

# Mistletoe in Cancer Care: Patient Resource

## What is mistletoe?

European mistletoe (*Viscum album*) is a plant that grows on a variety of trees. It is sometimes recommended to people with cancer as an integrative or complementary treatment. The plant is extracted into a liquid that is used mainly as a subcutaneous (SC) injection or an intravenous (IV) infusion. Mistletoe should only be used under the guidance of a qualified healthcare provider.

## What is mistletoe used for?

Mistletoe is used in cancer care as it may:

- Enhance the immune system
- Support quality of life
- Reduce cancer symptoms and side effects
- Improve treatment outcomes or slow progression

Mistletoe is not used as a cure for cancer. Mistletoe should not be considered an alternative to cancer treatments such as surgery, chemotherapy, immunotherapy, or radiation therapy.

## Does mistletoe work?

Dozens of studies have been done to evaluate the safety and effectiveness of mistletoe as a supportive cancer treatment.

Overall, mistletoe therapy is likely effective in supporting quality of life in people with cancer and reducing side effects of chemotherapy. Results are mixed for tumour response and survival. Some inconsistency may be due to the range of mistletoe preparations, cancer types, and cancer stages evaluated in these studies.

### *Immune response*

In several studies mistletoe has been found to increase

certain white blood cells called lymphocytes including natural killer cells. Mistletoe treatment seems to help decrease the immunosuppressive effects of surgery.

### *Quality of life and symptom management*

Several systematic reviews (large summaries of research) have shown a benefit of mistletoe treatment on quality of life and symptom management across a range of cancer types. Side effects which may be improved with mistletoe include nausea, vomiting, diarrhea, appetite loss, weight loss, pain, and fatigue.

### *Survival and tumor response*

Although several studies have found improved lifespan for people treated with mistletoe, almost an equal number have not found this. Therefore, results are not conclusive and additional research is needed to study any potential effect on survival time.

## How does mistletoe work?

There are two ways mistletoe is proposed to work:

1. Enhancing immune function – mistletoe appears to increase types of white blood cells called lymphocytes including natural killer cells, and to increase circulating compounds including cytokines and antibodies.
2. Directly killing cancerous cells (cytotoxicity) – mistletoe may trigger cell death which may reduce the ability for cancer to grow and spread.

## Is mistletoe safe?

Mistletoe has a very good safety profile. However, there are times when mistletoe therapy may not be safe.

Mistletoe should not be used by anyone with a known allergy or sensitivity to mistletoe. Use is generally not

recommended during pregnancy or breastfeeding due to lack of information on safety. Because mistletoe can stimulate the immune system, it should not be used in combination with immunosuppressant medications.

Mistletoe should be used cautiously in people with autoimmune conditions, although it is likely safe for those with well controlled disease not taking immunosuppressant medication. Mistletoe should be used cautiously in people with brain tumors due to the possibility of inflammation, and in people with acute leukemia due to lack of data.

No studies have found negative interactions with mistletoe and chemotherapy, radiation therapy, or surgery. Preliminary studies have found no harm using mistletoe alongside immunotherapies and targeted therapies, but more research is needed.

Mistletoe should only be used under the guidance of a healthcare provider to monitor for reactions, response, and to administer and/or monitor injections.

### **What are the side effects of mistletoe?**

Mistletoe is generally well tolerated, but there are some common and expected side effects. Most side effects are mild and resolve on their own.

*Subcutaneous injections:* injection site reactions (redness, swelling, itching), fatigue, flu-like symptoms, mild fever, diarrhea, and headache. Severe local reactions at the injection site occur in less than 1% of people.

*Intravenous infusions:* mild fever, itching, weakness, fatigue, re- inflammation of prior injection sites.

Serious reactions are rare but include angioedema, anaphylaxis, hypotension and loss of consciousness, and cellulitis at injection site.

### **What is the recommended dose, frequency, and length of use of mistletoe?**

Mistletoe is available as subcutaneous injections or intravenous infusions. The route of administration, type of mistletoe, maximum dose, and length of use varies based on the individual's cancer type, stage, medical history, goals and preferences, and other cancer treatments. Treatment with subcutaneous or IV administration begins with a low dose to assess tolerability. If mistletoe is well tolerated the dose is increased slowly, generally to a maximum of 200mg for subcutaneous injections or 1000mg for IV administration (higher doses may be used in select circumstances).

Treatment may be used for a few months to years if well-tolerated and positive outcomes are observed.

### **Where can I get more information?**

For more detailed information including references you can read the *Healthcare Professional Mistletoe Monograph* which is found at <https://thechi.ca/research/#research-summaries>. You can also consult with a health care provider such as a naturopathic doctor, medical doctor, or nurse practitioner who is experienced in the use of mistletoe.

### **Disclaimer**

This monograph provides a summary of available evidence and neither advocates for nor against the use of a particular therapy. Every effort is made to ensure the information included in this monograph is accurate at the time it is published. Prior to using a new therapy or product, always consult a licensed health care provider. The information in this monograph should not be interpreted as medical advice nor should it replace the advice of a qualified health care provider