

# Efficacy of Crude Marijuana and Synthetic Delta-9-Tetrahydrocannabinol as Treatment for Chemotherapy-Induced Nausea and Vomiting: A Systematic Literature Review

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Using marijuana as medicine is a controversial topic. One of the potential uses of marijuana is to decrease the incidence of chemotherapy-induced nausea and vomiting (CINV). Research on the topic spans decades and may provide useful insight for attenuation of these symptoms. The purpose of this article is to synthesize the literature on the efficacy of crude, or “smoked,” marijuana and synthetic oral delta-9-tetrahydrocannabinol (THC) as treatments for CINV.

## Background

CINV is a significant, well-documented problem. The chemoreceptor trigger zone in the brain activates the emetic center secondary to chemical stimuli in the blood and cerebrospinal fluid. Chemotherapy stimulates the release of neurotransmitters such as dopamine, histamine, acetylcholine, and serotonin that are involved in the emetogenic pathways. The chemoreceptor trigger zone and the emetic center are rich in receptors for these neurotransmitters, resulting in CINV (Carrieri-Kohlman, Lindsey, & West, 2003). The risk for CINV is dependent on the drugs used for treatment. Chemotherapy drugs have varying levels of emetic, or vomit-inducing, potential. The emetogenicity of a chemotherapeutic agent is ranked on a scale of very low to very high and is associated with incidence of vomiting described as a percentage. Very low emetic potential has a less than 10% vomiting incidence, low emetic potential is 10%–30%, and moderately emetogenic is 30%–60%. High emetogenicity is associated with a 60%–90% incidence of vomiting, and very high emetic potential is 90% (Itano & Taoka, 2005). Regimens with multiple drugs can lead to increased CINV because their emetic potentials are

**Purpose/Objectives:** To synthesize the research to determine whether oral delta-9-tetrahydrocannabinol (THC) and smoked marijuana are effective treatments for chemotherapy-induced nausea and vomiting (CINV) and to evaluate side effects and patient preference of these treatments.

**Data Sources:** Original research, review articles, and other published articles in CINAHL®, MEDLINE®, and Cochrane Library databases.

**Data Synthesis:** Cannabinoids are effective in controlling CINV, and oral THC and smoked marijuana have similar efficacy. However, smoked marijuana may not be accessible or safe for all patients with cancer. Also, these drugs have a unique side-effect profile that may include alterations in motor control, dizziness, dysphoria, and decreased concentration.

**Conclusions:** This synthesis shows that cannabinoids are more effective than placebo and comparable to antiemetics such as prochlorperazine and ondansetron for CINV.

**Implications for Nursing:** Nurses should feel supported by the literature to recommend oral synthetic THC as a treatment for CINV to their patients and physician colleagues. Nurses should be cognizant of the side-effect profile for this medication and provide appropriate patient education.

combined. Higher doses of the medications increase the emetic potential, resulting in more severe symptoms (Gullatte, 2001).

CINV is an undesirable side effect; it is distressing physically and may result in decreased quality of life (QOL). Patients may experience nausea, vomiting, or a combination. Nausea may precede vomiting or may occur separately. The sensation of nausea may compromise patients physically by decreasing appetite, leading to poor nutrition or diminished movement that results in muscle decompensation. Nausea may restrict patients' QOL by