PRENDIAMOCI A CUORE IL RENE

MILANO 2-3 DICEMBRE 2016

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Flavonoidi e prevenzione cardiovascolare e renale

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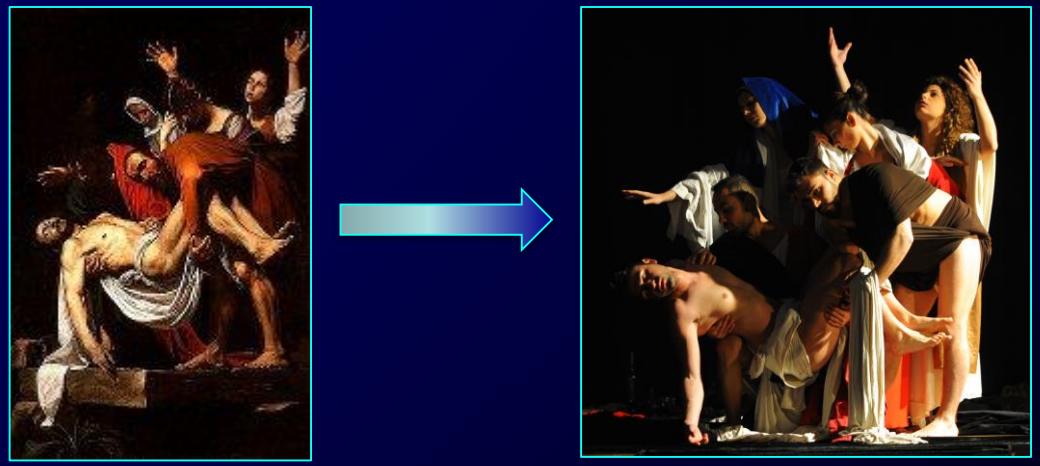
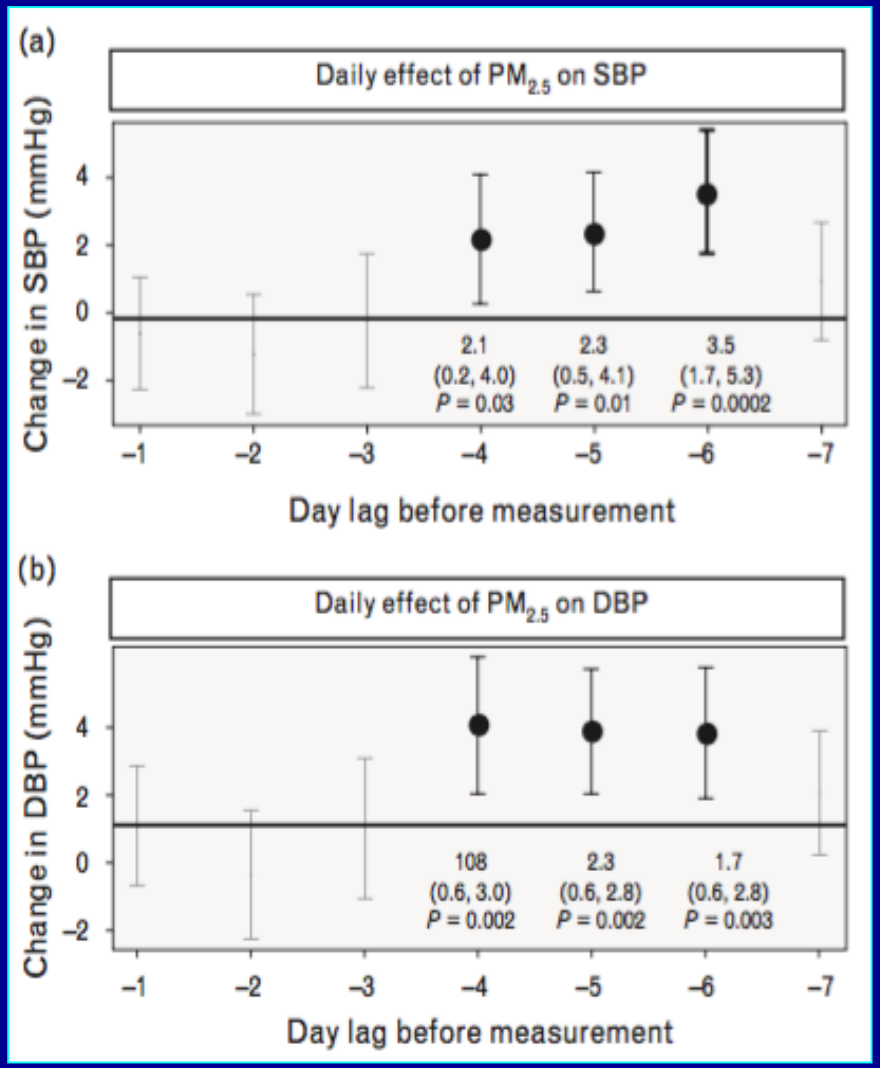
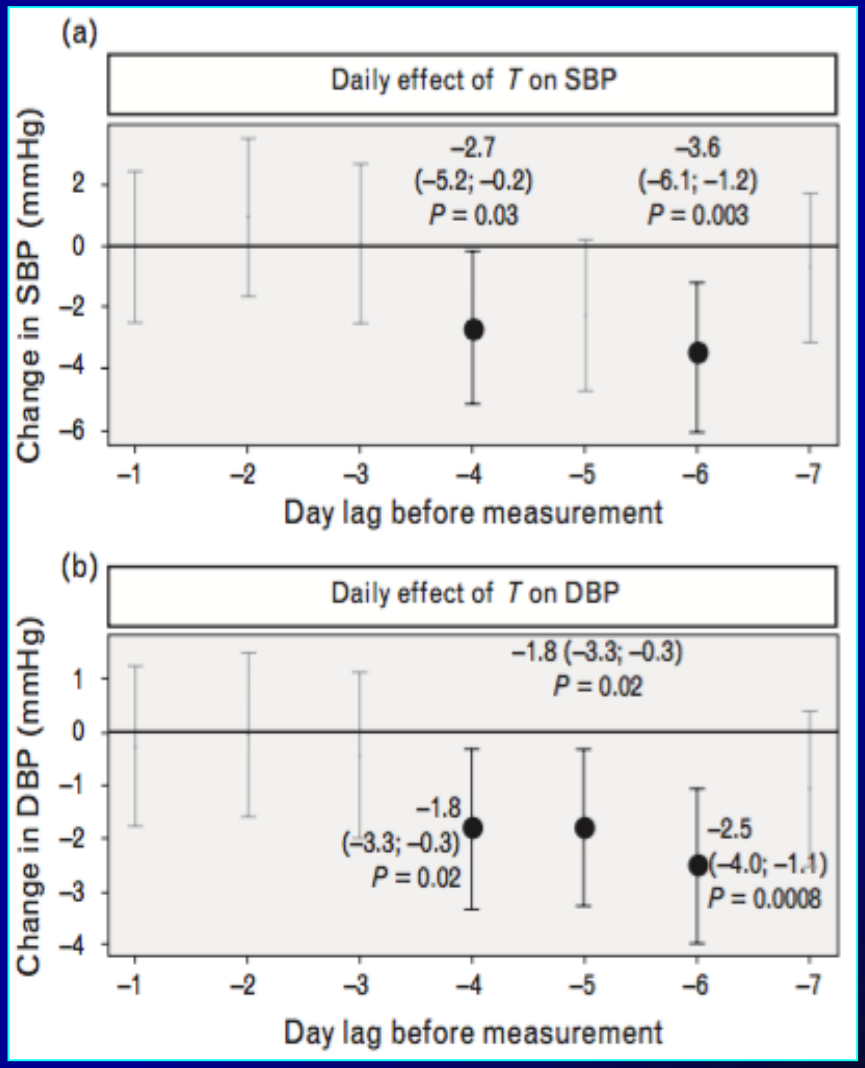
Flavonoidi e prevenzione cardiovascolare e renale

Are the known risk factors the only actors on the scene ?



