

# Reduction of Chemotherapy-Induced Nausea and Vomiting: A Pilot Study of Essential Oils in the Autologous Blood and Marrow Transplantation Population

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**BACKGROUND:** Chemotherapy-induced nausea and vomiting (CINV) places a burden on patients receiving blood and marrow transplantation. The effects of complementary aromatherapy on CINV are documented, but more information is needed to implement practice changes.

**OBJECTIVES:** The purpose of this pilot study was to evaluate whether pure peppermint or ginger essential oil reduced the severity of CINV.

**METHODS:** A controlled randomized pilot study was conducted using peppermint oil, ginger oil, and control (canola oil) groups. Nurses applied the assigned oil every four hours. Outcome and patient feedback data were collected.

**FINDINGS:** Twenty patients experienced a level 2 or greater nausea event. Patients in the peppermint oil group were the least likely to experience a nausea event, followed by the ginger oil and control groups. Five patients experienced level 2 vomiting; these events did not differ between groups.

## KEYWORDS

aromatherapy; chemotherapy-induced nausea and vomiting; transplantation

## DIGITAL OBJECT IDENTIFIER

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**CHEMOTHERAPY-INDUCED NAUSEA AND VOMITING (CINV)** can result in metabolic imbalances, the degeneration of self-care and functional ability, nutrient depletion, anorexia, a decline in the patient's performance and mental status (Berger et al., 2017), and, ultimately, nonadherence to the chemotherapy regimen, leading to poor patient outcomes. CINV can be a significant burden on patients undergoing blood and marrow transplantation (BMT). Patients undergoing BMT receive high-dose chemotherapy in preparation for transplantation. Although these regimens include antiemetics, patients may experience acute or delayed CINV.

Autologous stem cell transplantation is a procedure in which a patient's healthy stem cells are collected from the blood or bone marrow before treatment, stored, and then given back to the patient after treatment with radiation therapy or high-dose chemotherapy to replace destroyed stem cells (National Cancer Institute, n.d.). Two frequently used regimens for autologous BMT include high-dose melphalan and carmustine, etoposide, cytarabine, and melphalan with or without rituximab (BEAM+/-R). According to the National Comprehensive Cancer Network (2023), these regimens have a moderate (30%–90% frequency of emesis) to high emetic risk (more than 90% frequency of emesis) (Berger et al., 2017).

## Background and Significance

The use of aromatherapy in oncology settings has been found to enhance quality of life in patients with cancer and control other side effects and symptoms of the disease (Renata, 2012; Toniolo et al., 2021). A systematic literature review found that inhaled peppermint and ginger essential oils alleviated CINV in various populations of patients with cancer (Toniolo et al., 2021).

For patients with breast cancer experiencing CINV, inhaled ginger essential oil can reduce the incidence of CINV, increase health-related quality of life, and increase dietary intake (Lua et al., 2015; Salihah et al., 2016). In a study of patients receiving chemotherapy, patients used inhaled ginger essential oil or a placebo of a ginger fragrance instilled in a necklace placed 20 cm from their nostrils for five days. The results did not demonstrate