

Antioxidants and Mortality

Population: Antioxidant supplements for prevention of mortality in healthy participants and patients with various diseases (mean age: 63 years, range 18 to 103 years) from Europe, North and South America, Asia and Australia.

Intervention: Antioxidants (Beta-carotene, Vitamin A, C, E and/or Selenium)

Comparator: Placebo or no intervention

Outcome (0.5 – 12 years)	Study results and measurements	Certainty in effect estimates (Quality of evidence)	Absolute effect estimates		Summary
			Placebo or no intervention	Antioxidants	
Mortality	Relative risk: 1.04 (CI 95% 1.01 - 1.07) Based on data from 244056 patients in 56 studies	Low risk of bias	106 per 1000	110 per 1000	Antioxidants very slightly decrease mortality
			Difference: 4 more per 1000 (CI 95% 1 more - 7 more)		
Mortality with assigned fatalities to all of the dropouts	Relative risk: 1.02 (CI 95% 0.99 - 1.04) Based on data from 240738 patients in 55 studies	Low risk of bias	138 per 1000	141 per 1000	Antioxidants have little or no difference on mortality
			Difference: 3 more per 1000 (CI 95% 1 fewer - 6 more)		
Mortality in Primary prevention trials	Relative risk: 1.03 (CI 95% 0.97 - 1.08) Based on data from 177868 patients in 19 studies	Low risk of bias	101 per 1000	104 per 1000	Antioxidants have little or no difference on mortality in primary prevention trials
			Difference: 3 more per 1000 (CI 95% 3 fewer - 8 more)		
Mortality in Secondary prevention trials	Relative risk: 1.03 (CI 95% 0.99 - 1.07) Based on data from 66188 patients in 37 studies	Low risk of bias	116 per 1000	119 per 1000	Antioxidants have little or no difference on mortality in secondary prevention trials
			Difference: 3 more per 1000 (CI 95% 1 fewer - 8 more)		
Mortality after excluding trials administrating extra supplements in the antioxidant group	Relative risk: 1.04 (CI 95% 1.01 - 1.07) Based on data from 227700 patients in 43 studies	Low risk of bias	107 per 1000	111 per 1000	Antioxidants very slightly decrease mortality
			Difference: 4 more per 1000 (CI 95% 1 more - 7 more)		
Mortality after excluding trials with extra supplements for both intervention groups	Relative risk: 1.04 (CI 95% 1.0 - 1.07) Based on data from 233249 patients in 48 studies	Low risk of bias	104 per 1000	108 per 1000	Antioxidants have little or no difference on mortality
			Difference: 4 more per 1000 (CI 95% 0 fewer - 7 more)		
Mortality after excluding factorial	Relative risk: 1.1 (CI 95% 1.05 - 1.15)	Low risk of bias	95 per 1000	105 per 1000	

trials with potential confounding	Based on data from 52955 patients in 38 studies		Difference: 10 more per 1000 (CI 95% 5 more - 14 more)		Antioxidants very slightly decrease mortality
Mortality after excluding factorial trials with potential confounding and trials with extra supplements	Relative risk: 1.12 (CI 95% 1.06 - 1.18) Based on data from 46783 patients in 27 studies	Low risk of bias	94 per 1000	105 per 1000	Antioxidants very slightly decrease mortality
			Difference: 11 more per 1000 (CI 95% 6 more - 17 more)		
Mortality in beta-carotene trials	Relative risk: 1.05 (CI 95% 1.01 - 1.09) Based on data from 173006 patients in 26 studies	Low risk of bias	111 per 1000	117 per 1000	Beta-carotene very slightly decrease mortality
			Difference: 6 more per 1000 (CI 95% 1 more - 10 more)		
Mortality in vitamin A trials	Relative risk: 1.07 (CI 95% 0.97 - 1.18) Based on data from 41144 patients in 12 studies	Low risk of bias	136 per 1000	146 per 1000	Vitamin A has little or no difference on mortality
			Difference: 10 more per 1000 (CI 95% 4 fewer - 24 more)		
Mortality in vitamin C trials	Relative risk: 1.02 (CI 95% 0.98 - 1.07) Based on data from 65942 patients in 29 studies	Low risk of bias	93 per 1000	95 per 1000	Vitamin C has little or no difference on mortality
			Difference: 2 more per 1000 (CI 95% 2 fewer - 7 more)		
Mortality in vitamin E trials	Relative risk: 1.03 (CI 95% 1.0 - 1.05) Based on data from 171244 patients in 46 studies	Low risk of bias	103 per 1000	106 per 1000	Vitamin E has little or no difference on mortality
			Difference: 3 more per 1000 (CI 95% 0 fewer - 5 more)		
Mortality in selenium trials	Relative risk: 0.97 (CI 95% 0.91 - 1.03) Based on data from 62740 patients in 17 studies	Low risk of bias	64 per 1000	62 per 1000	Selenium has little or no difference on mortality
			Difference: 2 fewer per 1000 (CI 95% 6 fewer - 2 more)		

References

Bjelakovic G, Nikolova D, Gluud LL, Simonetti RG, Gluud C. Antioxidant supplements for prevention of mortality in healthy participants and patients with various diseases. The Cochrane Library. 2012 Jan 1.

Practical Issues



Medical routine

How often do I need to take the antioxidants?

Antioxidants, if taken, should be taken daily.



Adverse effects, interactions and antidote

Are there any side effects from taking antioxidants?

Side effects include nausea, constipation and diarrhoea. There is also some evidence for a very slight increase in mortality risk for vitamin E, A and beta-carotene.



Cost and access

How much do antioxidants cost?

Prices vary for over the counter antioxidant tablets. For example, Blackmores Sustained Released Multi + Antioxidant tablets (x180) RRP is \$64.49