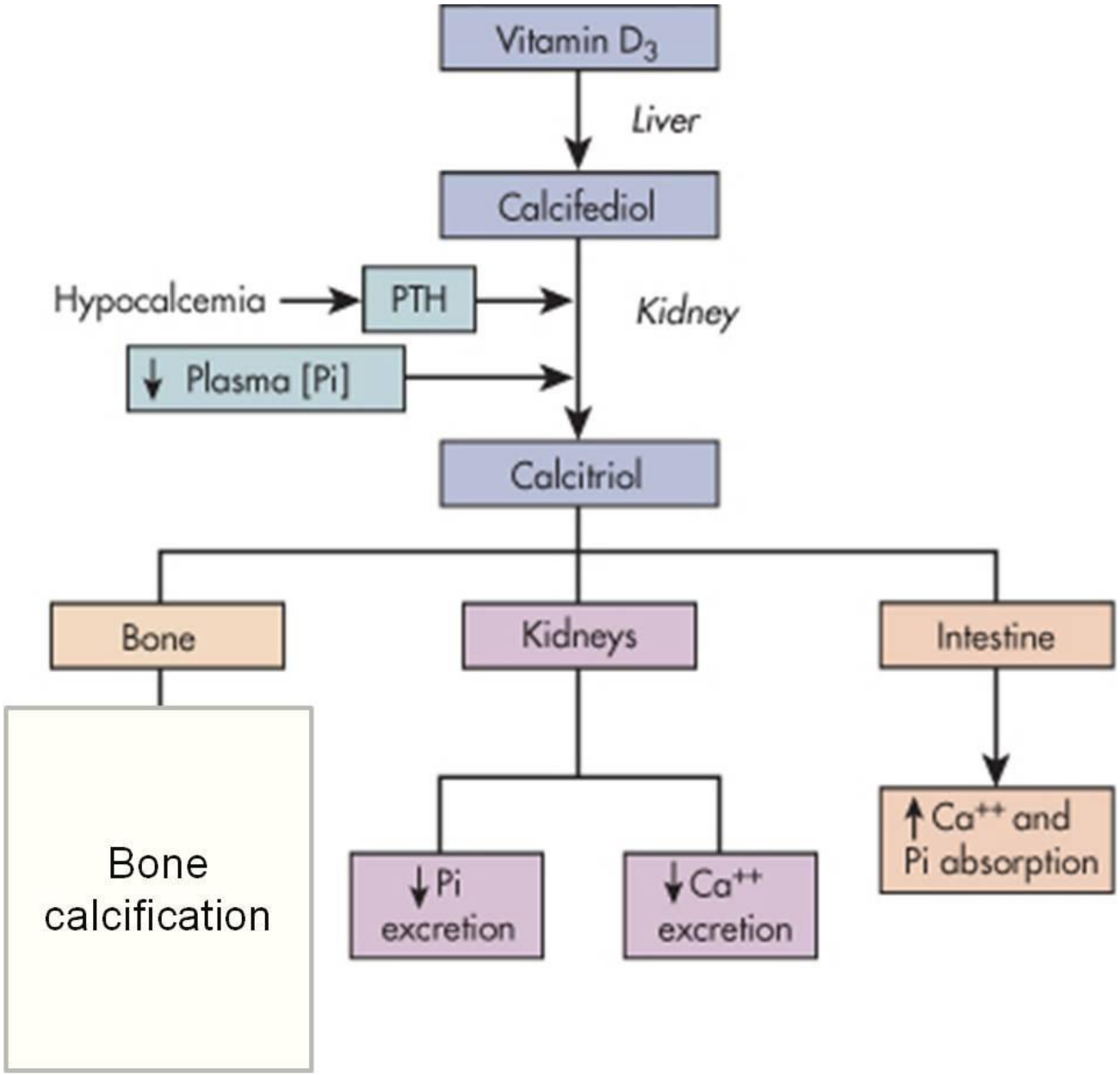
U.O.C. Oncologia Medica

Dipartimento Scienze Biomediche e Oncologia Umana

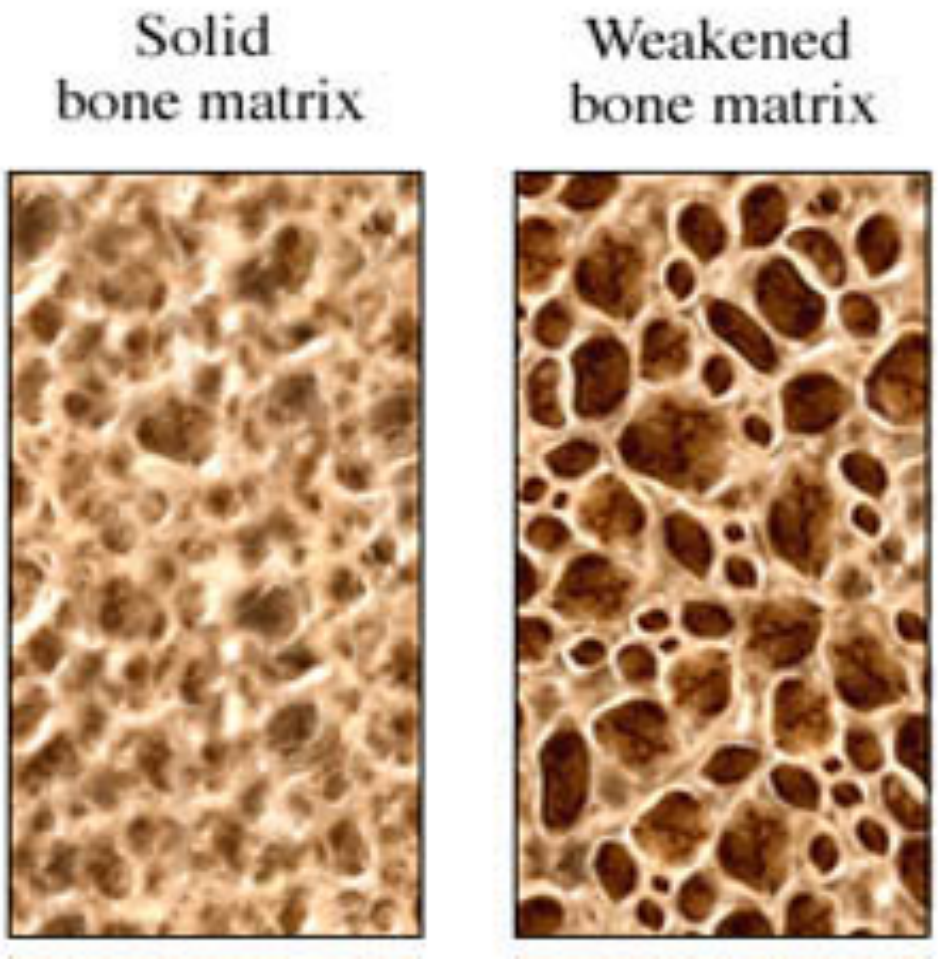
Domenico Marco Caccavo

Matera, 9-10 Maggio 2014 - HILTON GARDEN INN

EFFETTI NOTI DELLA VITAMINA D

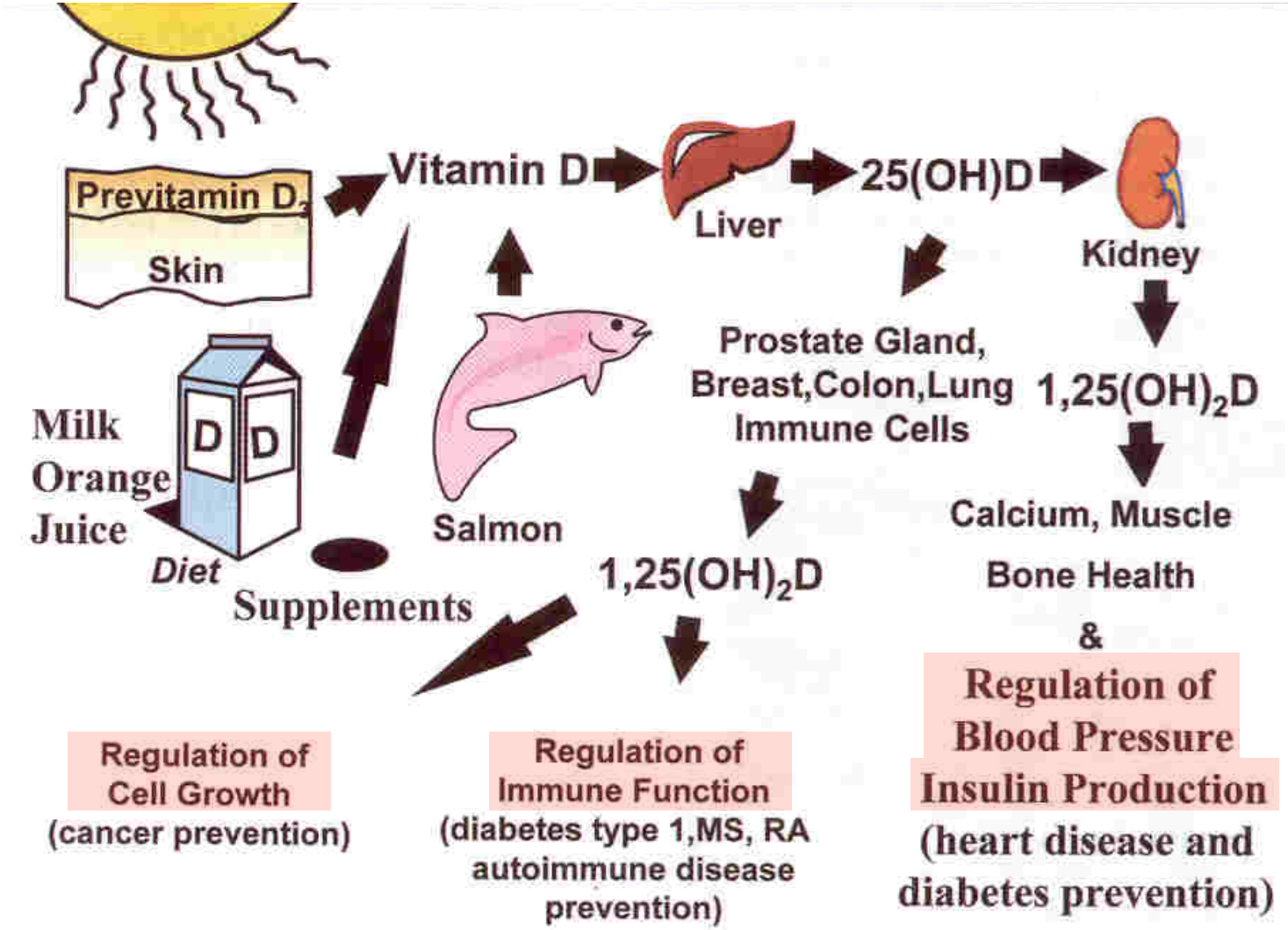