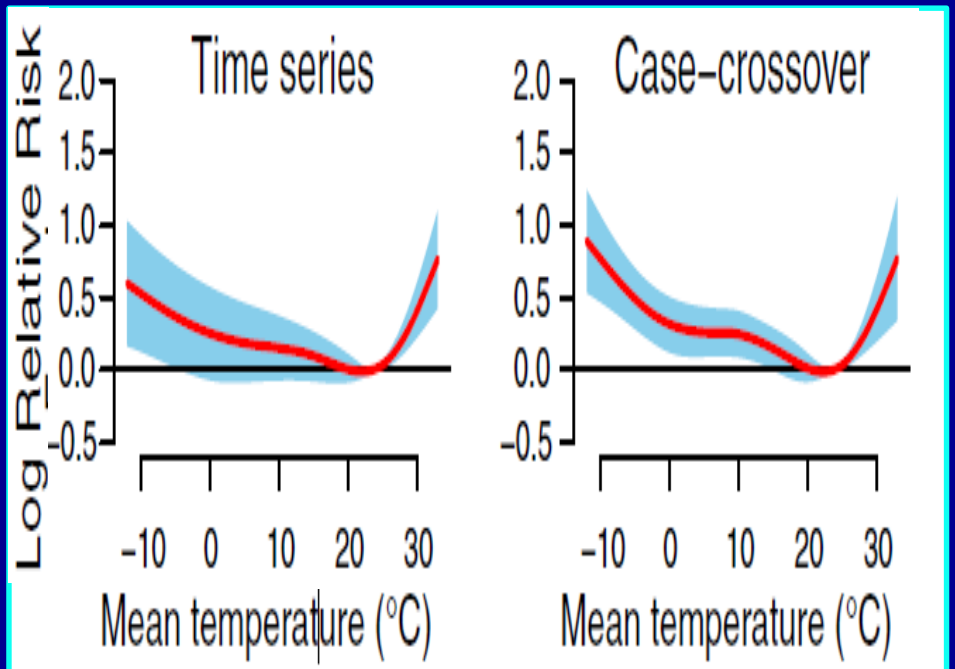
FINE PARTICULATE MATTER ($PM_{2.5}$) AND TEMPERATURE - BP EFFECTS



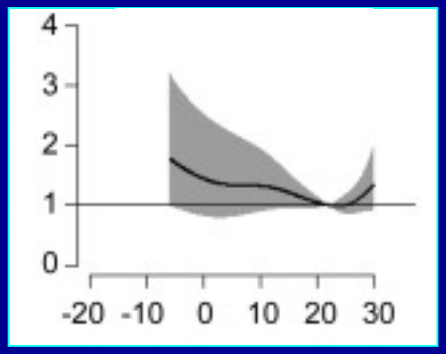


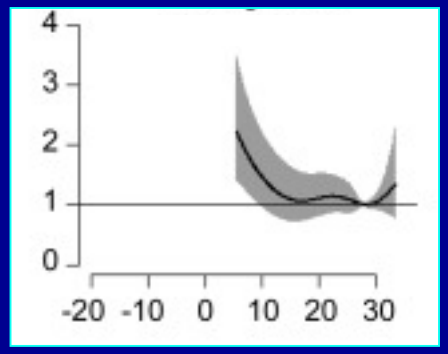
Giorgini P et al., J Hypertens. 2015; 33(10):2032-8.

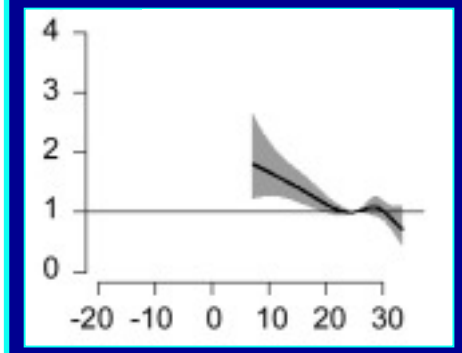
COLD AND HOT TEMPERATURE - CHD AND STROKE MORTALITY

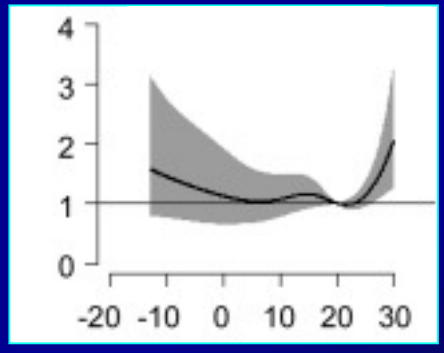


Effects		Relative risk (95% CI)	
		Time series	Case-crossover
Cold effect	$P < 0.05$	1.16 (1.04, 1.30)	1.29 (1.12, 1.48)
Hot effect	$P < 0.05$	1.38 (1.20, 1.60)	1.39 (1.15, 1.67)







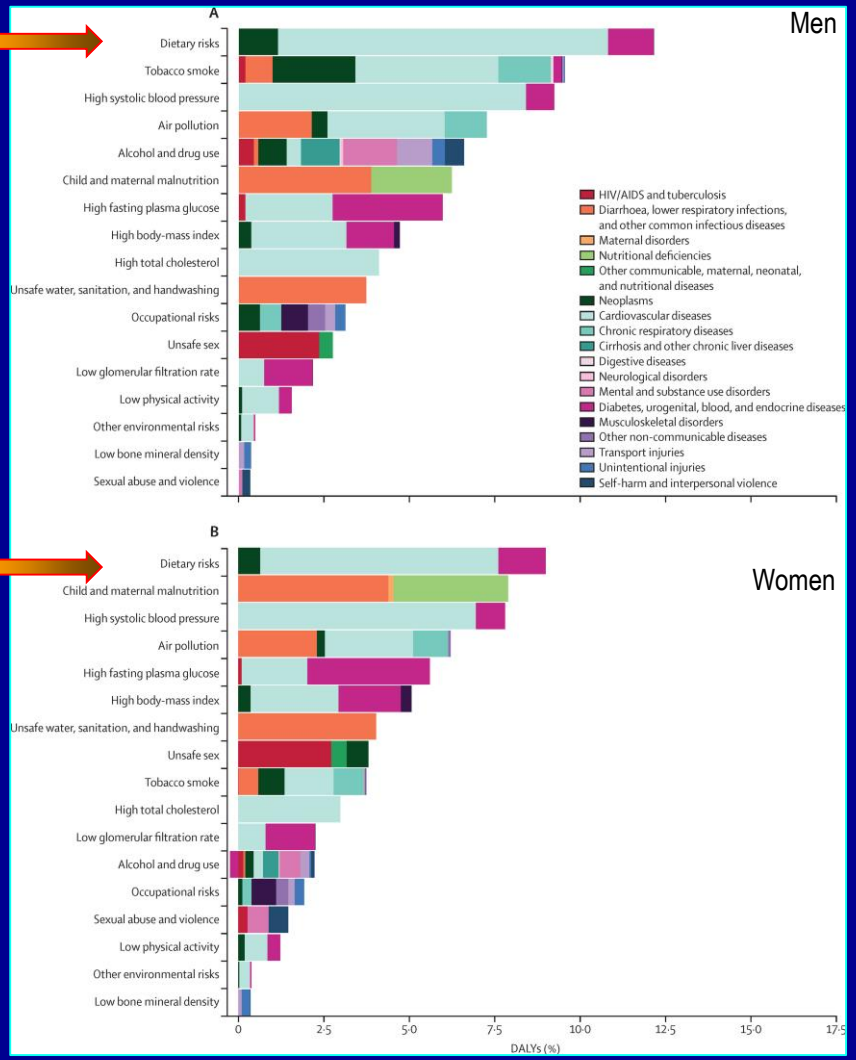


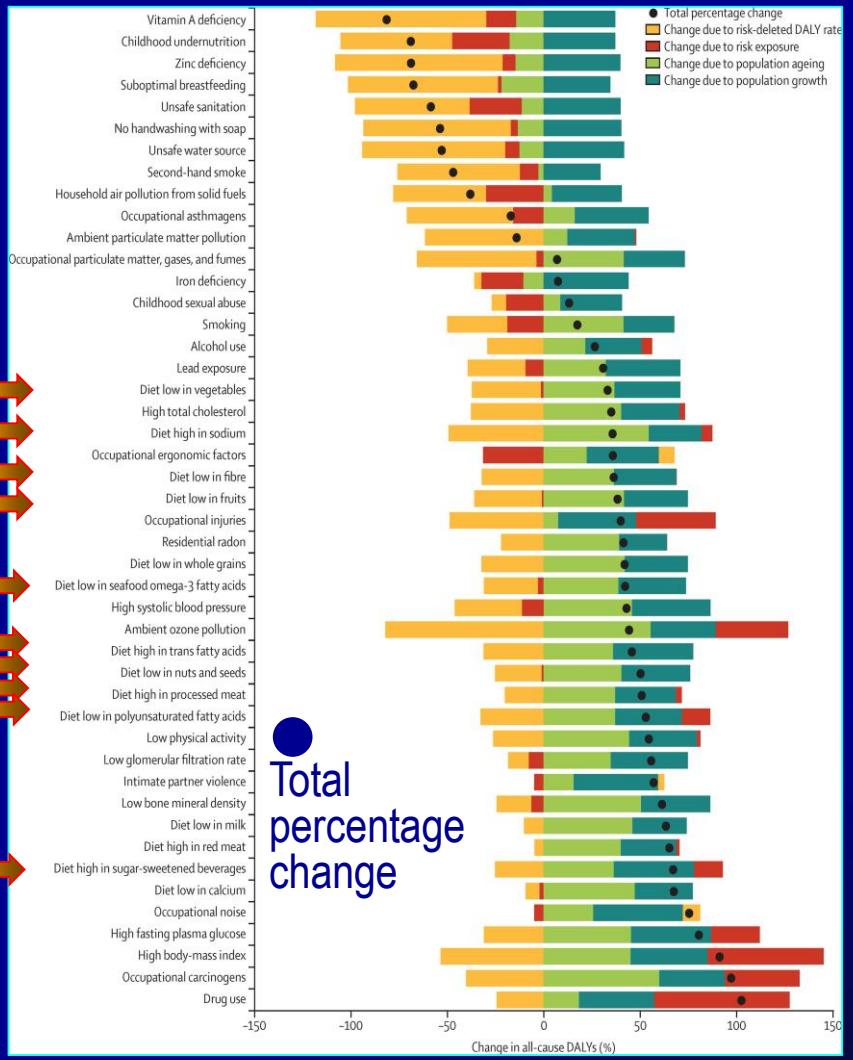
Lag days	Extreme cold[a]	Cold[b]	Hot[c]	Extreme hot[d]
0-3	1.18 (1.02-1.37)	1.05 (1.02-1.09)	1.06 (1.02-1.10)	1.14 (1.05-1.24)
0-7	1.27 (1.08-1.50)	1.08 (1.05-1.12)	1.04 (0.96-1.12)	1.12 (0.91-1.37)
0-14	1.39 (1.18-1.64)	1.11 (1.06-1.17)	1.05 (0.98-1.12)	1.13 (0.95-1.35)
0-21	1.45 (1.22-1.72)	1.16 (1.04-1.28)	1.02 (0.93-1.13)	0.98 (0.71-1.33)
0-28	1.55 (1.27-1.89)	1.17 (1.07-1.27)	1.03 (0.89-1.18)	1.08 (0.79-1.48)

Tian Z. Environ Health. 2012; 11:56

Chen R et al Neurology. 2013;81(12):1064-70

GLOBAL DALYS RISK FACTORS - CHANGES IN DALYS OVER 15 YEARS





⇧Drugs

⇧Age
⇧Population
⇧Prevalence

Lancet. 2016;388(10053):1659-1724.

