

Chocolate & Cardiovascular disease

- 6 systematic reviews
 - 5-9 observational studies (mostly prospective cohort)
 - 75,408-157,809 adults and followed 8-16 years
 - Highest consumption versus little to no consumption

Outcome	Relative Risk	Notes
CVD overall	0.63 (0.44-0.90)	0.75 (0.54-1.05) 2 studies vs 6
MI/Angina	0.90 (0.82-0.97)	0.71 (0.56-0.92) & dose analysis +ve
Stroke	0.81 (0.73-0.90)	0.71 or 0.81 & dose analysis +ve
Heart Failure	0.81 (0.66-1.01)	0.95 (0.61-1.48) 2 studies vs 5

1) BMJ. 2011;343:d4488. 2) Heart. 2015;101:1279-87. 3) Heart. 2016;102:1017-22. 4) Neurology. 2012;79:1223-9. 5) Nutr Metab Cardiovasc Dis. 2016;26:722-34. 6) Curr Atheroscler Rep. 2011;13:447-52.

Surrogates and Other Health Issues

- Blood pressure: 3 Sys Rev¹
 - 10-20 RCTs, 297-856 pts
 - ↓ ~3.6 Systolic & ~2.5 Diastolic
 - Less if normotensive, longer study or if comparator had any cocoa.
- Lipids: 2 Sys Rev²
 - 8-10 RCTs, 215-320 pts
 - ↓ LDL 0.15mmol/L
 - No other statistical different
- Depression¹
 - No research (?emotional change ≤90 minutes)
- Headache (migraines)²
 - No clear association
- Acne
 - Observational data: Chocolate ~doubles risk of acne³
 - 2 RCTs (13 and 54 patients)⁴
 - ↑ ~4-5 lesions after 2-3 days.

1) Cochrane 2012;8:CD008893. Am J Hypertens. 2010;23:97-103. BMC Med. 2010 Jun 28;8:39. 2) Eur J Clin Nutr. 2011;65:879-86. Am J Clin Nutr. 2010;92:218-25.

1) Nutr Rev. 2013;71:665-81. 2) Acta Biomed. 2014;85(3):216-21. 3) Dermatology 2015;230:34–39. 4) J Clin Aesthet Dermatol. 2014;7:19–23. J Am Acad Dermatol. 2016;75:220-2.

Summing Up

- Weight gain: Not what you expect,...
 - 1-unit/wk increase in consumption associated with 13% decrease (OR 0.87, 0.85-0.88) in the risk of being overweight or obesity.
- **Bottom-Line: Chocolate (possible dark) consumption is associated with no change or a small reduction in cardiovascular disease in cohort studies. Evidence is too weak to recommend chocolate consumption for health benefits. Surrogate marker changes are minimal and perhaps unreliable. Chocolate likely increases acne lesions in susceptible individuals.**