FLAVIOLA

Targeted delivery of dietary flavanols for optimal human cell function: Effects on cardiovascular health

SFRBM Annual Meeting, Pre-meeting Workshop II

Flavanols in Health and Disease

Flavanols and Health: Epidemiological Considerations

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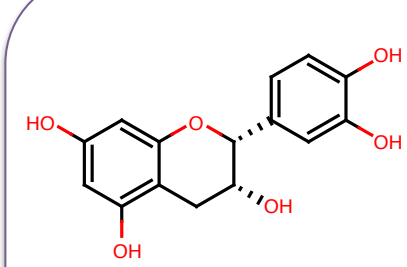
Outline

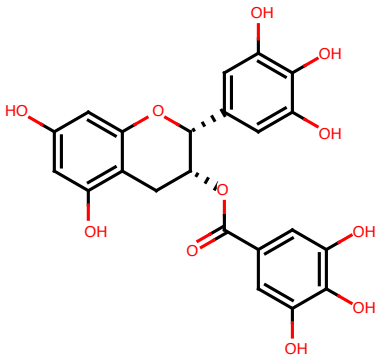
How much do people consume?

How is habitual consumption associated with health?

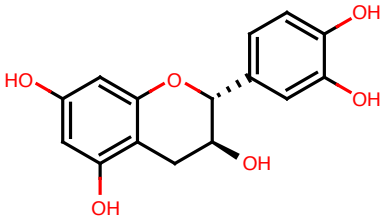
Flavan-3-ols



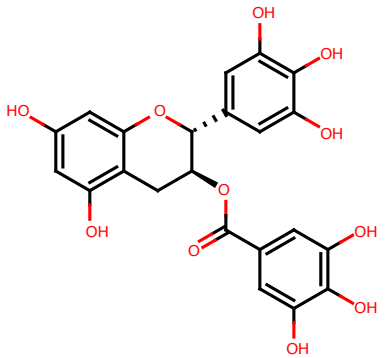
(-)-epicatechin



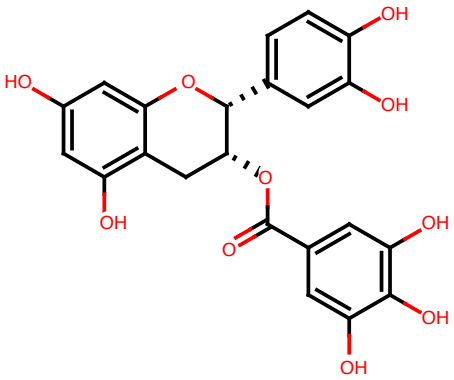
(-)-epigallocatechin-3′-gallate



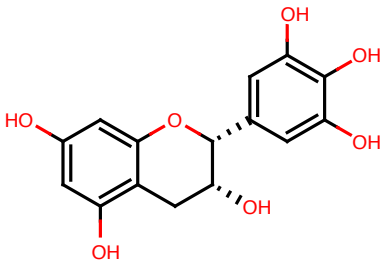
(+)-catechin