Flavonoidi e prevenzione cardiovascolare e renale

Prevention – Three different settings

Population

Mirare al compatibile
con le risorse

"Cluster"

Mirare al compatibile
con le risorse
con aggiunte specifiche

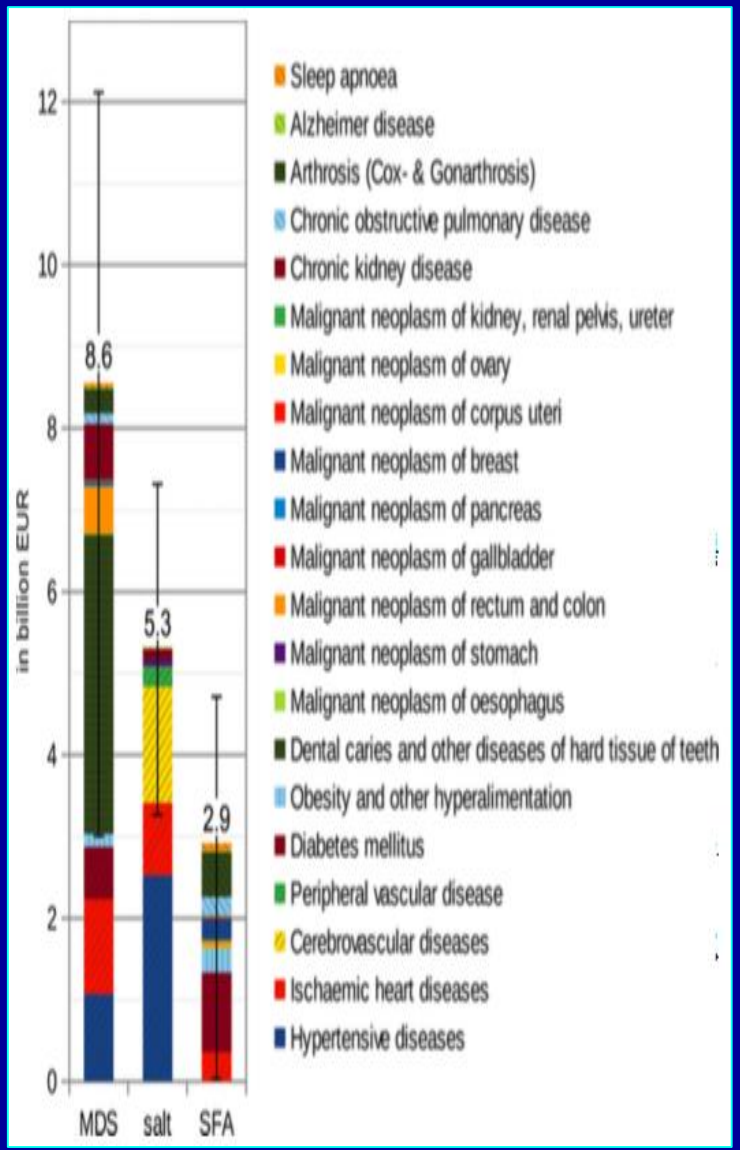
Individual

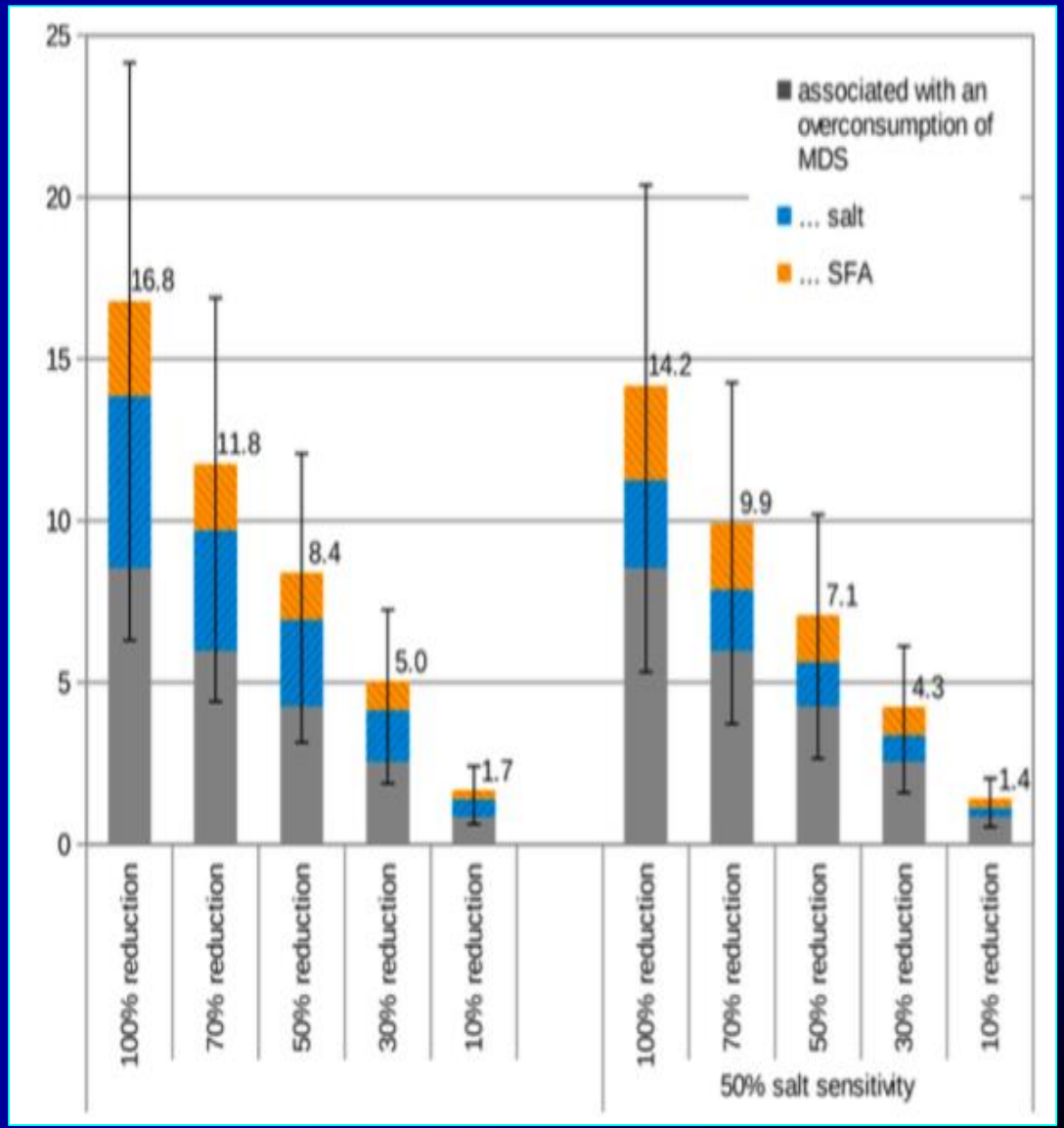
Mirare al compatibile
con le risorse
con aggiunte individuali

Flavonoidi e prevenzione cardiovascolare e renale

Is consideration of additional risk factors
Cost effective and/or cost-saving ?

Cost of overcomsumption of sugars, saturated fats and salt – Predicted healthcare cost savings - *A German study*