CARENZA DI VITAMINA D ED OSSO

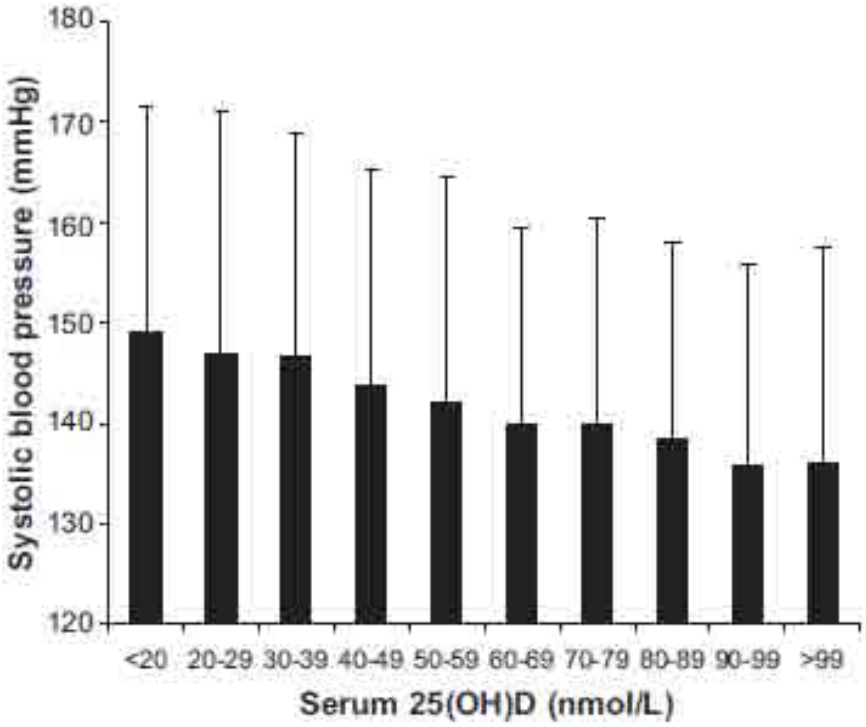


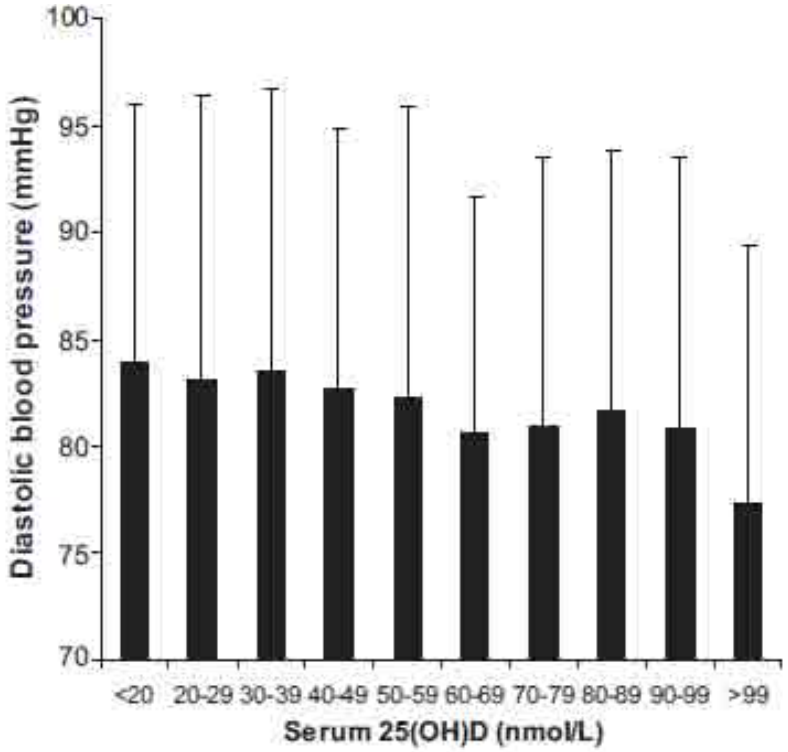
La 25 idrossivitamina D passa attraverso la barriera placentare ed è stato riscontrato una correlazione tra la concentrazione di Vit D nella madre durante la gravidanza e il contenuto minerale osseo del neonato.

