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

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Ginger for Chemotherapy-induced nausea and vomiting?

a systematic literature review and meta-analysis

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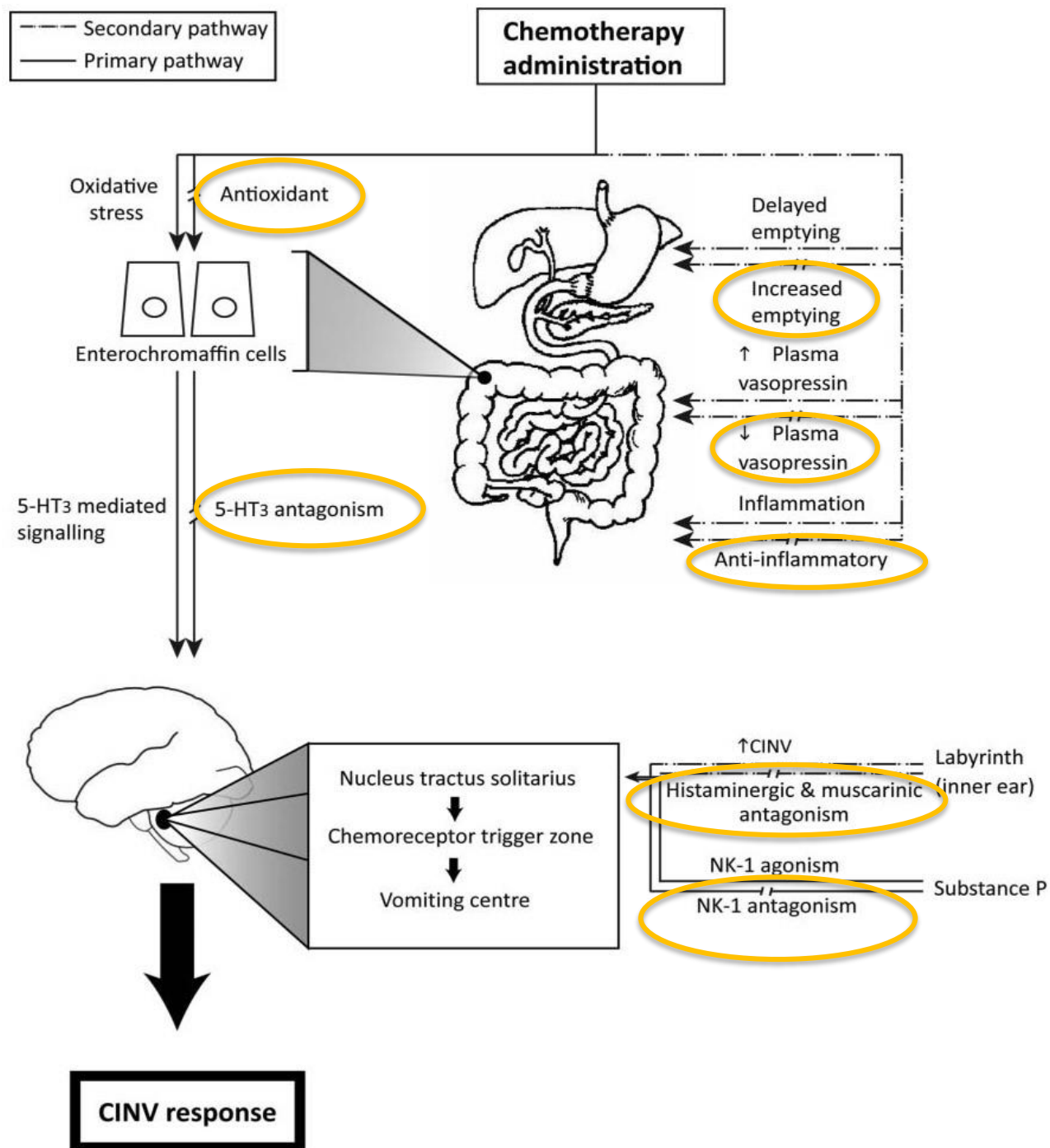
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What's the issue?