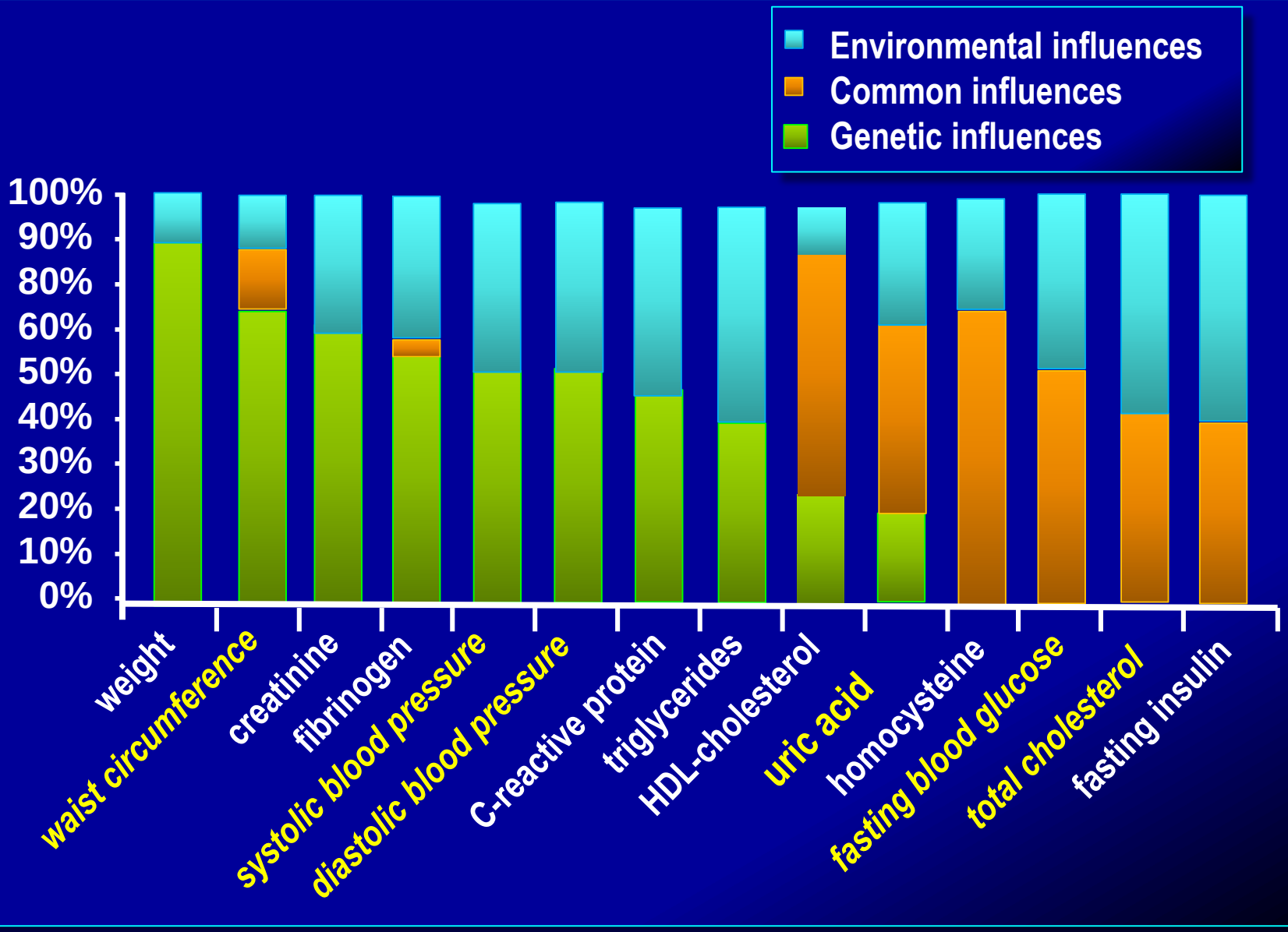
Meier T et al Plos One 2015

Flavonoidi e prevenzione cardiovascolare e renale

Approach

Effect of genetic and environmental influences on *cardiometabolic risk factors*

TWIN study



Jermendy G et al. Cardiovasc Diabetol 2011;10:96

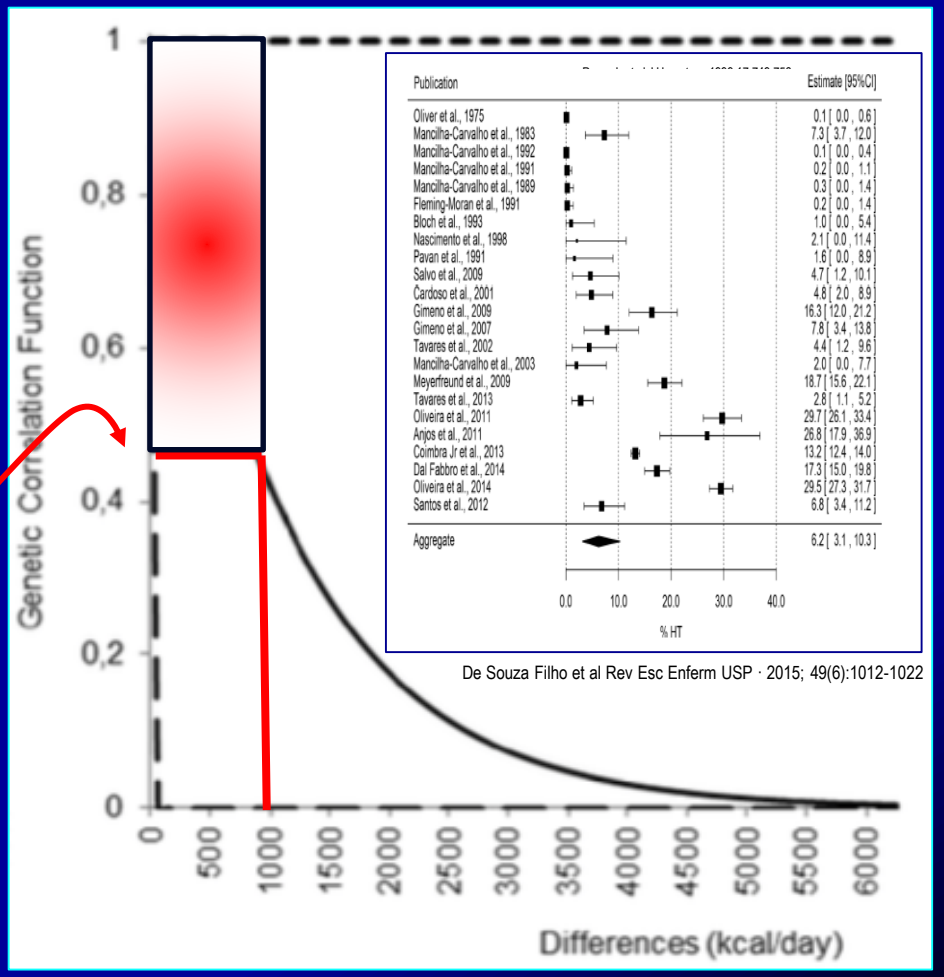
Nutrizione versus genotipo: il modello dei gemelli monozigoti

http://www.oprah.com/oprahshow/Outcasts-in-Their-Own-Families

Effect of genetic and environmental influences on *cardiometabolic risk factors*

A family study

Trait	h^2	Std. Error	p-value	95%CI
WC (cm)	0,34	0,07	<0,001	0,22–0,45
SBP (mmHg)	0,40	0,07	<0,001	0,27–0,51
GLU (mg/dl)	0,29	0,07	<0,001	0,18–0,40
HDL (mg/dl)	0,59	0,06	<0,001	0,48–0,69
TC (mg/dl)	0,51	0,07	<0,001	0,39–0,62
TG (mg/dl)	0,21	0,08	0,002	0,09–0,33



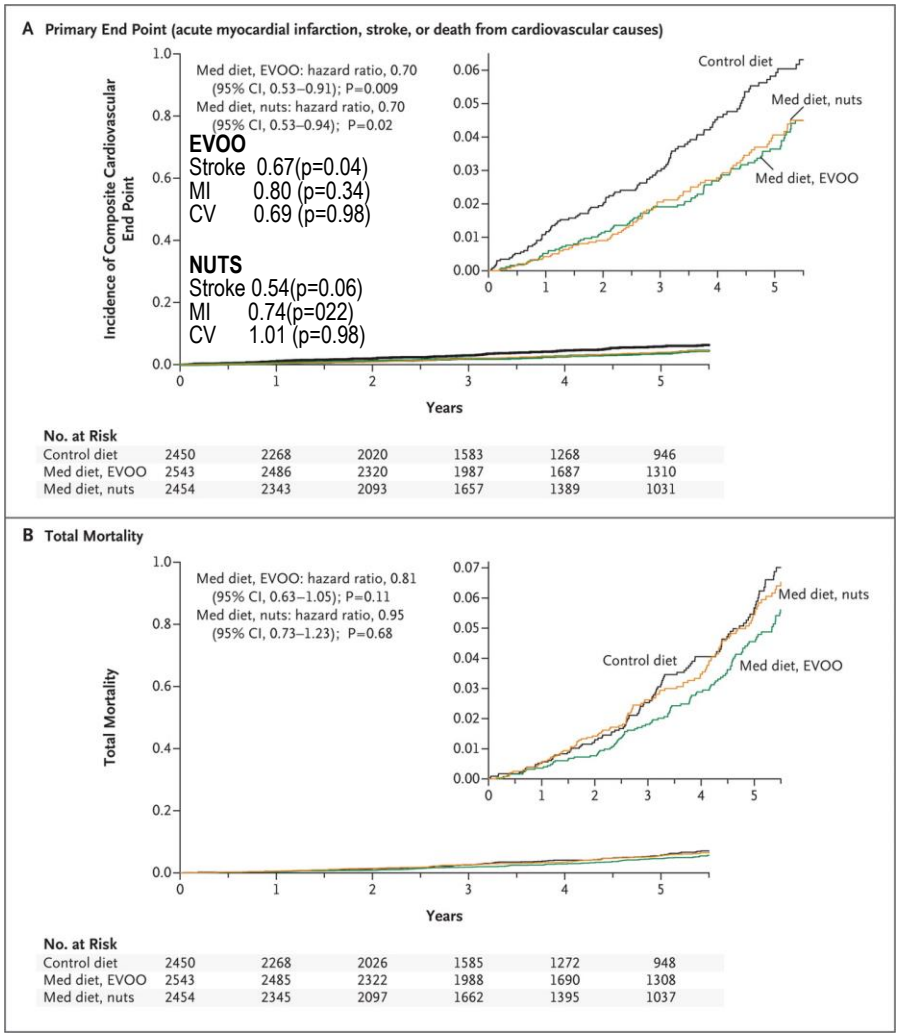
De Souza Filho et al Rev Esc Enferm USP · 2015; 49(6):1012-1022