ALTRI EFFETTI DELLA VITAMINA D

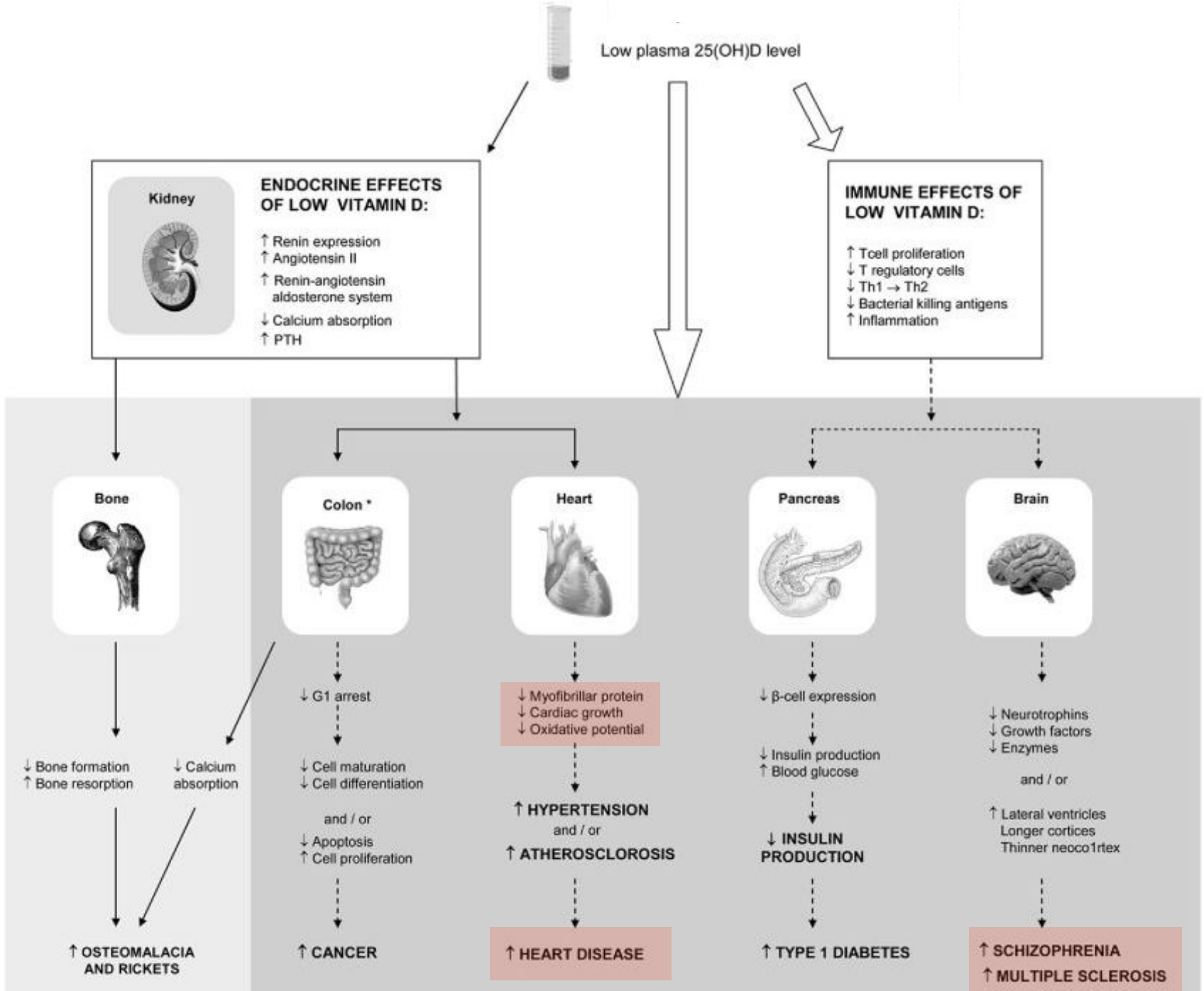


THE TROMSO HEART STUDY





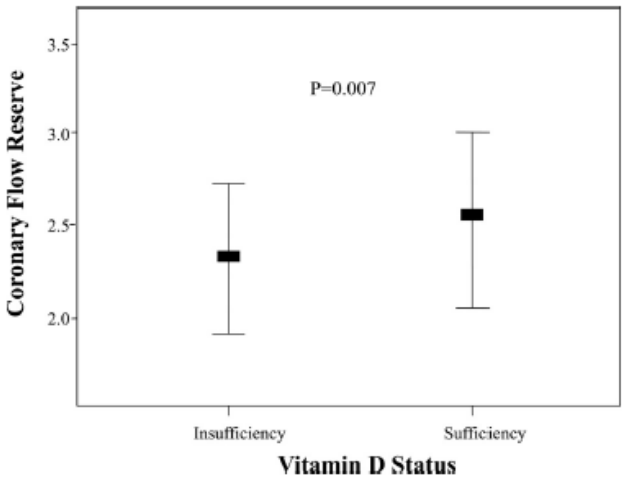
Thelle DS et al, Acta Med Scand, 200: 107-118, 1976


Low plasma 25(OH)D level
Kidney
ENDOCRINE EFFECTS OF LOW VITAMIN D:
↑ Renin expression
↑ Angiotensin II
↑ Renin-angiotensin aldosterone system
↓ Calcium absorption
↑ PTH
IMMUNE EFFECTS OF LOW VITAMIN D:
↑ Tcell proliferation
↓ T regulatory cells
↓ Th1 → Th2
↓ Bacterial killing antigens
↑ Inflammation
Bone
Colon *
Heart
Pancreas
Brain
↓ Bone formation
↑ Bone resorption
↓ Calcium absorption
↓ G1 arrest
↓ Cell maturation
↓ Cell differentiation
and / or
↓ Apoptosis
↑ Cell proliferation
↓ Myofibrillar protein
↓ Cardiac growth
↓ Oxidative potential
↑ HYPERTENSION
and / or
↑ ATHEROSCLOROSIS
↓ β-cell expression
↓ Insulin production
↑ Blood glucose
↓ INSULIN PRODUCTION
↓ Neurotrophins
↓ Growth factors
↓ Enzymes
and / or
↑ Lateral ventricles
Longer cortices
Thinner neoco1rtex
↑ OSTEOMALACIA AND RICKETS
↑ CANCER
↑ HEART DISEASE
↑ TYPE 1 DIABETES
↑ SCHIZOPHRENIA
↑ MULTIPLE SCLEROSIS

