Efficacy of ginger (zingiber officinale) in ameliorating chemotherapy-induced nausea and vomiting and chemotherapy-related outcomes: A systematic literature review update and meta-analysis

Crichton, Megan; Marshall, Skye; Marx, Wolfgang; Isenring, Elisabeth

Published in:
Nutrition and Dietetics

DOI:
10.1111/1747-0080.12426

Recommended citation (APA):

General rights
Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

For more information, or if you believe that this document breaches copyright, please contact the Bond University research repository coordinator.
Ginger for Chemotherapy-induced nausea and vomiting?

a systematic literature review and meta-analysis

Megan Crichton
BHSci, MNutr&Diet, APD, PhD candidate
mcrichto@bond.edu.au

Megan Crichton¹, Skye Marshall¹, Wolfgang Marx¹,², Alexandra McCarthy³,⁴, Elizabeth Isenring¹,⁵

¹ Faculty of Health Sciences and Medicine, Bond University, Gold Coast, Queensland.
² Food and Mood Centre, IMPACT SRC, School of Medicine, Deakin University, Geelong, Victoria.
³ School of Nursing, University of Auckland, New Zealand.
⁴ Division of Cancer Services, Princess Alexandra Hospital, Brisbane, Queensland.
⁵ Department of Nutrition & Dietetics, Princess Alexandra Hospital, Brisbane, Queensland.
What’s the issue?

- Fatigue
- Loss of appetite
- Weight loss
- **Nausea + vomiting**
- Decreased QoL
- Depression
- Anxiety
- GI symptoms

- ↓ QoL
- ↓ oral intake
- Malnutrition
- Treatment cessation
- Mortality
Anti-CINV mechanisms for Ginger

Evidence for Ginger for CINV

Ginger (*Zingiber officinale*) and chemotherapy-induced nausea and vomiting: a systematic literature review

Wolfgang M Marx, Laisa Teleni, Alexandra L McCarthy, Luis Vitetta, Dan McKavanagh, Damien Thomson, and Elisabeth Isenring

N=7 studies
Qualitative analysis
Mixed support for use of ginger

Standard recommendations for use of ginger for CINV in the clinical setting **not warranted.**
Study Aim

To evaluate the **efficacy** of **ginger** supplementation in the **prevention** and **management** of **CINV**.
Method

- 5 electronic databases searched
- From database inception to April 2018
- Data pooled (meta-analysis)
- Study quality assessed (Cochrane ROB Tool)
- Quality of body of evidence evaluated (GRADE)
Method – Study Characteristics

**Included**
- Any language
- Age >18 years
- Chemotherapy patients
- Intervention of ginger
- Comparator of placebo or standard care alone

**Excluded**
- Radiation
- Unable to be translated to English
- Receiving other interventions as comparator
Results – Search

Records identified through database searching (n=203)
  Records screened title and abstract only (n=210)
    Duplicates removed (n=89)
    Records excluded (n=84)
  Full-text papers assessed for eligibility (n=37)
    Full-text papers excluded (n=19)
  Papers included in qualitative synthesis (n=18)
  Papers included in meta-analysis (n=13)

Additional records identified through snowballing (n=2)

Additional records identified in previous SLR (n=5)
## Results – Study Quality (Risk of Bias)

<table>
<thead>
<tr>
<th>Study</th>
<th>Random sequence generation</th>
<th>Allocation concealment</th>
<th>Blinding of participants and personnel</th>
<th>Blinding of outcome assessment</th>
<th>Incomplete outcome data</th>
<th>Selective reporting</th>
<th>Other bias</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zick 2009</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Thamlikulikal 2017</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Shokri 2016</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Saleh 2012</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Farhadi 2013</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Mirzaei 2013</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Mozaffari 2014</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Manouchehri 2004</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Marz 2017</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>L 2018</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Pahlami 2017</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Karam 2017</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>danwala 2017</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Bossi 2017</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Arjia 2015</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Alarash 2012</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
</tr>
</tbody>
</table>
## Results – Study Samples

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total No. participants</strong></td>
<td>1652</td>
</tr>
<tr>
<td><strong>Sample sizes</strong></td>
<td>20-375</td>
</tr>
<tr>
<td><strong>Female</strong></td>
<td>64%</td>
</tr>
<tr>
<td><strong>Country</strong></td>
<td>Iran (n=6 studies), Thailand (n=4), USA (n=2), Turkey (n=2), Italy, Indonesia, China, Australia (n=1)</td>
</tr>
<tr>
<td><strong>Cancer</strong></td>
<td>Breast (n=9), lung (n=2), ovarian (n=2), other (gastrointestinal, haematological, unspecified) (n=5)</td>
</tr>
<tr>
<td><strong>CTx type</strong></td>
<td>Platinum-based (n=8); anthracycline-based (n=6); unspecified (n=4)</td>
</tr>
<tr>
<td><strong>CTx emetogenicity</strong></td>
<td>Moderate and/or high (n=8); unspecified (n=10)</td>
</tr>
<tr>
<td><strong>CTx regimen</strong></td>
<td>Single-day (n=6); unspecified (n=12)</td>
</tr>
<tr>
<td><strong>Anti-emetics</strong></td>
<td>Coticosteroid + 5-HT₃ receptor antagonist (n=6); Coticosteroid + 5-HT₃ receptor antagonist + other (n=7); aprepitant + 5-HT₃ receptor antagonist (n=2); unspecified (n=3)</td>
</tr>
</tbody>
</table>
Any dose for >3-days duration significantly reduced odds of overall nausea incidence by 27%.

GRADE level: very low

>1g/day for any duration significantly reduced odds of overall nausea incidence by 42%.

GRADE level: very low
Results – Vomiting Incidence

Any dose for >3-days duration significantly reduced odds of overall nausea by 40%.
GRADE level: low

≤1g/day for any duration significantly reduced odds of overall vomiting incidence by 30%.
GRADE level: low
Limitations

• Clinical heterogeneity
• Missing Data
• Small sample size in some studies
• Limited confidence in estimated effect
Take Home Message

Ginger supplementation for >3-days may improve CINV.
Existing research around dosage remains inconsistent.

...more research!

Megan Crichton | mcrichto@bond.edu.au