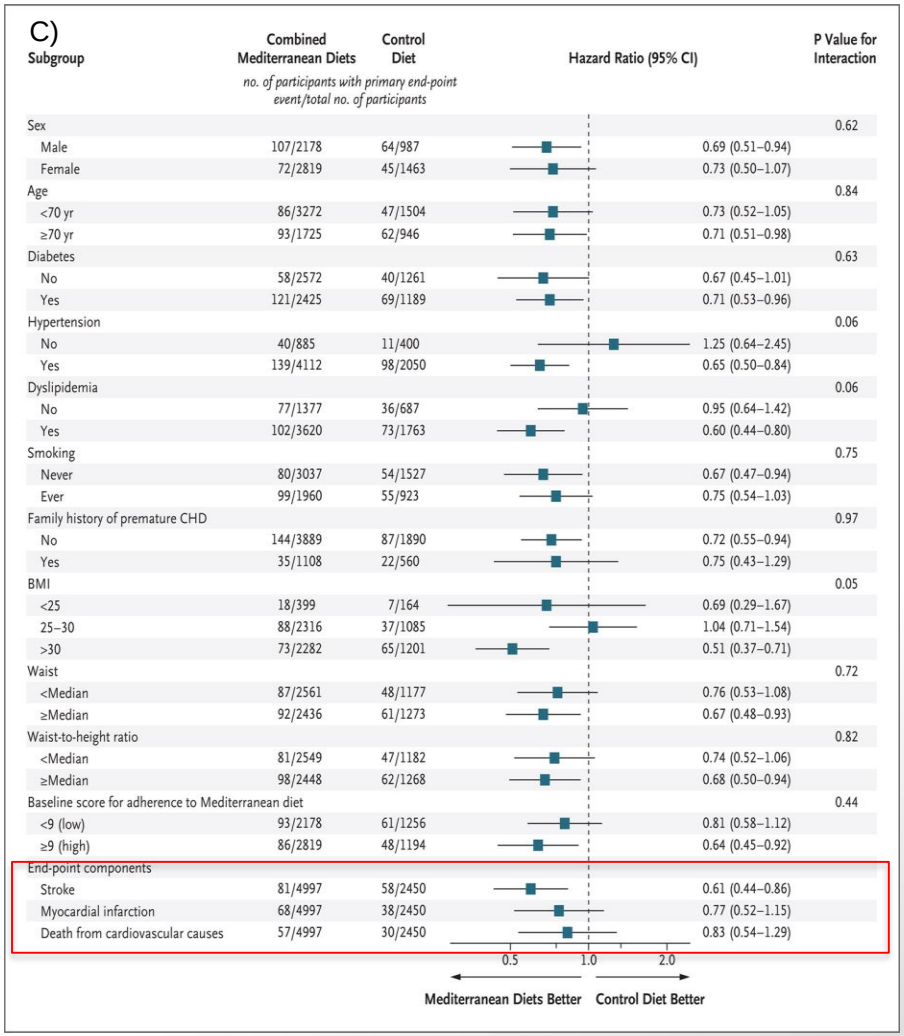
Santos DM et al PLoS One. 2013 18;8(11):e80417.

Flavonoidi e prevenzione cardiovascolare e renale

Role of diet

Mediteranean Diet with extravirgin oil (EVOO) or nuts: primary outcome A), total mortality B), and primary outcome components C) - *Predimed Study*





Estruch R et al. N Engl J Med 2013

The healthy populations living In the Kuna Islands

Islands** versus **Panama

↑ daily dietary intake of antioxidants

- 10-fold higher amount of cocoa-containing beverages

- 4 times the amount of fish

- twice the amount of fruit

(p<0.05 by t test)

- NaCl as urinary sodium levels 177±9 and 160±7 mEq Na/g creatinine, p=n.s.

Islands** versus **Panama

↑ *NO bioavailability ?*

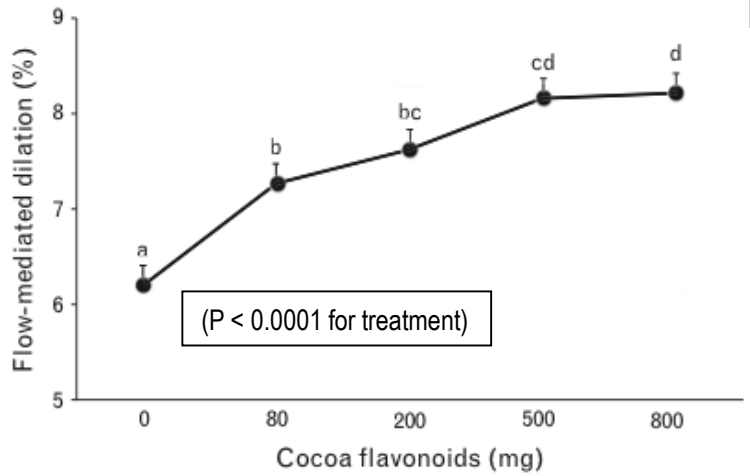
3-fold larger urinary nitrate:nitrite excretion

Kuna living in the San Blas drink a flavanol-rich cocoa as their main beverage, contributing more than 900 mg/day and *thus probably have the most flavonoid-rich diet of any population.*

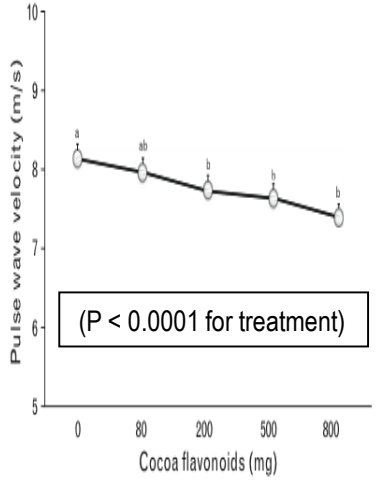
Hollenberg NK, J Cardiovasc Pharmacol. 2006;47 Suppl 2:S99-102; discussion S119-21.

Cocoa and flow-mediated dilation (A) pulse wave velocity (B), serum endothelin-1 concentrations (C), office BP (D) and monitored BP levels (E)

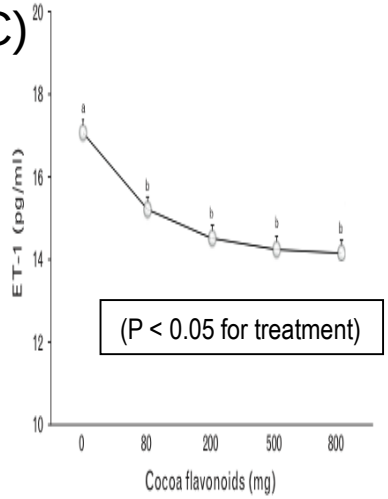
A)



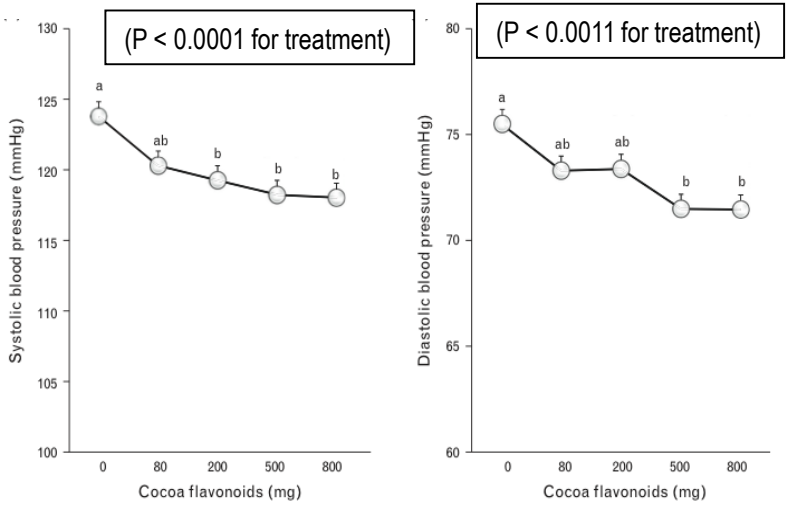
B)



C)



D)



E)

ABPM	0 mg control	80 mg	200 mg	500 mg	800 mg	SEM	*P*
SBP 24 h	**117.7**	**118.3**	**114.7**	**115.5**	**114.3**	**1.60**	**0.05**
SBP day	**122.4**	**122.5**	**119.1**	**119.4**	**119.1**	**1.56**	**0.038**
SBP night	108.7	110.1	106.6	107.8	106.3	1.33	NS
DBF 24 h	70.8	70.9	70.7	71.2	71.3	1.07	NS
DBP day	75.5	75.3	75.1	75.3	75.7	1.91	NS
DBP night	62.0	62.7	61.7	63.1	63.5	1.34	NS
HR 24 h	76.4	73.8	77.2	76.2	75.9	1.58	NS
HR day	79.2	77.5	81.5	80.3	80.2	1.94	NS
HR night	**70.9**	**66.6***	**68.7**	**68.5**	**67.5***	**1.33**	**0.024**
PP 24 h	**47.0**	**47.5**	**43.8**	**44.6**	**43.1***	**1.87**	**0.0064**
PP day	**47.2**	**47.5**	**43.4***	**44.2**	**43.6***	**1.81**	**0.0088**
PP night	**46.7**	**47.4**	**44.3**	**44.9**	**43.0**	**2.10**	**0.0352**