Low Levels of Serum 25-Hydroxyvitamin D Are Associated with Increased Risk of Myocardial Infarction, Especially in Women: Results from the MONICA/KORA Augsburg Case-Cohort Study

Karakas M et al, JCEM, 98: 272-280, 2013

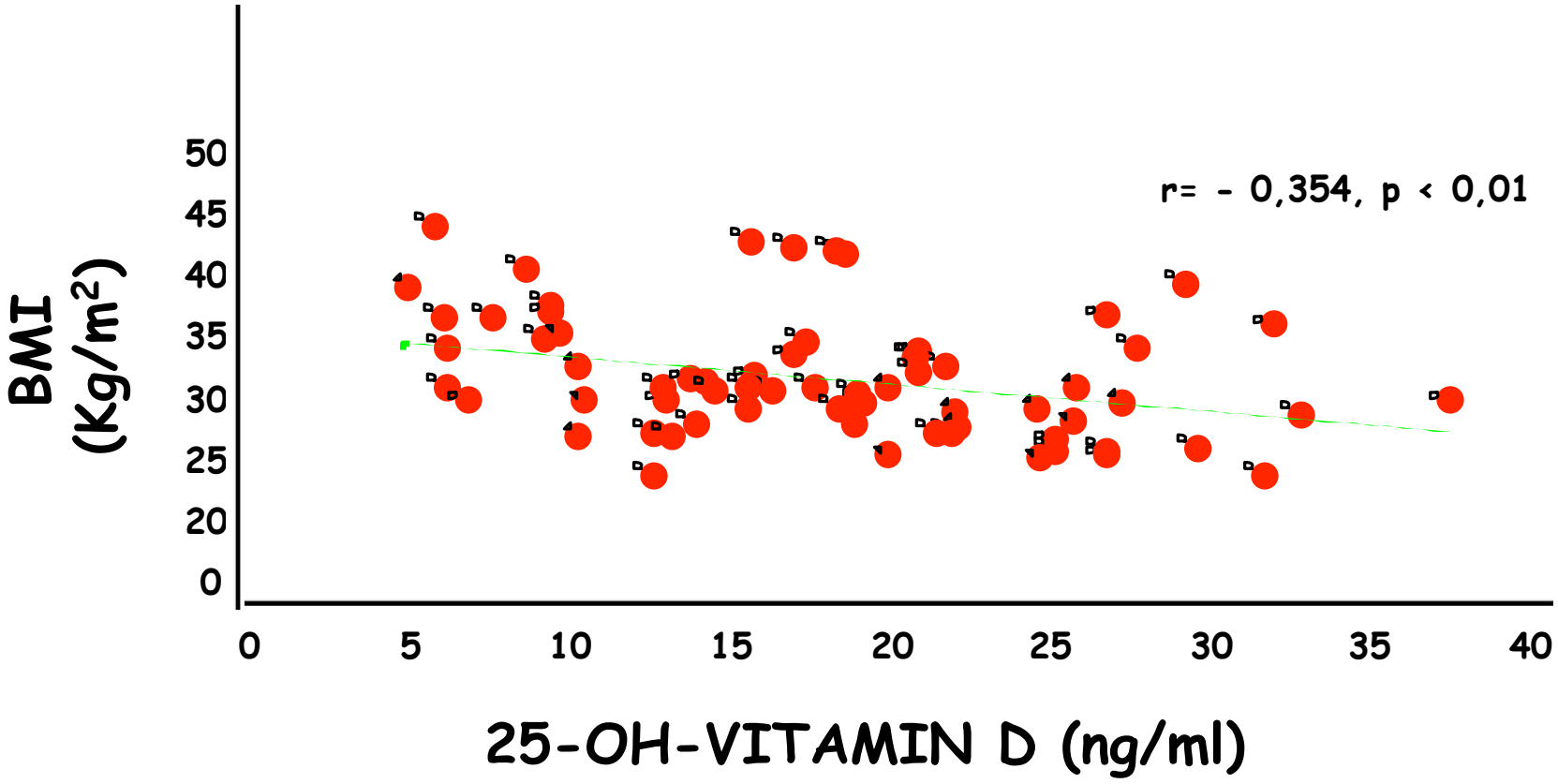
Vitamin D Status and Coronary Flow Reserve Measured by Positron Emission Tomography: A Co-Twin Control Study



Karohl et al, JCEM, 98: 389-397, 2013

Possible Role of Hyperinsulinemia and Insulin Resistance in Lower Vitamin D Levels in Overweight and Obese Patients

OVERWEIGHT AND OBESE PATIENTS WITHOUT HYPERTENSION AND DIABETES



De Pergola et al, BioMed Research, 2013

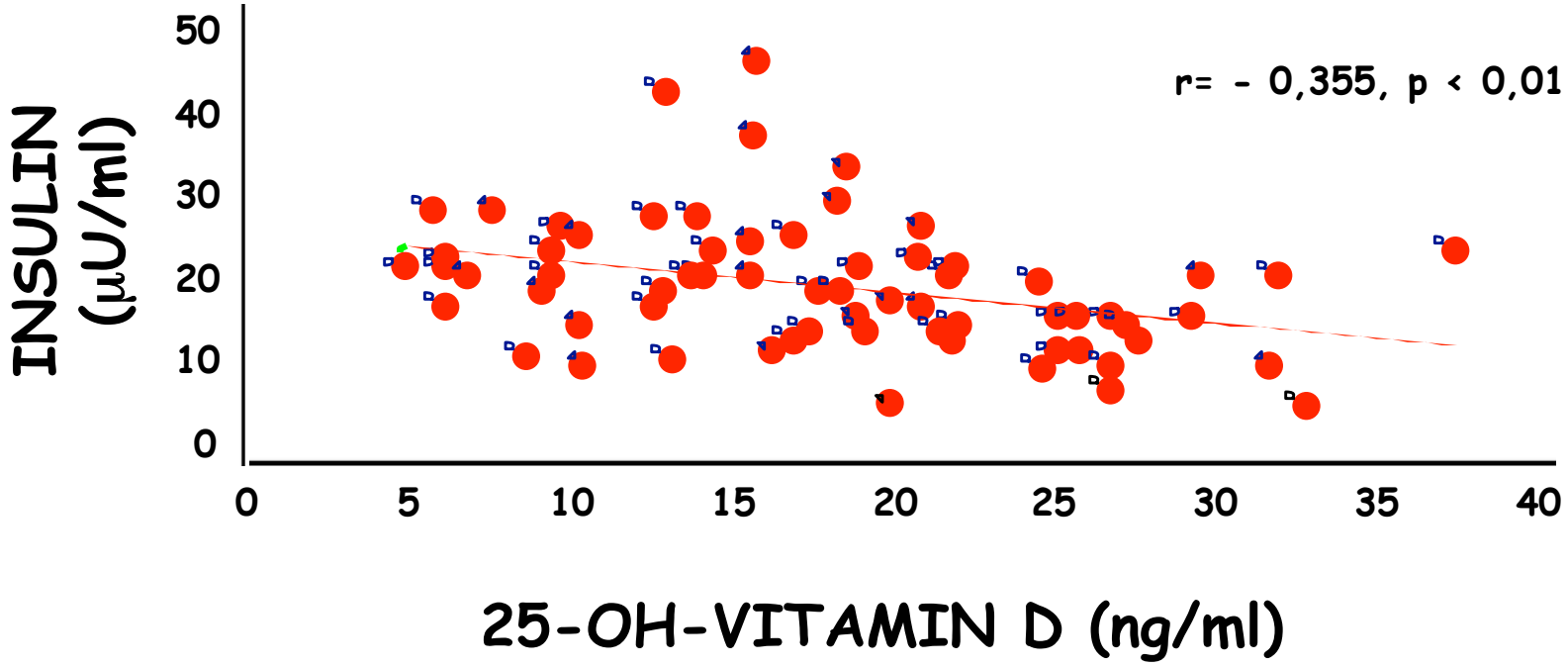
VITAMINA D e OBESITA'