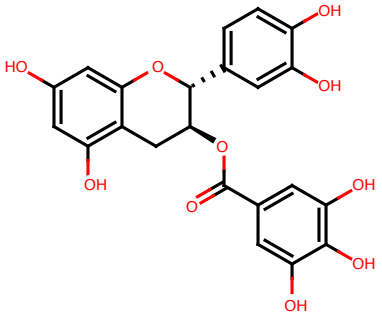
(+)-gallocatechin-3′-gallate



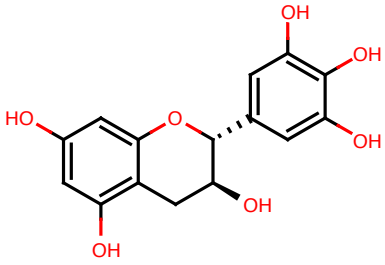
(-)-epigallocatechin



(-)-epicatechin-3′-gallate



(+)-gallocatechin



(+)-catechin-3′-gallate

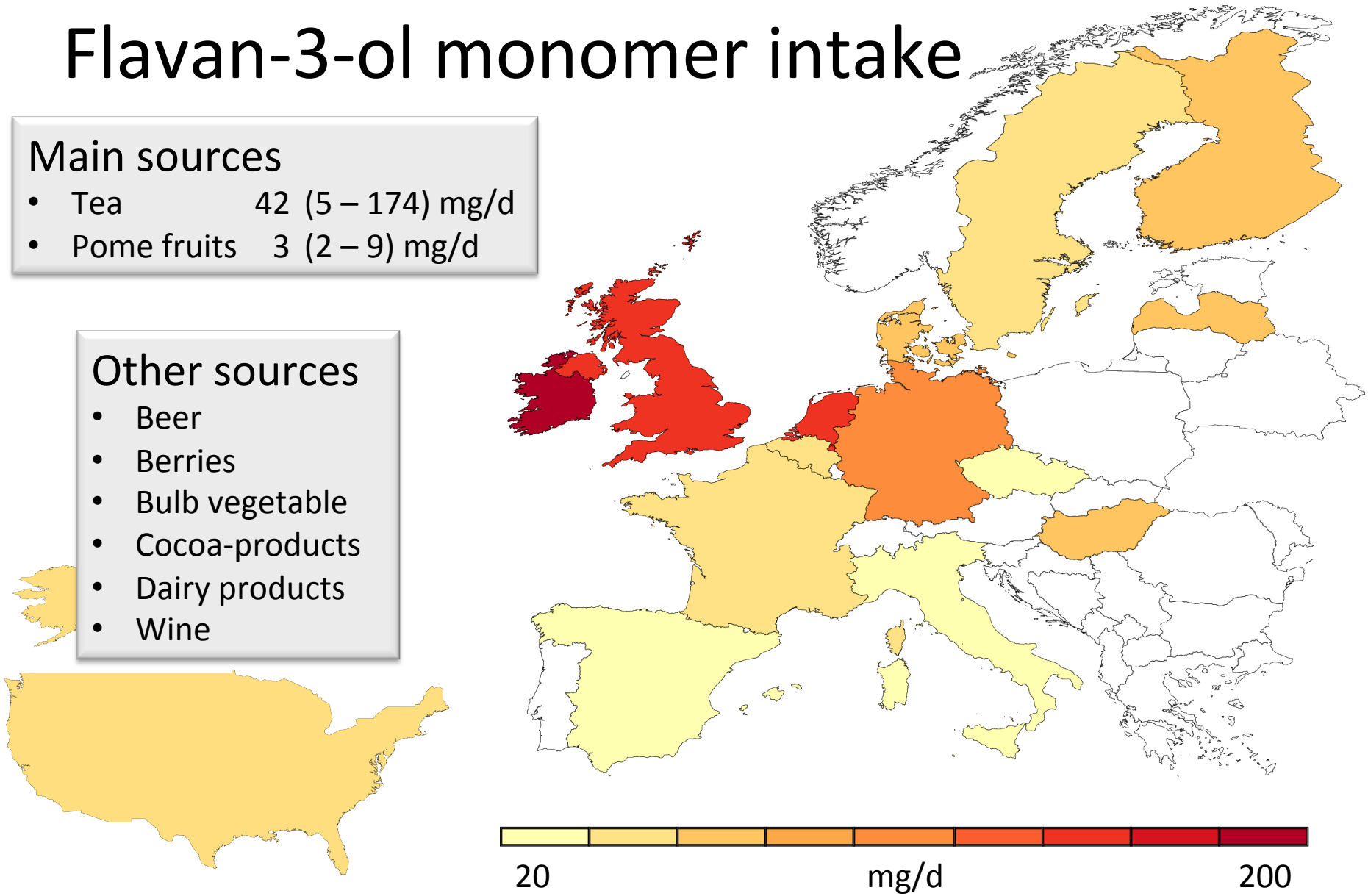
Flavan-3-ol monomer intake

Main sources

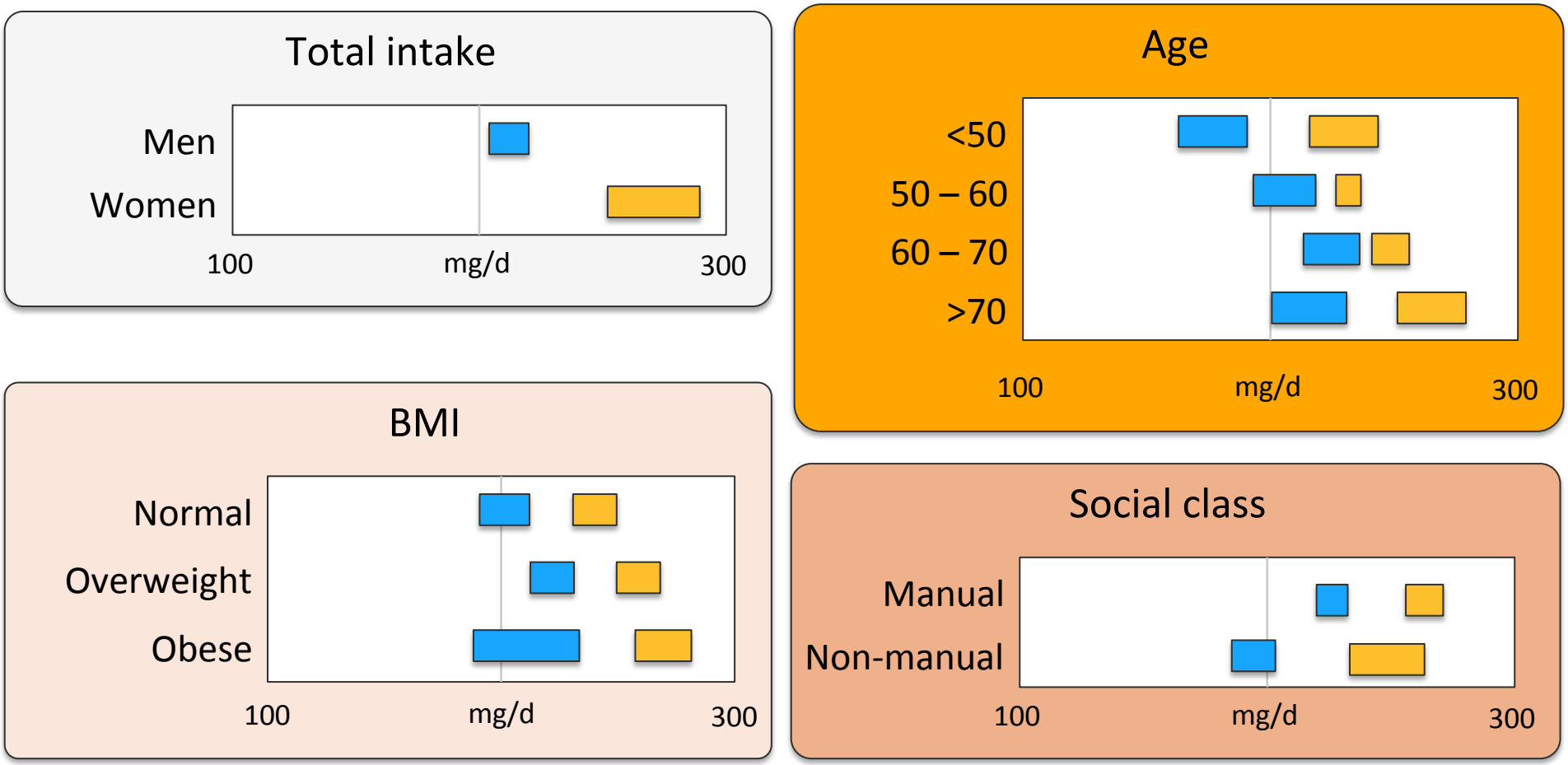
- Tea 42 (5 – 174) mg/d
- Pome fruits 3 (2 – 9) mg/d