Grassi D et al J Hypertens 2015, 33:294–303

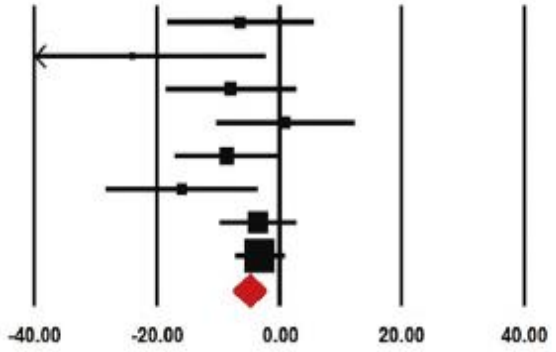
Effects of *pomegranate juice* on blood pressure
A systematic review and meta-analysis of randomized controlled trials

Study name	Difference in means	Standard error	Variance	Lower limit	Upper limit	Z-Value	p-Value
Asgary et al., 2013	-6.360	6.080	36.962	-18.276	5.556	-1.046	0.296
Aviram et al., 2004	-24.000	11.119	123.626	-45.792	-2.208	-2.159	0.031
Sohrab et al., 2008	-8.000	5.396	29.121	-18.577	2.577	-1.482	0.138
Sumner et al., 2005	1.000	5.718	32.690	-10.206	12.206	0.175	0.861
Tsang et al., 2012	-8.500	4.307	18.553	-16.942	-0.058	-1.973	0.048
Shema-Didi et al., 2014	-15.900	6.265	39.246	-28.179	-3.621	-2.538	0.011
Lynn et al., 2012	-3.510	3.156	9.961	-9.696	2.676	-1.112	0.266
Davidson et al., 2009	-3.170	2.027	4.108	-7.143	0.803	-1.564	0.118
	-4.964	1.382	1.911	-7.674	-2.255	-3.591	0.000

Statistics for each study

Difference in means and 95% CI

SBP: Pomegranate better Control better



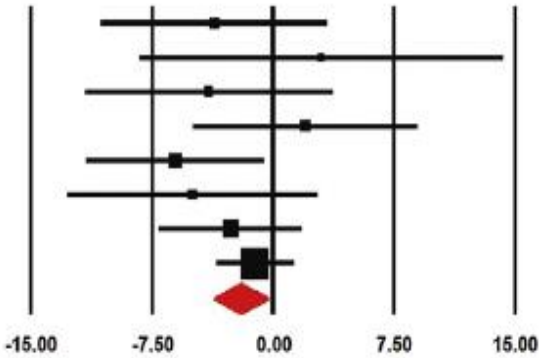
WMD: −4.96 mmHg, 95% CI: −7.67 to −2.25, p < 0.001

Study name	Difference in means	Standard error	Variance	Lower limit	Upper limit	Z-Value	p-Value
Asgary et al., 2013	-3.640	3.570	12.747	-10.638	3.358	-1.020	0.308
Aviram et al., 2004	3.000	5.733	32.882	-8.236	14.236	0.523	0.601
Sohrab et al., 2008	-4.000	3.910	15.291	-11.664	3.664	-1.023	0.306
Sumner et al., 2005	2.000	3.547	12.583	-4.952	8.952	0.564	0.573
Tsang et al., 2012	-6.070	2.812	7.909	-11.582	-0.558	-2.158	0.031
Shema-Didi et al., 2014	-5.000	3.934	15.476	-12.710	2.710	-1.271	0.204
Lynn et al., 2012	-2.640	2.256	5.091	-7.062	1.782	-1.170	0.242
Davidson et al., 2009	-1.110	1.210	1.464	-3.482	1.262	-0.917	0.359
	-2.012	0.869	0.755	-3.715	-0.309	-2.315	0.021

Statistics for each study

Difference in means and 95% CI

DBP: Pomegranate better Control better



WMD: −2.01 mmHg, 95% CI:−3.71 to −0.31, p = 0.021

Sahebkar A et al Pharmacol Res 2017, 115:149-161

The healthy populations living In the Kuna Islands

Islands** versus **Panama

↑ daily dietary intake of antioxidants

- 10-fold higher amount of cocoa-containing beverages

- 4 times the amount of fish

- twice the amount of fruit

(p<0.05 by t test)

Islands** versus **Panama

↑ *NO bioavailability ?*

3-fold larger urinary nitrate:nitrite excretion

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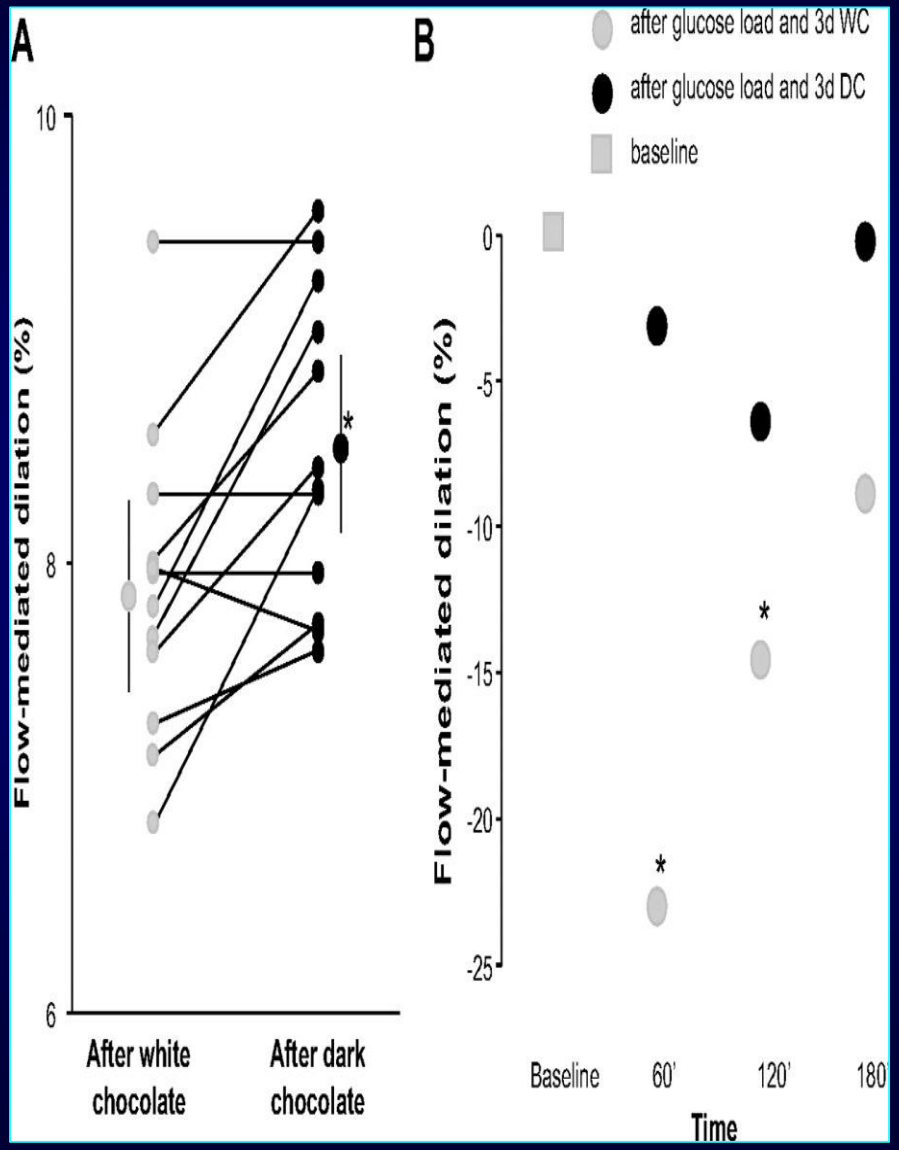
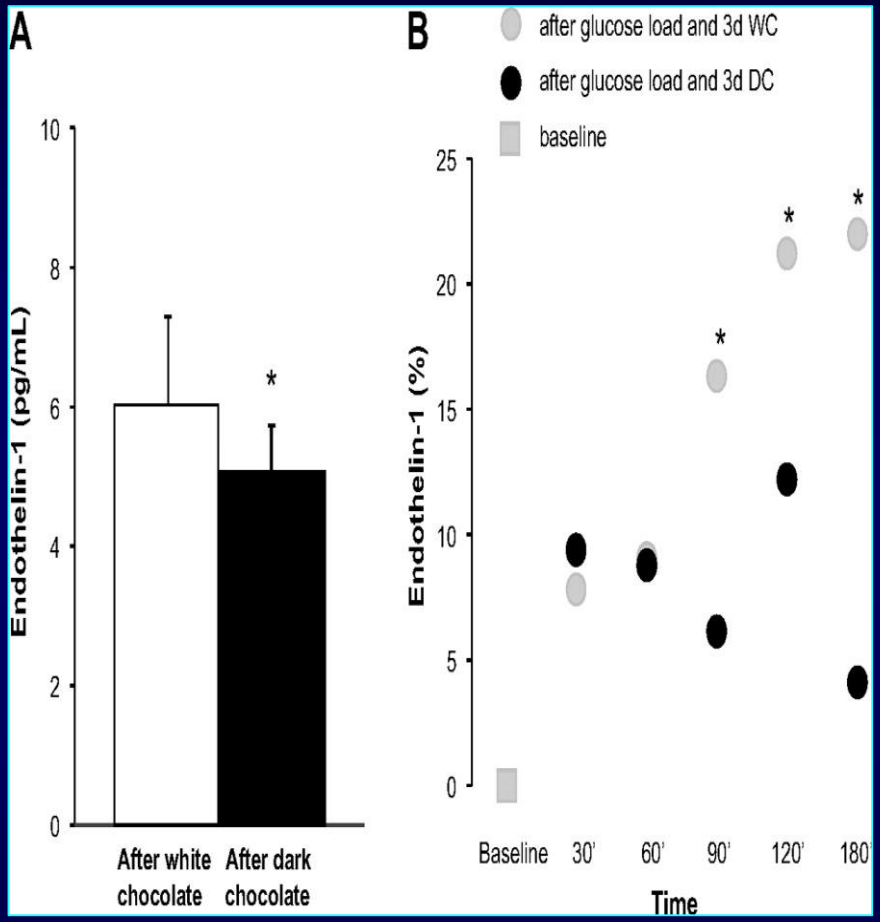
Dark chocolate effects on FMD at baseline (A) and after OGTT (B)