A) LA VITAMINA D E' LIPOSOLUBILE, PER CUI, SE IL TESSUTO ADIPOSO E' IN ECCESSO, ESSA PUO' ESSERE SEQUESTRATA CON UNA RIDUZIONE DELLA BIODISPONIBILITA'

B) GLI OBESI HANNO UNA RIDOTTA ATTIVITA' FISICA E DUNQUE UNA MINORE ESPOSIZIONE AL SOLE

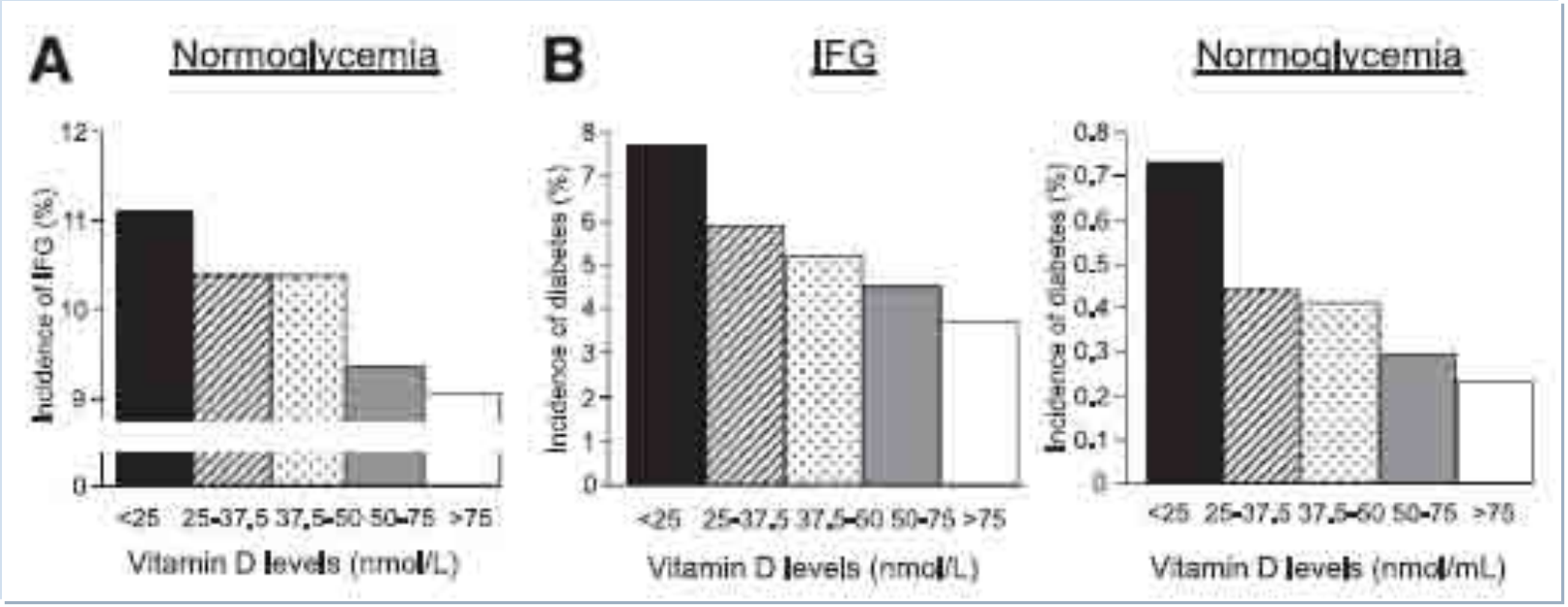
Possible Role of Hyperinsulinemia and Insulin Resistance in Lower Vitamin D Levels in Overweight and Obese Patients

OVERWEIGHT AND OBESE PATIENTS WITHOUT HYPERTENSION AND DIABETES



De Pergola et al, BioMed Research, 2013

Decreased Serum Concentrations of 25-Hydroxycholecalciferol Are Associated With Increased Risk of Progression to Impaired Fasting Glucose and Diabetes



Tsur A et al, Diabetes Care, 2013

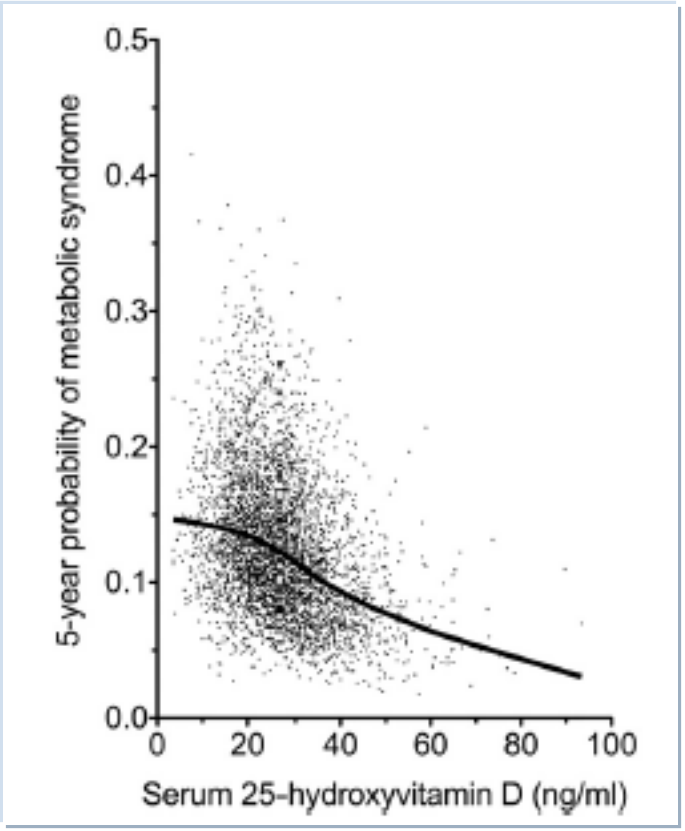
SUPPLEMEMTO DI VITAMINA D e RISCHIO DI DIABETE TIPO 2