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



- ↓ QoL
- ↓ oral intake
- Malnutrition
- Treatment cessation
- Mortality



Source: Marx, W., Ried, K., McCarthy, A., Vitetta, L., Sali, A., McKavanagh, D., Isenring, E. 2017. Ginger – Mechanism of action in chemotherapy-induced nausea and vomiting: a review. *Critical Reviews in Food Science and Nutrition*, 57(1), 141-146.

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

Ginger as an Antiemetic Modality for Chemotherapy-Induced Nausea and Vomiting: A Systematic Review and Meta-Analysis

Jiyeon Lee, RN, PhD, ACNP-BC, and Heeyoung Oh, RN, PhD

N=5 studies

Meta-analysis

No significant effect 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)

Additional records
identified through
snowballing
(n=2)

Additional records
identified in previous SLR
(n=5)

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)

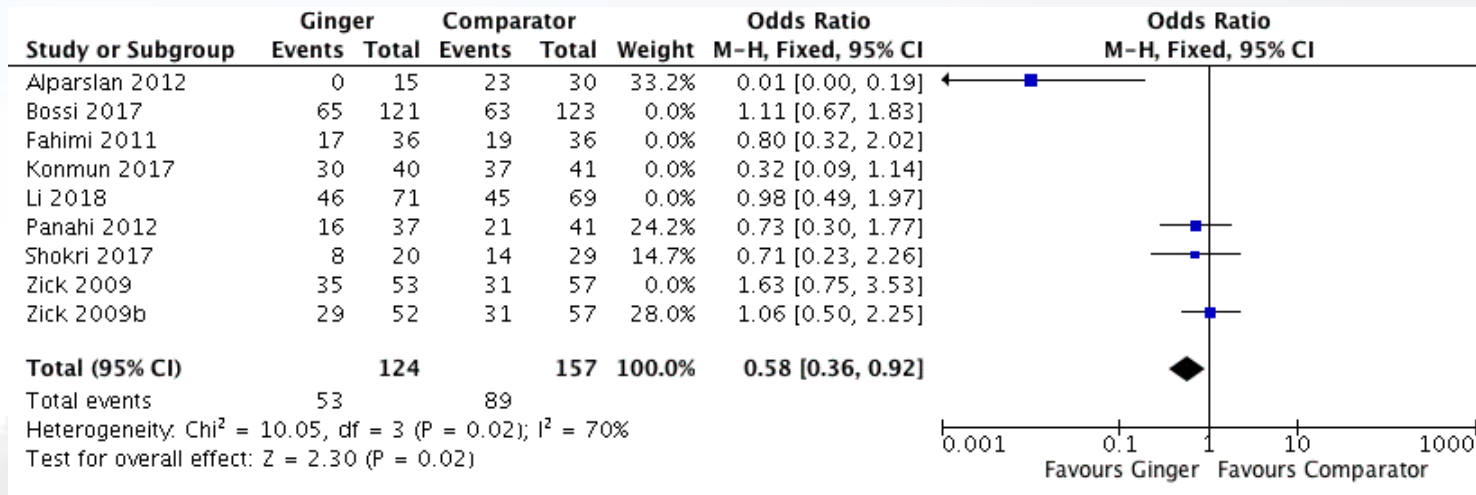
Results – Study Quality (Risk of Bias)

Author (Year)	Random sequence generation (selection bias)	Allocation concealment (selection bias)	Blinding of participants and personnel (performance bias)	Blinding of outcome assessment (detection bias)	Incomplete outcome data (attrition bias)	Selective reporting (reporting bias)	Other bias
Alparslan 2012	?	?	-	-	?	+	+
Arslan 2015	?	-	-	-	?	+	+
Bossi 2017	+	?	+	+	?	+	-
Darwilai 2017	+	?	+	+	+	+	+
Fahimi 2011	?	?	+	+	?	+	+
Kommun 2017	+	?	+	+	+	+	+
Li 2018	?	?	+	+	+	+	+
Manusirivithaya 2004	+	?	+	+	+	+	+
Marx 2017	+	+	+	+	+	?	+
Montazeri 2013	+	?	+	+	-	?	+
Muthia 2013	?	?	-	-	?	+	+
Panahi 2012	-	-	-	-	+	+	+
Ryan 2012	+	?	+	+	+	+	+
Sanaati 2016	+	+	-	-	-	+	+
Shokri 2017	?	?	+	+	?	+	+
Thamlikitkul 2017	+	?	+	+	+	+	+
Yekta 2012	+	?	+	+	+	+	+
Zick 2009	+	+	+	+	+	+	+