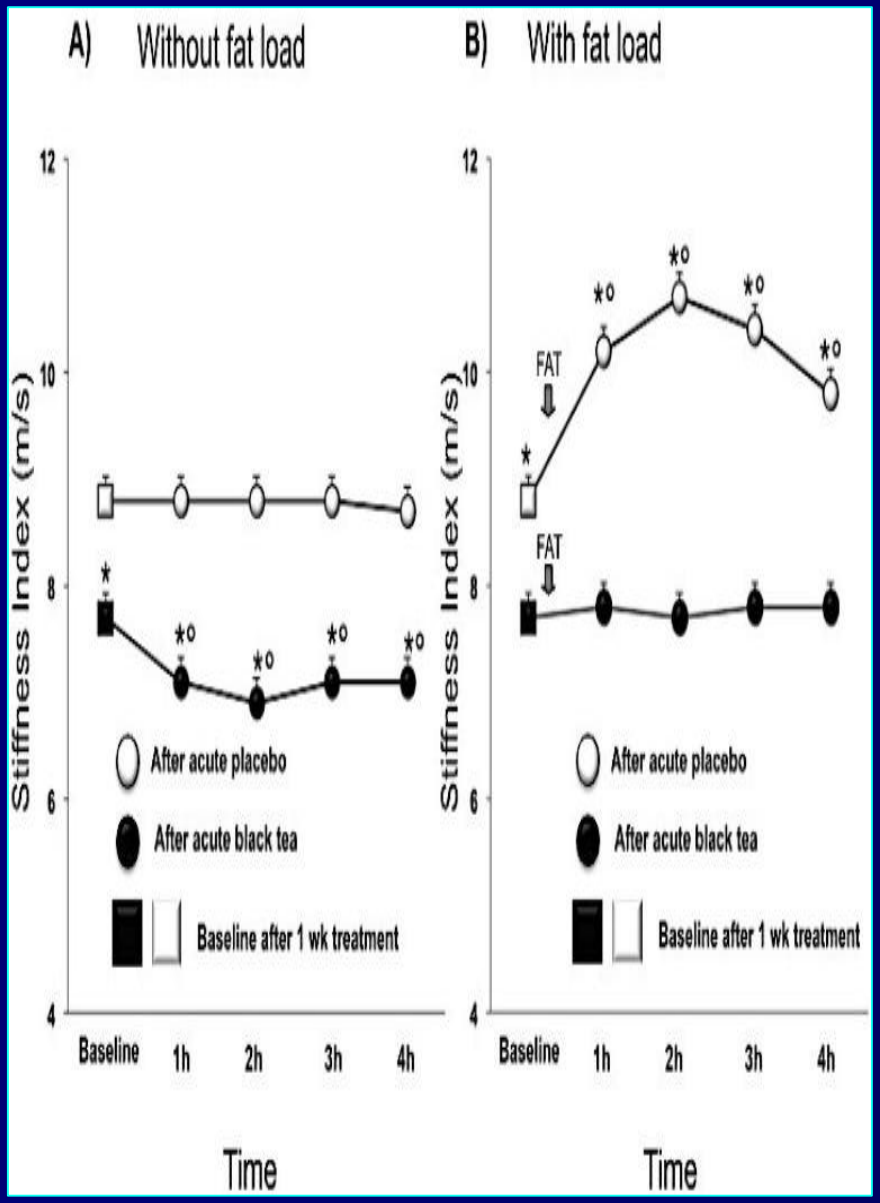
Dark chocolate effects on circulating ET-1 at baseline (A) and after OGTT (B)

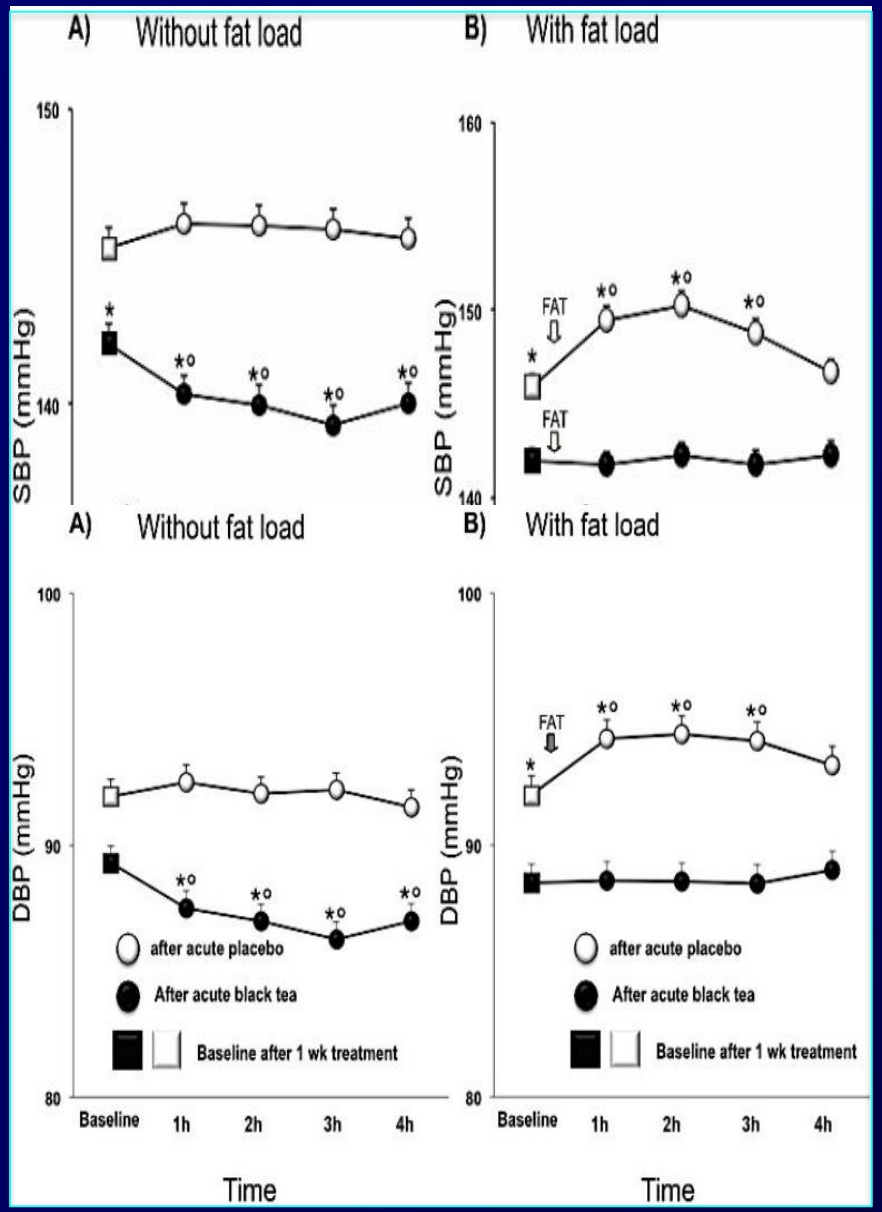


Dark chocolate also prevented the OGTT-related increase in BP (SBP: <0.0001 and DBP: P=0.019 for treatment)