NURSES' HEALTH STUDY :

Il supplemento >1200 mg di calcio e > 800 UI di VIT D era associato ad una riduzione di sviluppare diabete tipo 2 del 33% rispetto all'assunzione di < 600 mg di calcio e 400 UI di Vitamina D

Pittas A.G et al, Diabetes Care, 29:650–656, 2006

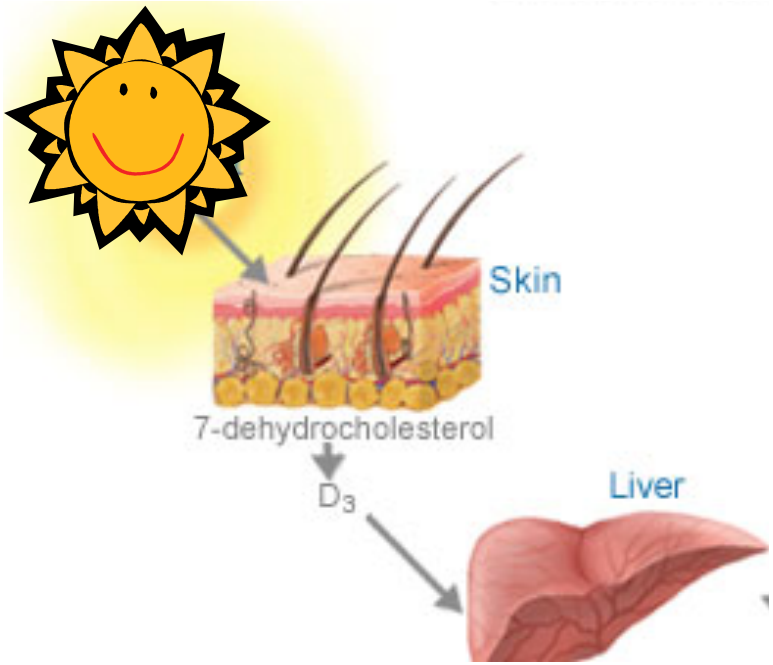
Low Serum 25-Hydroxyvitamin D Is Associated with Increased Risk of the Development of the Metabolic Syndrome at Five Years: Results from a National, Population-Based Prospective Study (The Australian Diabetes, Obesity and Lifestyle Study: AusDiab)

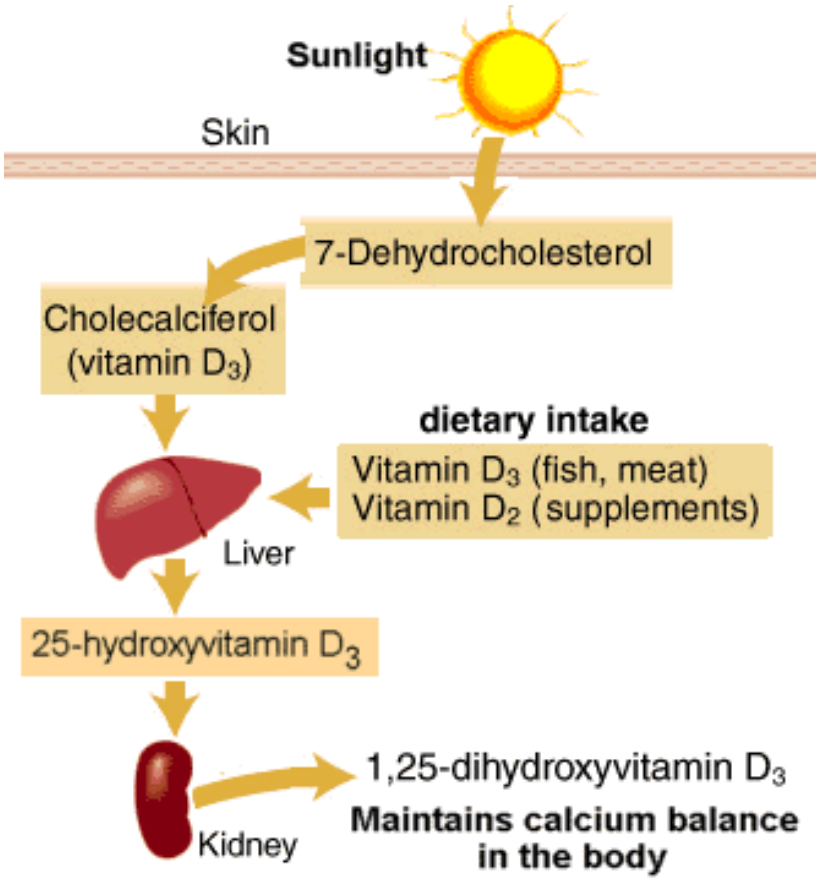


Spline regression model adjusted for age, sex, ethnicity, season, latitude, smoking, family history of type 2 diabetes, physical activity, education, and eGFR

Gagnon C et al, *J Clin Endocrinol Metab*, 97: 1953-1961, 2012

SOLE: FONTE DI VITAMINA D





25-OH-VITAMINA D3

La produzione cutanea di Vitamina D dipende da:

