
Systematic review of the effects of ginseng on cardiovascular risk factors

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CRD summary

This review determined the efficacy and safety of ginseng supplementation (*Panax* spp.) on cardiovascular risk factors. The authors' conclusion, that current evidence does not support the use of ginseng to treat cardiovascular risk factors, seems to follow from the results presented, although it is possible that relevant studies might have been missed.

Authors' objectives

To determine the efficacy and safety of ginseng supplementation (*Panax* spp.) on cardiovascular risk factors.

Searching

MEDLINE, AMED, BIOSIS Previews, CAB Abstracts, EMBASE and the Cochrane Controlled Trials Register were searched from inception to July 2005; the search terms were reported. In addition, bibliographic references were checked and experts were consulted. Only full manuscripts published in the English language were included.

Study selection

Study designs of evaluations included in the review

Randomised controlled trials (RCTs) and non-randomised studies (NRSs) were eligible for inclusion. Case reports were excluded.

Specific interventions included in the review

Studies using ginseng products derived from *Panax* species were eligible for inclusion. Eligible products had to be monopreparations or primarily ginseng-based. Herbs not containing ginsenosides were excluded, as were studies that evaluated both *Panax* and non-*Panax* species without separating the two treatment groups. The interventions included American ginseng extract, *Panax* ginseng and *Panax* ginseng extract; most of the studies evaluated monotherapies. The dosages ranged from 0.08 to 7.5 g/day, and the duration of the intervention ranged from a single dose to 27 months.

Participants included in the review

Patients with congestive heart failure, hypertension, type 2 diabetes mellitus or mild blood abnormalities, individuals with physical or mental stress, and healthy individuals were included in the review. Where reported, the mean age ranged from 22 to 68 years.

Outcomes assessed in the review

Studies reporting cardiovascular events (blood-pressure, lipid profiles and blood glucose) and adverse events were eligible for inclusion.

How were decisions on the relevance of primary studies made?

One reviewer assessed the eligibility of the studies.

Assessment of study quality

The Jadad scale was used to assess the quality of the primary studies. Studies scoring 0 to 2 points out of a possible maximum of 5 were considered to be low quality, while those scoring 3 to 5 were considered to be high quality. In addition, studies were assessed with respect to the use of standardised preparations of ginseng and characterised ginseng profiles, including their content and purity. Two reviewers assessed the quality of the included studies and any disagreements were resolved by discussion.

Data extraction

A predefined data extraction form was used to collect information on patient population, ginseng preparation, dose, treatment duration, type of control, study design and financial support. The authors did not state how many reviewers performed the data extraction. Effect changes were reported as percentages.

Methods of synthesis

How were the studies combined?

The studies were combined in a narrative, grouped by outcome.

How were differences between studies investigated?

The studies were grouped according to whether they were multiple- or single-dose interventions. Some differences between the studies were evident from the data tables and review text.

Results of the review

Thirty-four studies (n=1,719) were included in the review: 22 RCTs (n=1,115) and 12 NRSs (n=604).

Most of the studies were small (less than 30 participants) and most (59%) were considered to be of a poor quality (NRSs or 0 to 2 points on the Jadad scale). Nine studies reported using standardised preparations, while eight reported testing or provided ginseng profiles of the preparations.

Blood-pressure.

Multiple-dose studies (6 RCTs, 2 NRSs): 2 RCTs found a significant reduction in blood-pressure compared with placebo. One of these found a significant reduction in systolic blood-pressure (4%) in patients with type 2 diabetes mellitus compared with placebo, while the other found a significant reduction in diastolic blood-pressure (3%) in patients with physical or emotional stress compared with the control group. Three studies demonstrated slight elevations in blood-pressure (1 to 4%), two compared with placebo and one compared with baseline, but these were not statistically significant.

Single-dose studies (1 RCT, 3 NRSs): 2 acute single-dose studies (1 RCT, 1 NRS) found greater reductions in systolic and diastolic blood-pressure (8 to 11%). When the participants in one of these studies were examined in a subsequent RCT with placebo control, a much smaller reduction was shown (1 to 4%).

Lipid (3 RCTs, 6 NRSs).

Overall, the results were inconsistent. Five studies found a statistically significant improvement in one or more lipid parameters compared with baseline or an active control group.

Blood glucose. Single-dose studies (9 RCTs): one research group performed these 9 acute single-dose studies. Five studies conducted with *Panax quinquefolius* found reductions in postprandial blood glucose levels (9 to 39%) in patients with and without diabetes. Three acute studies conducted with *Panax ginseng* found either no change in postprandial blood glucose or an increase in postprandial blood glucose levels. Multiple-dose studies (4 RCTs, 2 NRSs): 4 studies found significant reductions in blood glucose outcomes compared with placebo. Reductions of 7 to 10% in fasting blood pressure (3 studies), 4 to 8% in glycosylated haemoglobin (2 studies) and 13% in blood glucose (1 study) were observed. No other statistically significant between-group differences were found.

Authors' conclusions

Current evidence does not support the use of ginseng to treat cardiovascular risk factors.

CRD commentary

The research question was supported by clear inclusion criteria in terms of the intervention, study design and outcomes. Several electronic databases were searched and, although this search was unrestricted by language, only papers published in English were reviewed; relevant papers may therefore have been omitted. The methods used to select

studies and assess study quality were likely to minimise error or bias. The authors did not report how the data were extracted, so it is unclear whether there was a possibility of error or bias at this stage. The reported narrative synthesis was appropriate given differences between the studies in terms of intervention, dosage, duration of treatment, population and study design. The authors' conclusion seems to follow from the results presented, although it is possible that relevant studies might have been missed.

Implications of the review for practice and research

Practice: The authors did not report any implications for practice.

Research: The authors stated that there was a lack of well-controlled trials evaluating the effects of ginseng for the treatment of cardiovascular risk factors, including studies evaluating different doses of ginseng.

Funding

National Center for Complementary and Alternative Medicine.

Bibliographic details

Buettner C, Yeh G Y, Phillips R S, Mittleman M A, Kaptchuk T J. Systematic review of the effects of ginseng on cardiovascular risk factors. *Annals of Pharmacotherapy* 2006; 40(1): 83-95

PubMedID

16332943

DOI

10.1345/aph.1G216

Indexing Status

Subject indexing assigned by NLM

MeSH

Blood Glucose /metabolism; Blood Pressure /drug effects; Cardiovascular Diseases /blood /drug therapy /physiopathology; Cholesterol /blood; Humans; Panax /chemistry; Plant Extracts /chemistry /therapeutic use; Randomized Controlled Trials as Topic; Risk Factors; Treatment Outcome

AccessionNumber

12006003370

Date bibliographic record published

31/10/2007

Date abstract record published

31/10/2007

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.