Other sources

- Beer
- Berries
- Bulb vegetable
- Cocoa-products
- Dairy products
- Wine



Determinants of intake in EPIC Norfolk

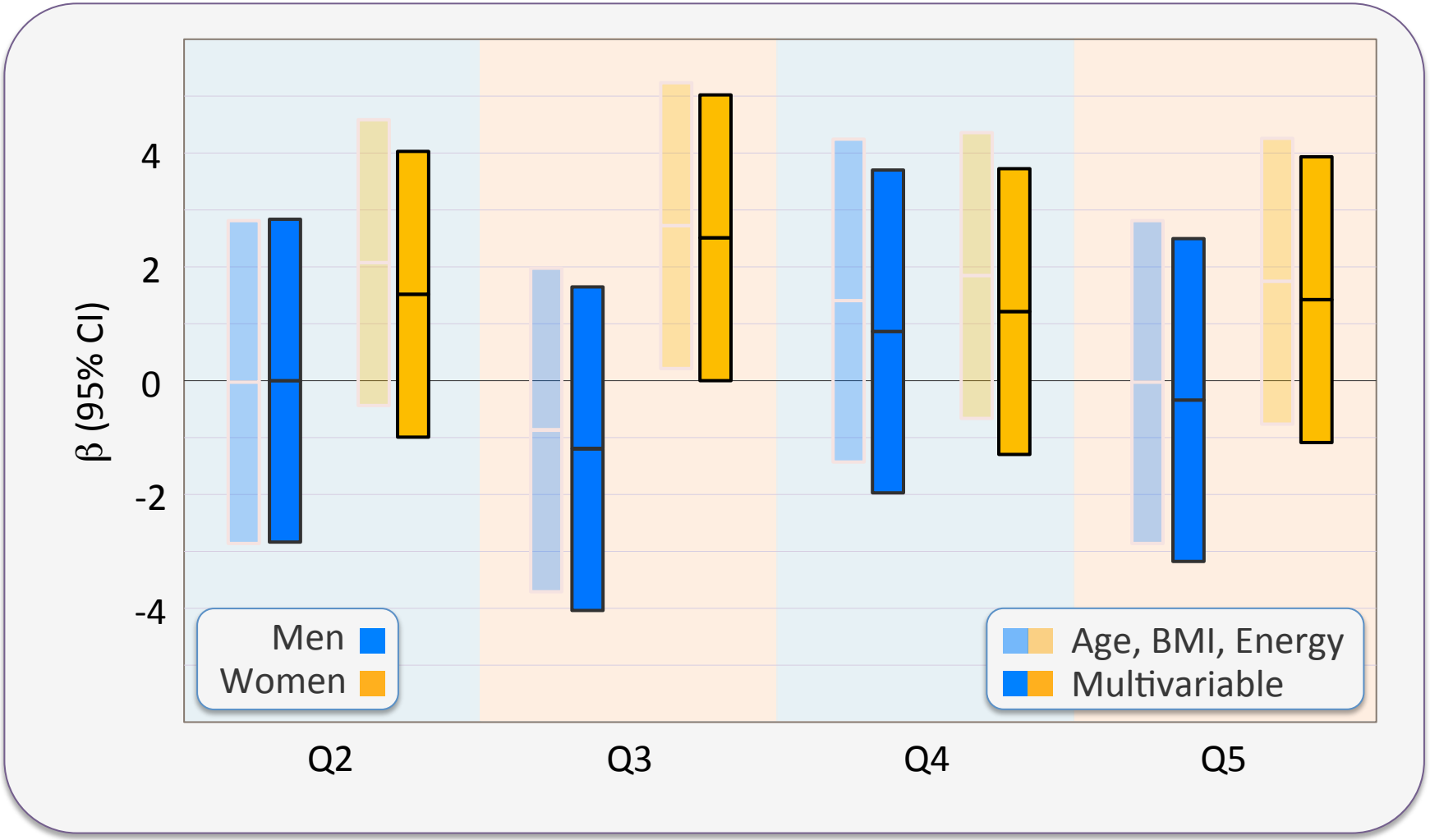


Men Women

Flavanol intake; 95% CI; adjusted for energy intake; data for 8 MJ diet

Association of habitual intake with health

No consistent association with BP in EPIC Norfolk



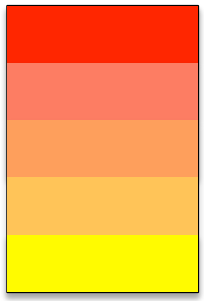
Comparison with other epidemiological studies

Intake

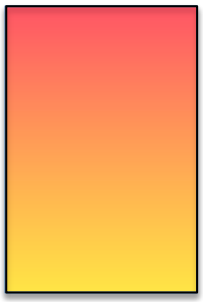
	n	Q1	Q2	Q3	Q4	Q5
Men						
EPIC Norfolk	1,407	57 (2 - 123)	166 (123 - 201)	235 (200 - 270)	303 (270 - 350)	431 (351 - 943)
Health Professional F'up Study	23,043	11.8				150
Women						
EPIC Norfolk	1,322	37 (1 - 97)	149 (97 - 185)	217 (185 - 251)	284 (251 - 327)	393 (327 - 1092)
Iowa Women's Health*	34,492	4.2 (0 - 6.8)	10 (6.8 - 15.1)	20.4 (15.1 - 29.4)	75.7 (29.4 - 135.7)	182 (136 - 1050)
Cancer Prevention Study II	60,289	7 (0 - 10)	12 (10 - 14)	17 (14 - 20)	26 (20 - 37)	64 (37 - ...)
Nurses Health Study I	46,672	9				176
Nurses Health Study II	87,242	10				196

