Efficacy of ginger for nausea and vomiting: a systematic review of randomized clinical trials

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Authors' objectives
To assess the efficacy of ginger for clinical nausea and vomiting.

Searching
Searches were conducted of the following sources from their respective inception to November 1997: MEDLINE; EMBASE; BIOSIS Previews; Research Council for Complimentary Medicine (CISCOM); and the Cochrane Library. Search terms were ginger, Zingiber officinale and Ingwer. A manual search was performed using the bibliographies of identified studies and reviews and through scanning the authors' own files. Manufacturers of ginger preparations were asked to contribute published and unpublished material. No language restrictions were applied.

Study selection
Study designs of evaluations included in the review
Only double-blind, placebo-controlled randomised trials (RCTs) were eligible. Included RCTs were of cross-over or parallel group design.

Specific interventions included in the review
Studies of ginger monopreparations were eligible. Oral ginger was given in the following doses (where the dose was stated): 1g stat dose; 4 times 250 mg daily for 4 days; or 0.5g or 1g at time of premedication or before anaesthesia. Control groups received placebo or metoclopramide (10 mg). Duration of interventions ranged from one dose to 4 days.

Participants included in the review
Patients experiencing nausea and vomiting were eligible. Participants included the following: cadets with seasickness; pregnant women with severe nausea; patients receiving chemotherapy (compazine) for leukemia; and women after gynaecological surgery including laparoscopic surgery.

Experimentally induced nausea and vomiting were excluded.

Outcomes assessed in the review
Inclusion criteria were not defined for outcomes. The incidence of nausea and vomiting (including seasickness, postoperative nausea and vomiting, and morning sickness) were assessed by methods that included symptoms scores and a four point scale.

How were decisions on the relevance of primary studies made?
All studies were assessed independently by both authors.

Assessment of study quality
Validity was assessed and scored using the following criteria as defined by Jadad: adequacy of randomisation method; blinding; and withdrawals (see Other Publications of Related Interest no.1). The authors met to agree consensus on the assessed data with disagreements resolved by discussion.

Data extraction
Data were extracted in a standardised predefined manner. Tables reported in the review included the following information: author; year of publication; quality score; patient sample and type of nausea; study design; intervention and control; duration of treatment; outcome measures; results; and comment.

Methods of synthesis
How were the studies combined?
Absolute risk reduction (ARR) with 95% confidence limits and number needed to treat (NNT) with 95% CI were calculated using data from studies on postoperative nausea. The other studies were combined in a narrative review.

How were differences between studies investigated?
Differences between the studies were discussed.

Results of the review
Six RCTs were included (439 patients).

Jadad validity scores ranged from 2 to 4 (maximum score 5). Methodological problems included small sample size and lack of power calculation and use of outcome measures of debatable reliability.

Seasickness (one RCT, 80 cadets, one dose of ginger): ginger was associated with a statistically significant reduction in seasickness 4 hours after ginger was given (P < 0.05).

Morning sickness (one cross-over RCT, 30 women, ginger given for 4 days): ginger was associated with a statistically significantly greater symptom relief compared to placebo (P = 0.035).

Chemotherapy induced nausea (one RCT, 41 patients, no details of ginger given): reported a significant reduction in nausea for ginger compared to placebo (P value not given).

Postoperative nausea (three RCTs, 288 women, one dose of ginger given preoperatively): non-significant difference in pooled absolute risk reduction (ARR) for ginger compared to placebo. ARR = 0.052 (95% CI: -0.082, 0.186). NNT = 19 (95% CI included possibility of no benefit). Two of the three RCTs reported benefit (both with Jadad score 3) but the third (Jadad score 4) reported no benefit. The authors could not explain the discrepancies in results. One RCT (120 women having laparoscopic surgery) compared ginger vs placebo vs metoclopramide and reported significantly fewer patients with nausea in the ginger group compared with placebo (P = 0.0006) with rates of nausea and vomiting of ginger 21% vs metoclopramide 27% vs placebo 41%.

Adverse reaction: there were no reports of adverse reactions in any of the included studies.

Authors' conclusions
Ginger was found to be a promising antiemetic herbal remedy, but the clinical data are insufficient to draw firm conclusions. Further rigorous studies are needed to establish whether ginger is efficacious for clinical nausea and vomiting.

CRD commentary
The aims were stated and inclusion criteria defined in terms of study design, participants, and intervention but eligible outcomes were not defined a priori. The literature search included several relevant databases, no language restrictions were applied and attempts were made to locate unpublished material. Methods used to select primary studies were described. Primary studies were limited to double-blind, placebo-controlled, RCTs, validity was assessed and scored using specified criteria and validity was taken into account when discussing the results. Methods used for data extraction were poorly described. Some relevant details of the included studies were presented in tabular format though definitions of nausea and vomiting in the individual studies were not reported. It was not clear whether all the included studies systematically assessed adverse reactions as an outcome. The three studies combined in the meta-analysis reported different results and statistical heterogeneity was not assessed and thus meta-analysis may not have been appropriate. The discussion included consideration of publication bias.

Evidence supports the authors' conclusions.

Implications of the review for practice and research
Practice: The authors report that ginger was found to be a promising antiemetic herbal remedy, but the clinical data were insufficient to draw firm conclusions.

Research: The authors report that further rigorous studies are needed to establish whether ginger is efficacious for clinical nausea and vomiting.

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