Results – Study Samples

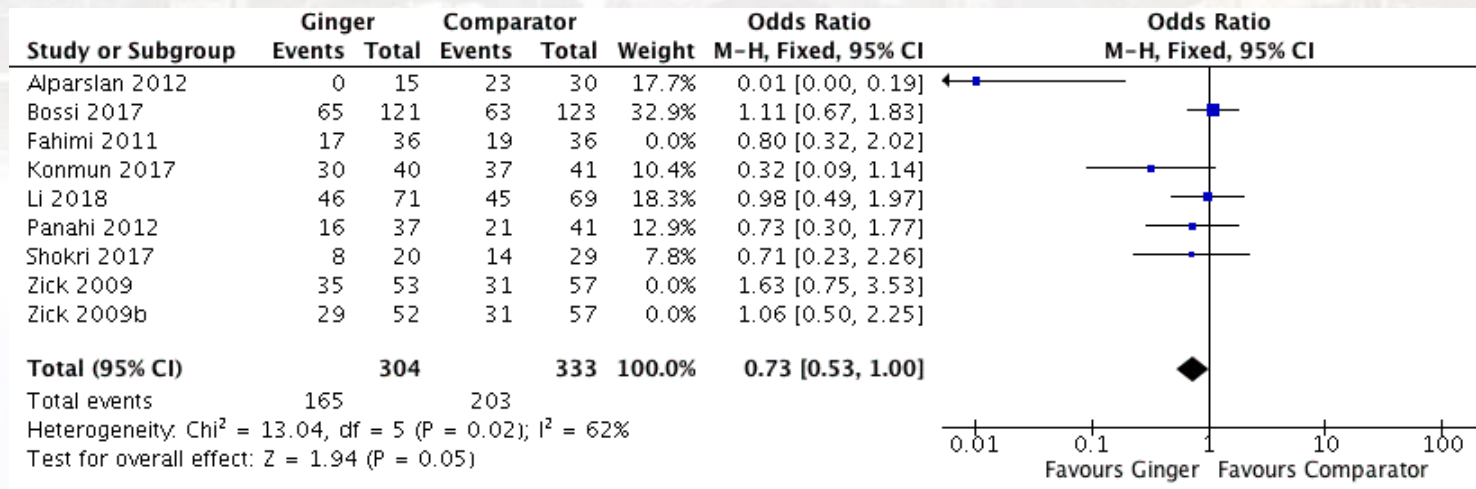
Total No. participants	1652
Sample sizes	20-375
Female	64%
Country	Iran (n=6 studies), Thailand (n=4), USA (n=2), Turkey (n=2), Italy, Indonesia, China, Australia (n=1)
Cancer	Breast (n=9), lung (n=2), ovarian (n=2), other (gastrointestinal, haematological, unspecified) (n=5)
CTx type	Platinum-based (n=8); anthracycline-based (n=6); unspecified (n=4)
CTx emetogenicity	Moderate and/or high (n=8); unspecified (n=10)
CTx regimen	Single-day (n=6); unspecified (n=12)
Anti-emetics	Corticosteroid + 5-HT ₃ receptor antagonist (n=6); Corticosteroid + 5-HT ₃ receptor antagonist + other (n=7); aprepitant + 5-HT ₃ receptor antagonist (n=2); unspecified (n=3)