Grassi D et al. Hypertension. 2012;60:827-832

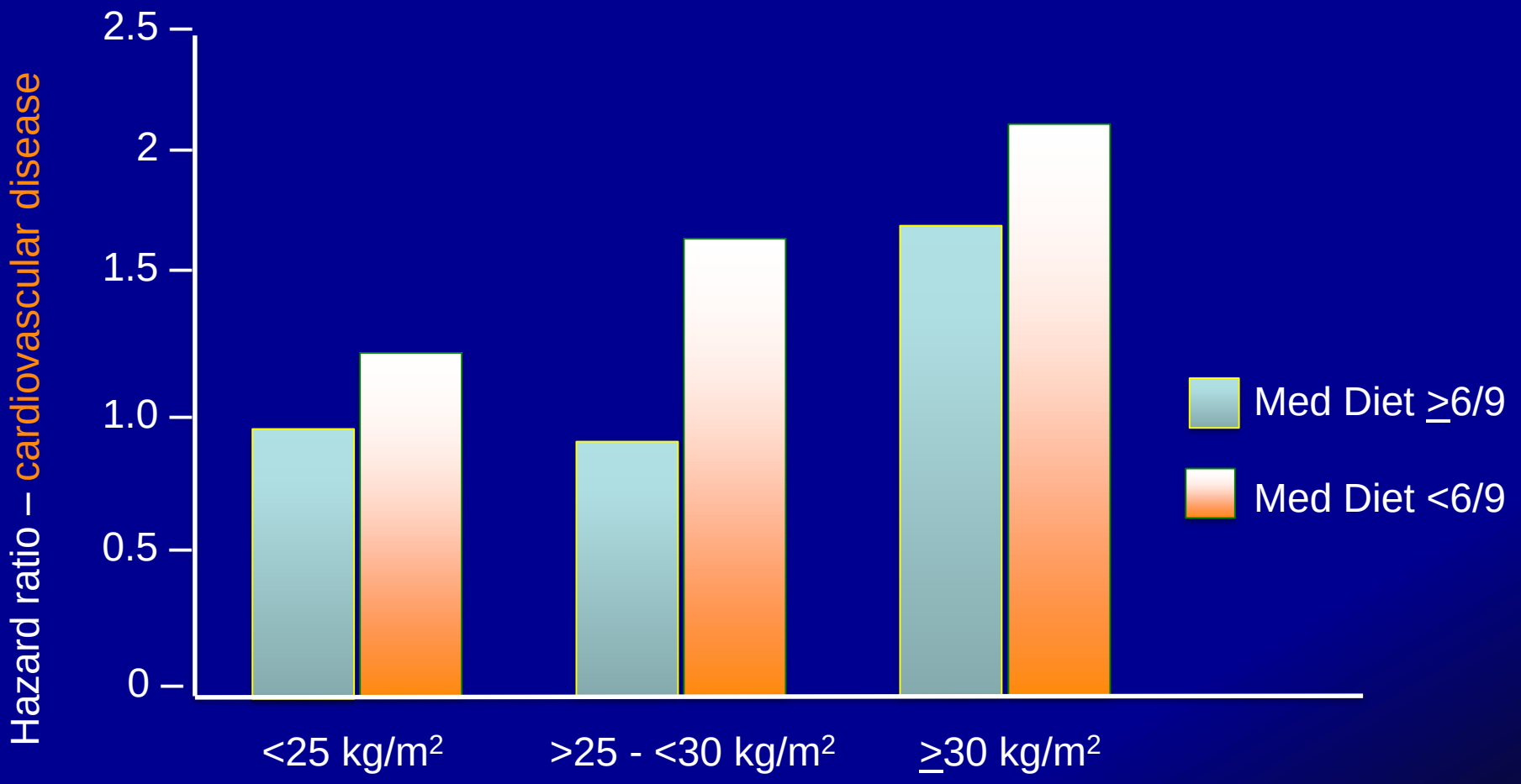
Black tea lowers blood pressure and wave reflections in fasted and postprandial conditions in hypertensive patient





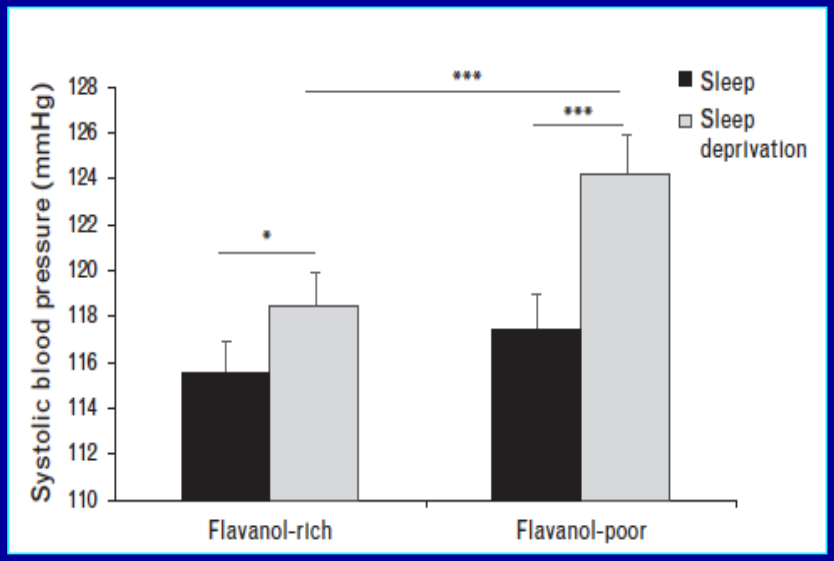
Grassi D et al Nutrients. 2015;7(2):1037-51.

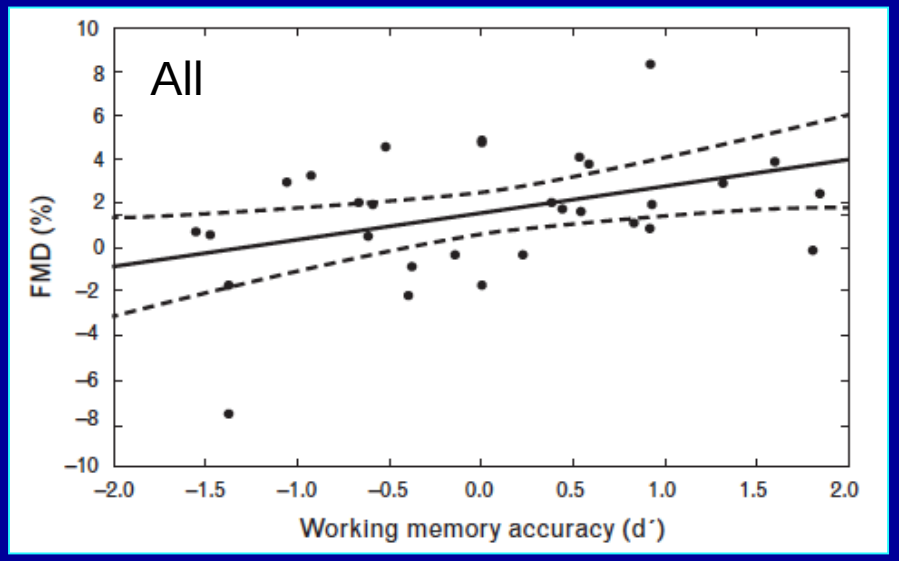
Cardiovascular risk according to Mediterranean diet adherence – The SUN Study

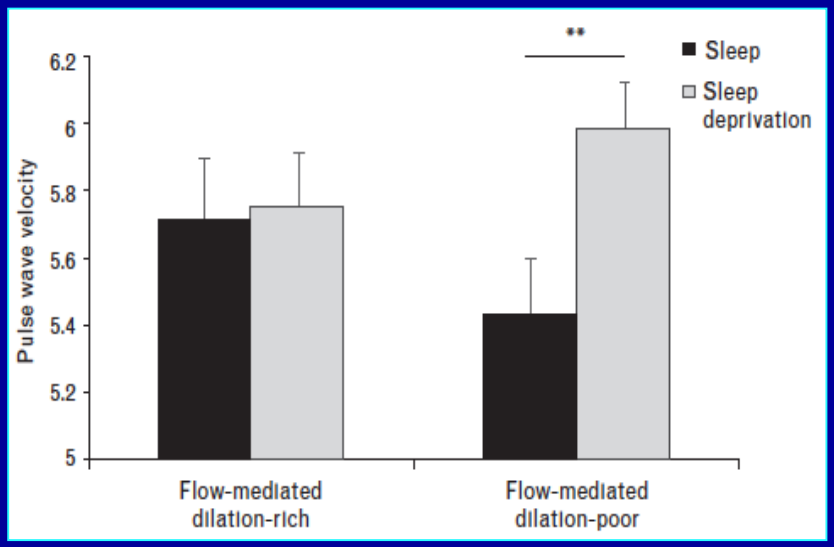


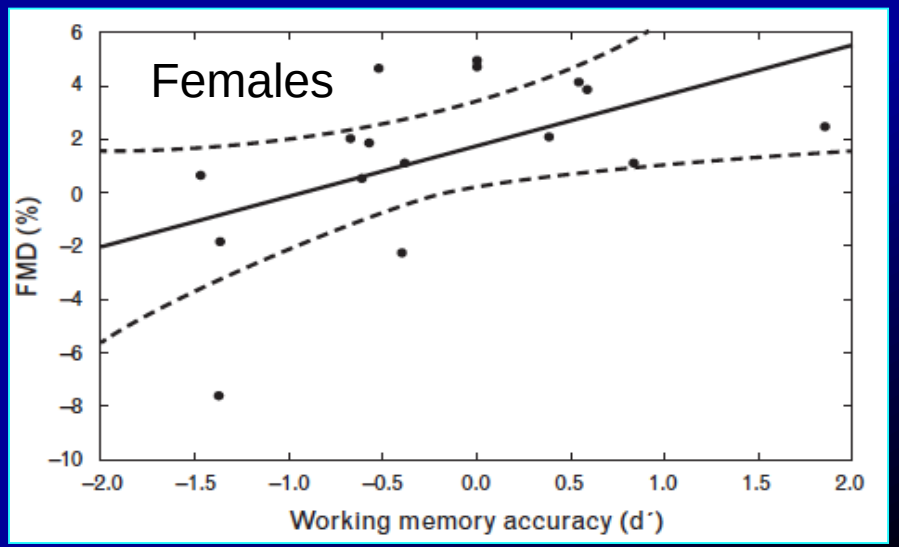
Eguaras S et al. Nutrients. 2015; 7(11): 9154–9162.

Flavanol-rich chocolate improves arterial function and working memory performance









Grassi D et al J Hypertens 2016

Sommario e Messaggi chiave

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La “salute cardiorenale” è promossa da una dieta sana, sostanzialmente riconducibile a quella mediterranea

Sommario e Messaggi chiave

La “salute cardiorenale” è promossa da una dieta sana, sostanzialmente riconducibile a quella mediterranea

La dieta corretta - inclusiva di alimenti funzionali e nutraceutici - e l’attività fisica possono sommarsi alla terapia farmacologica nella protezione dagli eventi cardiorenali, persino antagonizzando comportamenti negativi