*includes Thearubigins

Assessment of Exposure

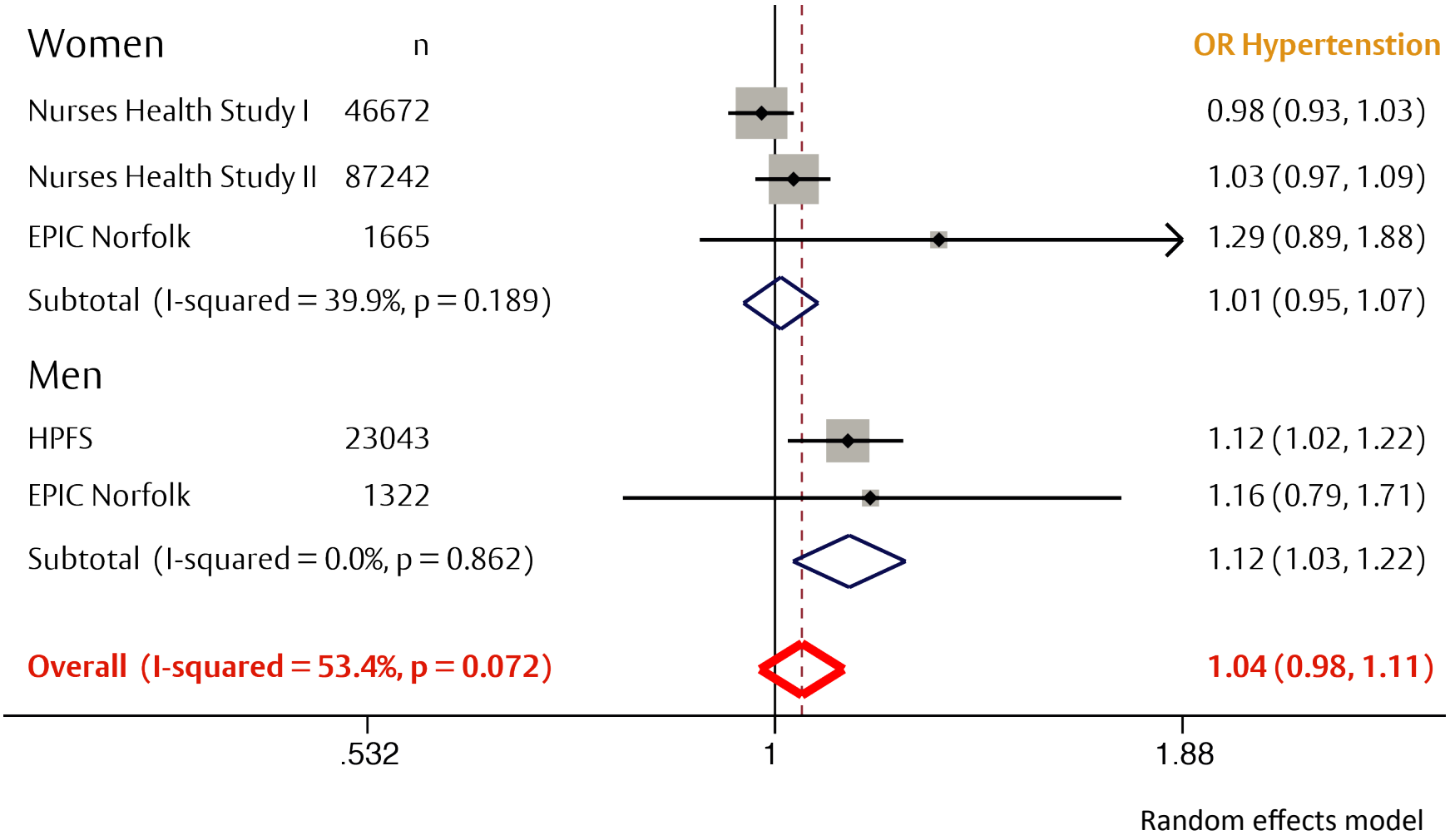


Food-Frequency-Questionnaire
Only 100 – 200 items
