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

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Purpose/Objectives: To evaluate the effect of ginger as an antiemetic modality for the control of chemotherapy-induced nausea and vomiting (CINV).

Data Sources: Databases searched included MEDLINE® (PubMed), Embase, CINAHL®, Cochrane Central Register of Controlled Trials, Korean Studies Information Service System, Research Information Sharing Service by the Korean Education and Research Information Service, and Dissertation Central.

Data Synthesis: A systematic review was conducted of five randomized, controlled trials involving 872 patients with cancer. Ginger was compared with placebo or metoclopramide. The participant characteristics, chemotherapy regimen and antiemetic control, ginger preparation and protocol, measurements, results of the studies, adherence to the treatment protocol, and side effects were reviewed systematically. The incidence and severity of acute and delayed CINV were subject to meta-analysis. The incidence of acute nausea ($p = 0.67$), incidence of acute vomiting ($p = 0.37$), and severity of acute nausea ($p = 0.12$) did not differ significantly between the ginger and control groups.

Conclusions: Current evidence does not support the use of ginger for the control of CINV. Ginger did not contribute to control of the incidence of acute nausea and vomiting or of the severity of acute nausea.

Implications for Nursing: Ginger has long been regarded as a traditional antiemetic modality, but its effectiveness remains to be established. The findings of this study could be incorporated into clinical guidelines, such as the Oncology Nursing Society's Putting Evidence Into Practice resources. Current evidence supports the need for more methodologically rigorous studies in this area.

Knowledge Translation: Although ginger is known as a traditional antiemetic, current evidence does not support the effect of ginger in CINV control. The findings of this study inform healthcare providers that its effectiveness remains to be established from methodologically rigorous future trials.

Chemotherapy-induced nausea and vomiting (CINV) is a well-known and distressing side effect of chemotherapy. The control of CINV is significantly improved with effective antiemetics such as 5-hydroxytriptamine-3 (5-HT_3) receptor antagonists (RAs), neurokinin-1 (NK-1) RAs, and dexamethasone. The use of currently recommended antiemetic regimens has enabled the achievement of high rates of complete response, which is defined as no emesis and no need for rescue medication (Gralla et al., 2003; Hesketh et al., 2003; Poli-Bigelli et al., 2003). However, considerable numbers of patients report experiencing nausea from chemotherapy. An estimated 36%–62% of patients report experiencing nausea during the delayed phase, defined as 24 hours postchemotherapy, even with concurrent use of a guideline-recommended antiemetic regimen (i.e., aprepitant, palonosetron, and dexamethasone for highly emetogenic chemotherapy; palonosetron and dexamethasone for moderately emetogenic chemotherapy) (Aapro et al., 2010; Celio et al., 2011; Navari, Gray, & Kerr, 2011). Less effective control of CINV during the delayed phase and the symptom of nausea with currently available antiemetics have led researchers to search for nonpharmacologic approaches for improving the control of CINV.

Ginger (*Zingiber officinale*) is a traditional antiemetic, the effects of which have been investigated since ancient times. Studies have found antiemetic properties of ginger as the inhibitory effects of its components (i.e., gingerols and shogaols) at 5-HT_3 receptors (Abdel-Aziz, Windeck, Ploch, & Verspohl, 2006; Pertz, Lehmann, Roth-Ehrang, & Elz, 2011) and cholinergic M_3 receptors (Pertz et al., 2011). An antiemetic effect of ginger in the control of postoperative nausea and vomiting has been supported by a meta-analysis (Chaiyakunapruk, Kitikannakorn, Nathisuwan, Leeprakobboon, & Leelasettagool, 2006). A Cochrane review suggested the possible benefit of ginger in the control of pregnancy-related nausea and vomiting (Matthews, Dowswell, Haas, Doyle, & O'Mathúna, 2010). However, studies regarding the effect of ginger in CINV control have yielded both positive and negative results, making its efficacy uncertain (Dabbour, 2007; Levine et al., 2008; Manusirivithaya et al., 2004; Pace, 1986; Pecoraro,