Results – Nausea Incidence



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

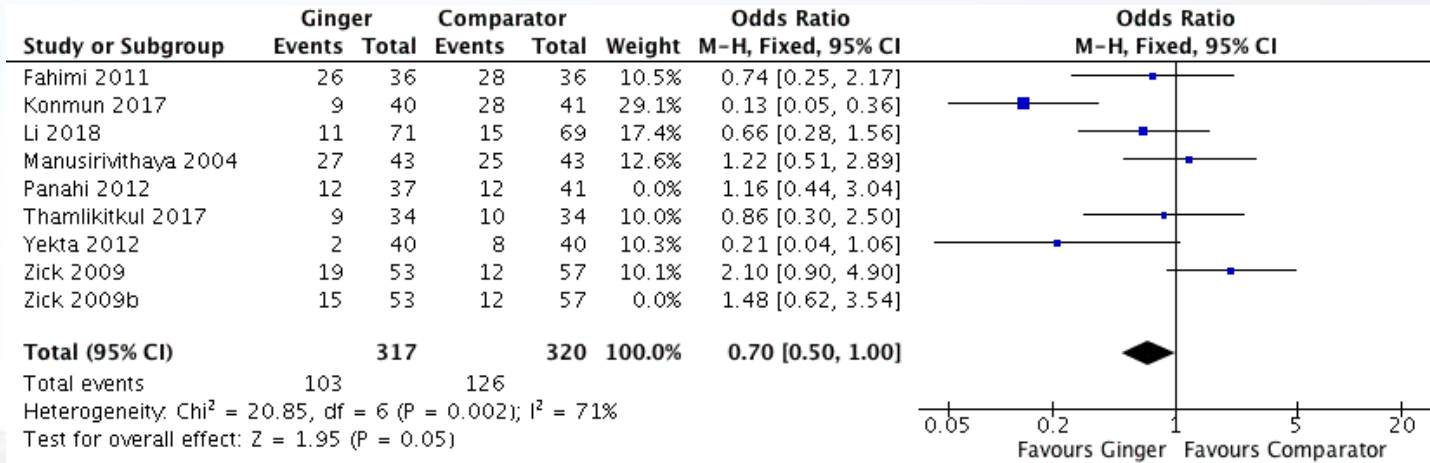
GRADE level: very low



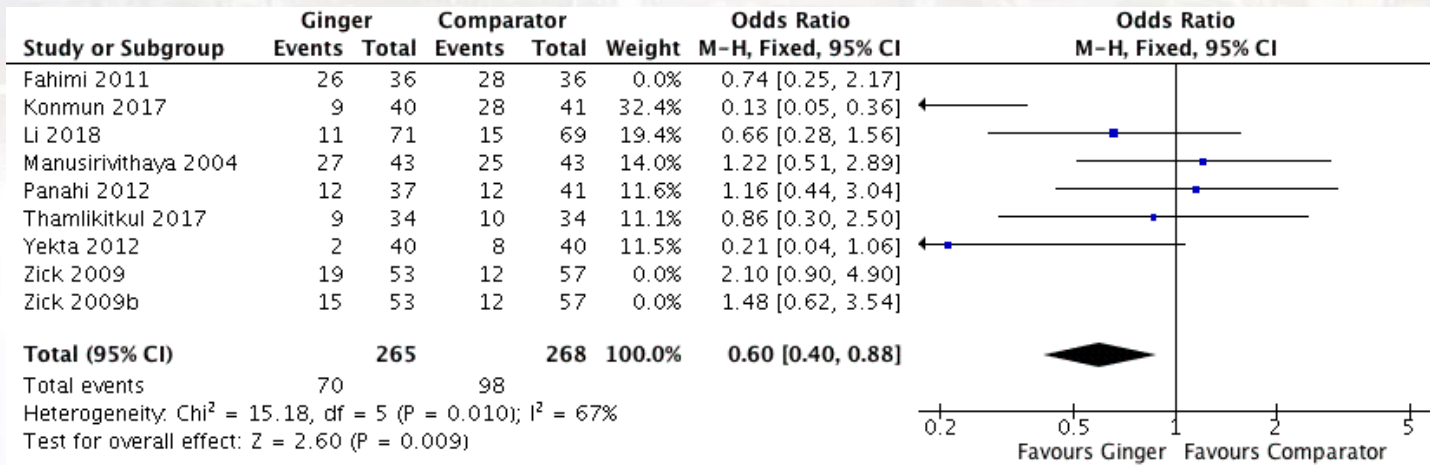
Any dose for >3-days duration significantly reduced odds of overall nausea incidence by 27%.

GRADE level: very low

Results – Vomiting Incidence



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



Any dose for >3-days duration significantly reduced odds of overall nausea by 40%.
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!



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