Vitamin C for preventing and treating the common cold
(Review)

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BACKGROUND
Vitamin C (ascorbic acid) in preventing and treating the common cold has been a subject of controversy for 60 years.

OBJECTIVES
To discover whether oral doses of 0.2 g per day or more of vitamin C reduce the incidence, duration or severity of the common cold when used as continuous prophylaxis (regularly every day) or as therapy after onset of symptoms.

SEARCH METHODS
We searched the Cochrane Central Register of Controlled Trials (CENTRAL) (The Cochrane Library 2010, issue 1) which contains the Acute Respiratory Infections Group's Specialised Register, MEDLINE (2006 to February 2010) and EMBASE (2006 to February 2010).

SELECTION CRITERIA
We excluded trials if a dose less than 0.2 g per day of vitamin C was used, or if there was no placebo comparison. We did not restrict to randomised controlled trials (RCTs).

DATA COLLECTION AND ANALYSIS
Two reviewers independently extracted data. ‘Incidence’ of colds during prophylaxis was assessed as the proportion of participants experiencing one or more colds during the study period. ‘Duration’ was the mean days of illness of cold episodes.

MAIN RESULTS
Twenty-nine trial comparisons involving 11,306 participants contributed to the meta-analysis on the risk ratio (RR) of developing a cold whilst taking prophylactic vitamin C. In the general community trials, involving 10,708 participants, the pooled RR was 0.97 (95% confidence interval (CI) 0.94 to 1.00). Five trials involving a total of 598 marathon runners, skiers and soldiers on subarctic exercises yielded a pooled RR of 0.48 (95% CI 0.35 to 0.64).

Twenty-nine comparisons examined the effect of prophylactic vitamin C on common cold duration (9649 episodes). In adults the duration of colds was reduced by 8% (3% to 12%), and in children by 13% (6% to 21%). The severity of colds was significantly reduced in the prophylaxis trials.
Seven trial comparisons examined the effect of therapeutic vitamin C (3249 episodes). No consistent differences from the placebo group were seen in the duration or severity of colds.

Authors’ conclusions

The failure of vitamin C supplementation to reduce the incidence of colds in the general population indicates that routine prophylaxis is not justified. Vitamin C could be useful for people exposed to brief periods of severe physical exercise. While the prophylaxis trials have consistently shown that vitamin C reduces the duration and alleviates the symptoms of colds, this was not replicated in the few therapeutic trials that have been carried out. Further therapeutic RCTs are warranted.

PLAIN LANGUAGE SUMMARY

Vitamin C for preventing and treating the common cold

The term ‘the common cold’ does not denote a precisely defined disease, yet the characteristics of this illness are familiar to most people. It is a major cause of visits to a doctor in Western countries and of absenteeism from work and school. It is usually caused by respiratory viruses for which antibiotics are useless. Other potential treatment options are of substantial public health interest.

Since vitamin C was isolated in the 1930s it has been proposed for respiratory infections. It became particularly popular in the 1970s when Nobel laureate Linus Pauling concluded from earlier placebo-controlled trials that vitamin C would prevent and alleviate the common cold. Over two dozen new trials were undertaken thereafter. Vitamin C has been widely sold and used as both a preventive and therapeutic agent.

This review is restricted to placebo-controlled trials testing 0.2 g per day or more of vitamin C. Regular ingestion of vitamin C had no effect on common cold incidence in the ordinary population. However, it had a modest but consistent effect in reducing the duration and severity of common cold symptoms. In five trials with participants exposed to short periods of extreme physical stress (including marathon runners and skiers) vitamin C halved the common cold risk.

Trials of high doses of vitamin C administered therapeutically, starting after the onset of symptoms, showed no consistent effect on either duration or severity of common cold symptoms. However, only a few therapeutic trials have been carried out, and none have examined children, although the effect of prophylactic vitamin C has been greater in children. One large trial with adults reported equivocal benefit from an 8 g therapeutic dose at the onset of symptoms, and two trials using five-day supplementation reported benefit. More trials are necessary to settle the possible role of therapeutic vitamin C, meaning administration immediately after the onset of symptoms.