

Is there a role for antioxidant vitamins in the prevention of cardiovascular diseases? An update on epidemiological and clinical trials data.

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OBJECTIVES: To review prospective epidemiological studies and randomized clinical trials regarding the role of antioxidant vitamins (vitamins E and C and beta-carotene) in the prevention of cardiovascular diseases. **DATA SOURCES:** Computerized (MEDLINE and Science Citation Index) and manual searches on the role of antioxidant vitamins in cardiovascular disease management. **STUDY SELECTION:** Only prospective epidemiological studies and double-blind, controlled, randomized clinical trials, including at least 100 participants and providing sufficient data to allow quantitative estimation of the effects of vitamin intake were included. Retrospective epidemiological evaluations and other retrospective studies were excluded. Geographic correlation studies of population-based intake of antioxidants and cardiovascular disease rates were also excluded due to the potential large impact of confounders in cross-sectional analyses. **DATA SYNTHESIS:** Relative risk was evaluated for all prospective epidemiological studies. Relative risk reductions were evaluated for clinical trials. The Mantel-Haenszel method was used to estimate the relative risk reduction in clinical trials when not calculated in the original publication. A formal meta-analysis was not performed because very significant differences among study populations, type (supplemental versus dietary) and dosage of antioxidant vitamins, duration of follow-up and overall study design exist for both epidemiological investigations and clinical trials, and the pooling of study results could be misleading. **CONCLUSIONS:** Prospective epidemiological investigations suggest a reduction in cardiovascular risk associated with increased intake of antioxidant vitamins, particularly vitamin E. Randomized clinical trials remain inconclusive with regard to the role of vitamin E in cardiovascular protection. The large, randomized clinical trials of beta-carotene in primary prevention show no effect and potential for harm associated with the use of beta-carotene. There are inconclusive and insufficient epidemiological and clinical trial data with regard to the role of vitamin C in cardiovascular protection. Overall, it is recommended that wide-spread use of antioxidant vitamins in cardiovascular protection should not be instituted and should await the results of further ongoing clinical trials.

Publication Types:

- Review

MeSH Terms:

- Adult
- Aged
- Antioxidants/pharmacology*
- Ascorbic Acid/pharmacology
- Cardiovascular Diseases/epidemiology
- Cardiovascular Diseases/prevention & control*
- Clinical Trials
- Epidemiologic Studies
- Female
- Follow-Up Studies
- Humans
- Male
- Middle Aged
- Prospective Studies
- Randomized Controlled Trials
- Treatment Outcome
- Vitamin E/pharmacology
- Vitamins/pharmacology*
- beta Carotene/pharmacology

Substances:

- Antioxidants
- Vitamins
- Vitamin E
- Ascorbic Acid
- beta Carotene

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