Not validated for flavan-3-ols



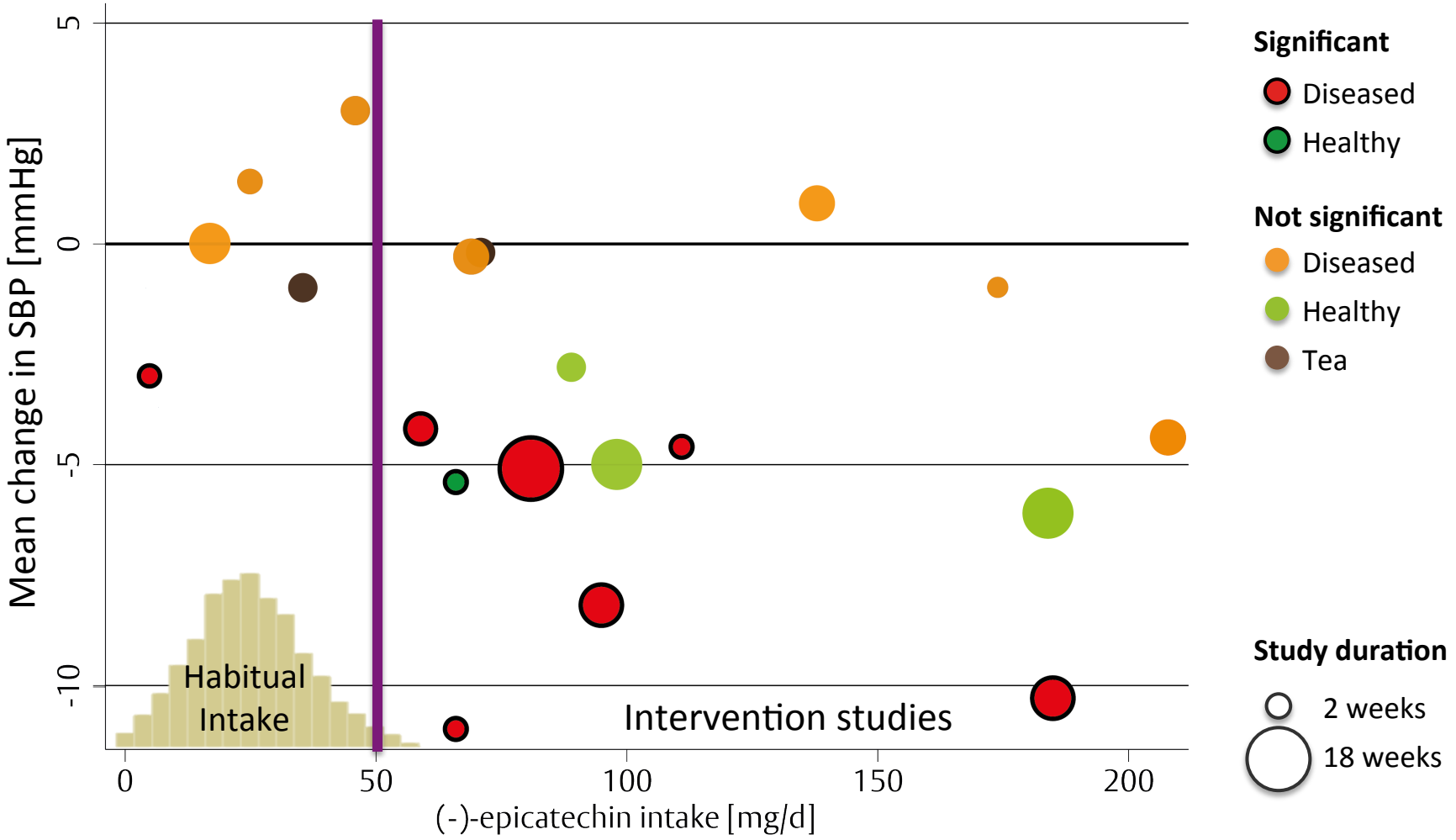
7-day-diary
Up to 11,000 foods
Suitable for flavan-3-ols