A) Angolo di incidenza dei raggi solari

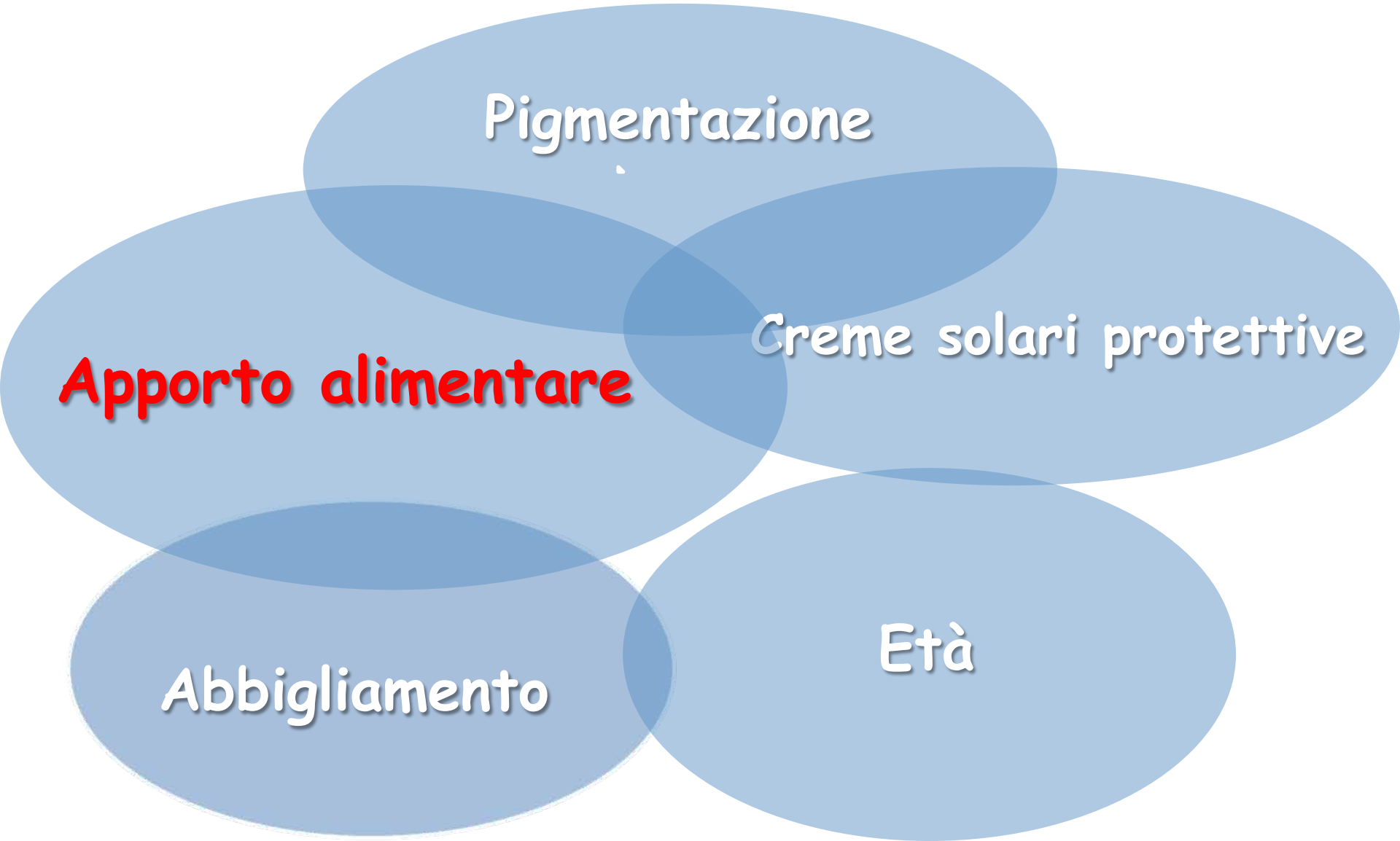
B) Latitudine

C) Stagione

d) Ora

- DEFICIT VIT D : 25(OH)D < 20 ng/mL
- CARENZA DI VIT D : 25(OH)D 21-29 ng/mL
- SUFFICIENTE VIT D :25(OH) > 30 ng/mL
- ADEGUATA VIT D : 25(OH) 40-60 ng/mL

ALTRI FATTORI COINVOLTI




MILK
Dietary and supplement sources of vitamin D_3, D_2

FONTI ALIMENTARI DELLA VITAMINA D

Alimento	Contenuto di vitamina D in UI
Latte	**3-40**/L
Burro	**35**/100 g
Yogurt	**89**/100 g
Formaggi	**12-44**/100 g
Funghi shiitake freschi	**100**/100 g
Funghi shiitake secchi	**1660**/100 g
Tuorlo d'uovo	**20-25**/tuorlo
Gamberetti	**152**/100 g
Fegato di manzo	**15-50**/100 g
Tonno, sardine, salmone, sgombro in scatola	**224-332**/100 g
Salmone rosa con lisca in scatola	**624**/100 g
Salmone, sgombro cotto	**345-360**/100 g
Sgombro dell'atlantico (crudo)	**360**/100 g
Aringa dell'atlantico (cruda)	**1628**/100 g
Aringa affumicata	**120**/100 g
Aringa sottoaceto	**680**/100 g
Merluzzo	**44**/100 g
Olio di fegato di merluzzo	**175**/g – **1360**/cucchiaio

Fonte Misra M et al. Pediatrics 2008; 122: 398-417

ALIMENTI FORTIFICATI CON VITAMINA D

CEREALI PER LA COLAZIONE

BURRO

FORMAGGI

MARGARINA

LATTE

YOGURT

SUCCO DI ARANCIA

SCOPO DELLO STUDIO

Lo studio è finalizzato ad esaminare la possibilità di una relazione significativa tra i livelli sierici di 25(OH)D e lo *score* di aderenza alla dieta Mediterranea in un gruppo di pazienti sovrappeso ed obesi non affetti da diabete o ipertensione stabile.

NURETA-PREDIMED INVESTIGATORS STUDY

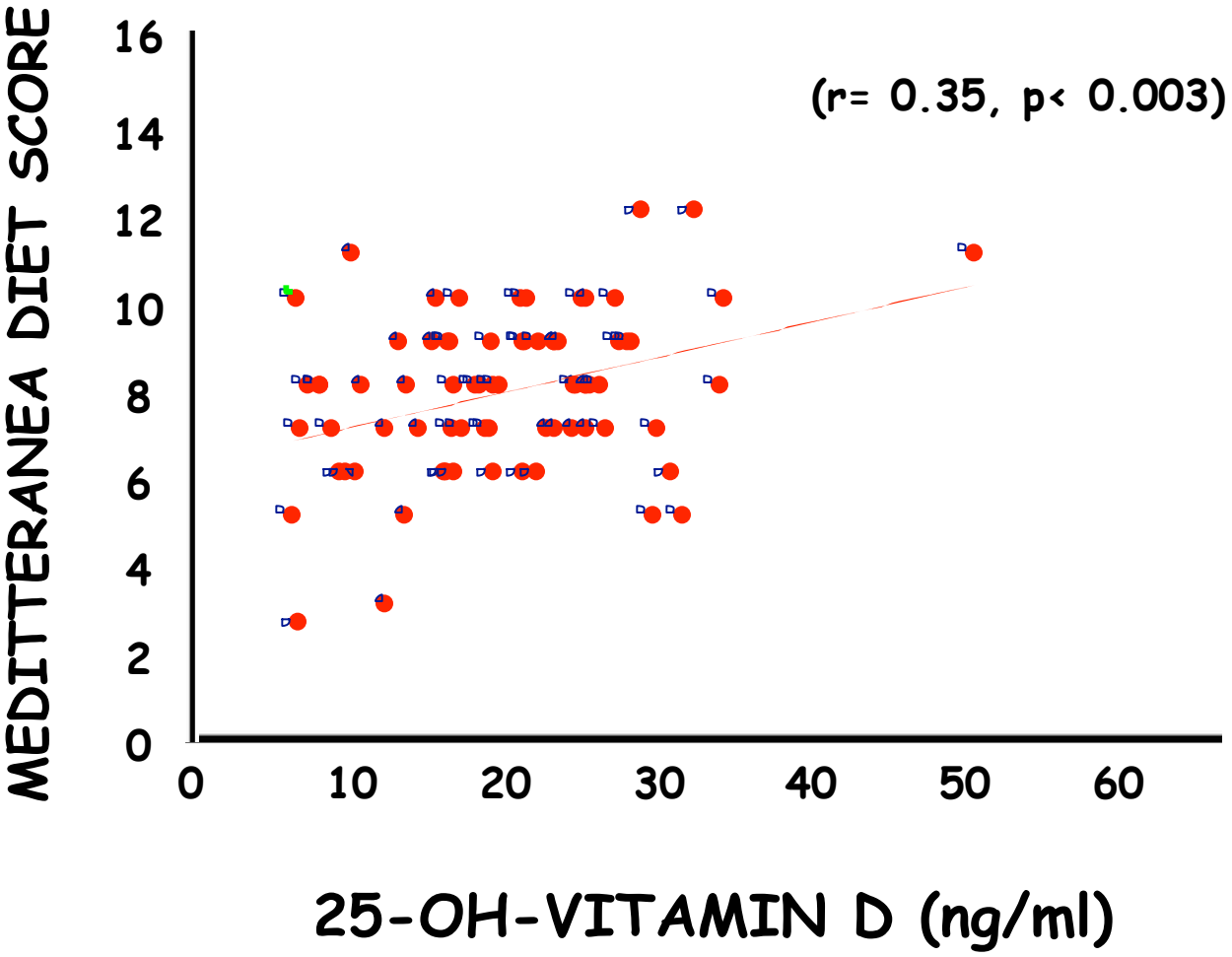
Adherence to the Mediterranean diet and risk of metabolic syndrome and its components

