Systematic review on "vitamin E and prevention of colorectal cancer"

Arain MA, Qadeer AA

CRD summary
The review concluded that vitamin E did not have a protective role in the prevention of colorectal cancer. Despite the potential for selection biases, the review was generally well conducted. The authors’ conclusions are based on the evidence and appear appropriate.

Authors' objectives
To determine if vitamin E supplements help in decreasing the incidence of colorectal cancer among adults.

Searching
PubMed and the Cochrane Library databases were searched between 1999 and January 2009 for articles published in English. Search terms were reported. Google Scholar was also searched.

Study selection
Randomised controlled trials (RCTs) that evaluated the efficacy of vitamin E supplementation compared with placebo or other supplement were eligible for inclusion. Trials had to report the incidence of colorectal cancer as a dichotomous outcome, and could include participants of just one gender or both genders. Trials in which other vitamins were combined with vitamin E were excluded.

The included trials evaluated vitamin E supplementation (doses were 400 IU/day, 600 IU every other day, or 50mg/day) compared with placebo in male only or female only participants. The age of participants was over 40 in all trials.

Two authors independently undertook the selection process.

Assessment of study quality
Quality assessment was undertaken using the CONSORT (Consolidated Standards of Reporting Trials) 22-point scale, which assessed quality factors including randomisation, study design, allocation concealment and follow-up.

The authors did not state how many reviewers were involved in the validity assessment.

Data extraction
The authors did not state how the data were extracted but did state that two authors were involved in the data extraction. Data on the incidence of colorectal cancer were used in the review to calculate relative risks (RRs) and 95% confidence intervals (CIs)

Methods of synthesis
The pooled relative risks, together with 95% confidence intervals, were calculated using a fixed-effect meta-analysis. Statistical heterogeneity was assessed using the $X^2$ and $I^2$ statistic.

Results of the review
Four RCTs (n=94,069 participants) were included in the review. The quality of the RCTs was generally high, with trials scoring between 15/22 and 20/22. The length of follow-up varied from seven to 10 years.

There was no statistically significant difference in the incidence of colorectal cancer between vitamin E supplementation and placebo participants (RR 0.89, 95% CI 0.76 to 1.05; $I^2$=7%; four RCTs).

Authors' conclusions
Vitamin E did not have a protective role in the prevention of colorectal cancer.
CRD commentary
Inclusion criteria for the review were clearly defined and several relevant databases were searched. There was the potential for both language and publication bias, as only published English language articles were included; publication bias was not assessed. Attempts were made to minimise error and bias in the process of study selection and data extraction, but the same could not be assumed for quality assessment.

Quality assessment was undertaken using a standard checklist, which was appropriate. The RCTs were combined using fixed-effects meta-analysis which appeared appropriate, given the large sample size, lack of heterogeneity and high quality of the included trials.

Despite the potential for selection biases, the review was generally well conducted. The authors’ conclusions are based on the evidence and appear appropriate.

Implications of the review for practice and research
Practice: The authors stated that vitamin E is not recommended for prevention of colorectal cancer.

Research: The authors stated that further RCTs are required in different populations and for different conditions.

Funding
Not stated.

Bibliographic details
Arain MA, Qadeer AA. Systematic review on "vitamin E and prevention of colorectal cancer". Pakistan Journal of Pharmaceutical Sciences 2010; 23(2): 125-130

PubMedID
20363687

Original Paper URL
http://www.pakmedinet.com/15350

Indexing Status
Subject indexing assigned by NLM

MeSH
Antioxidants /therapeutic use; Colorectal Neoplasms /prevention & control; Dietary Supplements /statistics & numerical data; Humans; Randomized Controlled Trials as Topic; Treatment Outcome; Vitamin E /therapeutic use

AccessionNumber
12010003918

Date bibliographic record published
04/08/2010

Date abstract record published
24/11/2010

Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.