Comparison with other epidemiological studies

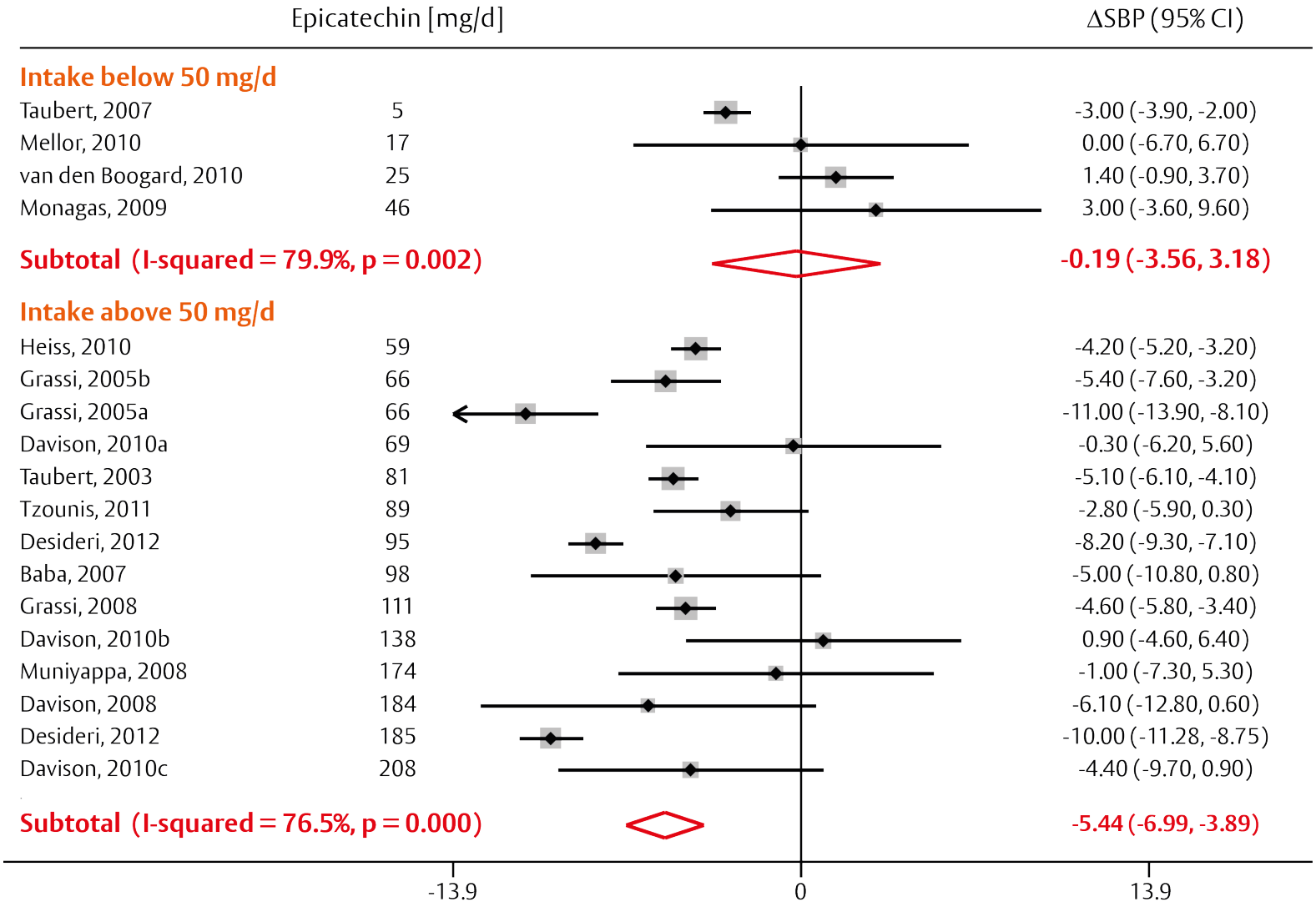


Comparison with intervention studies

Intervention studies and habitual intake



Intervention studies – effect by intake



Estimated impact of SBP reduction

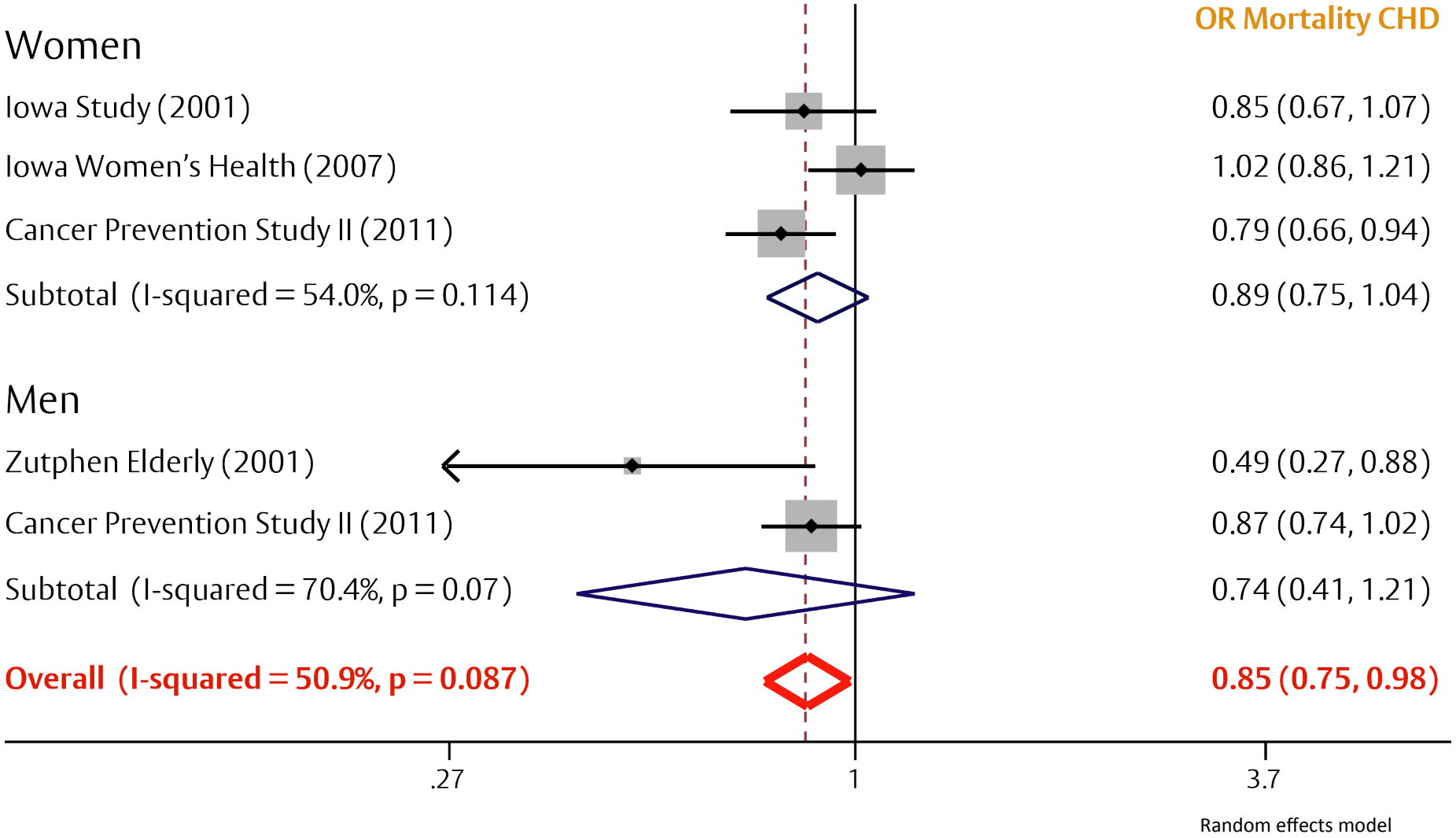
DSBP	Mortality - CVD	Mortality - Stroke
-2 mm Hg	-4%	-6%
-3 mm Hg	-5%	-8%
-5 mm Hg	-9%	-14%

Reduction of 5.5 mmHg (e.g. DASH)

- Reduction of CVD events by >650,000 over 10 years

Cook *et al.,* Arch Int Med (1995) 155:701 Erlinger *et al.* Preventative Medicine (2003)

Flavanol intake and CHD – epidemiology



Summary

Habitual flavanol intake

	Flavan-3-ol	Epicatechin
General public	10-790 mg/d	5 – 20 mg/d
EPIC Norfolk (median)	225 mg/d	27 mg/d

Association with blood pressure and CVD risk

- No consistent association between habitual intake and BP
- Habitual intake is below the amount required to observe significant changes in SBP
- Potentially beneficial effect on CVD mortality

Acknowledgements