14-point food items

Using olive oil as main culinary fat
Consumption $\geq$ 4 spoons/day of olive oil
Consumption $\geq$ 2 servings/day of vegetables
Consumption $\geq$ 3 fruit units/day (including natural fruit juices)
Consumption $<$ 1 serving/day of red meat, hamburger or meat products
Consumption $<$ 1 serving/day of butter, margarine or cream
Consumption $<$ 1 serving/day of sweetened or carbonated beverages
Consumption $\geq$ 3 glasses/week of wine
Consumption $\geq$ 3 servings/week of legumes
Consumption $\geq$ 3 servings/week of fish or shellfish
Consumption $<$ 3 times/week of commercial sweets or pastries (not homemade)
Consumption $\geq$ 1 servings/week of nuts (including peanuts)
Consumption preferentially of chicken, turkey, or rabbit meat instead of veal, pork, hamburger or sausages
Consumption $\geq$ 2 servings/week of vegetables, pasta, rice or other dishes seasoned with *sofrito* (sauce made with tomato and onion, leek, or garlic and simmered with olive oil)

Babio N et al, *Nutr Metab Cardiovasc Dis*, 19: 563-570, 2009

RELATIONSHIP BETWEEN VITAMIN D LEVELS AND MEDITERRANEAN DIET SCORE



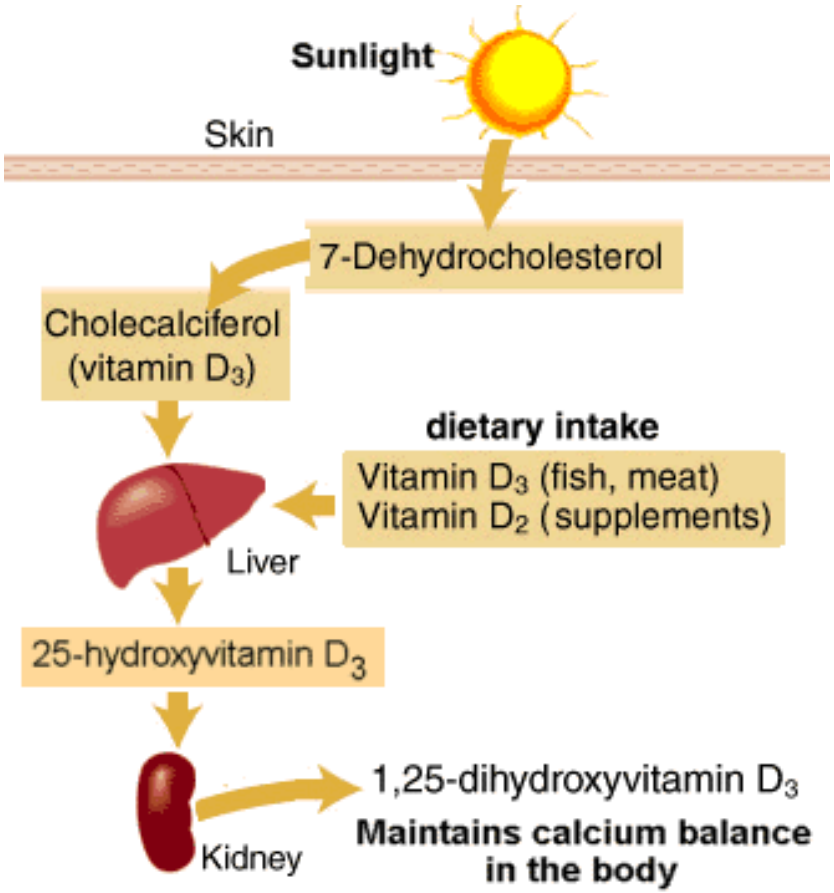
ANALISI DI REGRESSIONE MULTIPLA

E' stata effettuata una analisi di regressione multipla, ponendo i livelli circolanti di 25(OH)D quale variabile dipendente e lo score di aderenza alla dieta Mediterranea, l'età, il sesso ed il BMI quali variabili indipendenti (fitted model: $F = 4.05$, $P<0.006$, $R^2 = 0.314$).

La vitamina D ha mantenuto un'associazione significativa positiva con lo score di aderenza alla dieta Mediterranea ($p < 0.005$) e negativa con il BMI ($p < 0.05$).

CONCLUSIONI

Le concentrazioni sieriche di vitamina D aumentano in maniera progressiva con l'incremento dello score di aderenza al modello di dieta Mediterranea, indipendentemente dalla età, dal sesso e dal BMI, suggerendo che la dieta Mediterranea possa influenzare i livelli circolanti della vitamina D.



E' possibile ipotizzare che qualche componente che caratterizza la dieta Mediterranea possa aumentare l'assorbimento di vitamina D o la sintesi del 7-deidrocolesterolo o l'attività della 25-idrossilasi epatica o inibire la 1-idrossilasi renale

Type of Dietary Fat Is Associated with the 25-Hydroxyvitamin D_3 Increment in Response to Vitamin D Supplementation

TABLE 3. Associations of dietary fat intake with changes in 25OHD

Model	β	95% CI	P
A, Total fat intake (g/d)	0.05	−0.10–0.20	0.530
B, Type of dietary fat			
MUFA (g/d)	0.94	0.18–1.71	0.016
PUFA (g/d)	−0.93	−1.81 to −0.05	0.038
SFA (g/d)	−0.41	−0.86–0.05	0.077
C, MUFA/PUFA ratio	4.71	0.58–8.84	0.026
D, MUFA/PUFA ratio	6.46	1.31–11.61	0.014

β represents regression coefficients. All models are adjusted for baseline BMI (kilograms per square meter), baseline 25OHD (nanograms per milliliter), and total energy intake (kilocalories per day). In model B, fat variables are also adjusted for each other. In model D, SFA intake is also adjusted for.

La composizione dei grassi della dieta può influenzare le variazioni dei livelli circolanti di 25OHD in risposta alla supplementazione di vitamina D3.
Le diete ricche in MUFA (acidi grassi monoinsaturi) migliorano e quelle ricche in PUFA possono ridurre la efficacia dei supplementi di vitamina D3

Niramitmahapanya S et al, *J Clin Endocrinol Metab*, 96: 3170-4 2011


The End