

DMSO for Cancer Treatment Explained: Science of DMSO and How it Works

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Editor

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Many people with cancer want to try anything that can potentially help them fight their disease. Complementary and alternative cancer therapies often do not play a direct role in curing cancer, but they can help patients in coping with the signs and symptoms of cancer and cancer therapies. DMSO is an experimental treatment that has been shown to slow down the progression of cancer in laboratory studies.¹ In this article, we talk about DMSO and the different ways in which it can potentially help cancer patients.

DMSO for Cancer Treatment

Science on DMSO: Can DMSO

cure cancer?

How it Works?

What is Dimethyl Sulfoxide?



What is Dimethyl Sulfoxide (DMSO)?

Dimethyl sulfoxide (DMSO) is a commonly available chemical compound, though it was discovered in a rather roundabout way. [As a byproduct of making paper](#), DMSO is a clear liquid that has the ability to get through barriers such as skin, allowing the body to absorb it.

Since its discovery, scientists have found that DMSO has [many uses, though usually medicinal](#). DMSO has been shown to help with getting past membranes (such as skin), reduce inflammation, offer localized pain relief, and potentially prevent the growth of bacteria. It can be administered in a number of ways, including topically, intravenously (through a vein), and orally.

A primary use of DMSO has been to transport drugs and other molecules through the skin into the body. That's why it's been explored for a range of various purposes, including cancer, [dermatology](#), and pain management.

Despite these potential uses, DMSO is currently only approved by the FDA for the treatment of interstitial cystitis, or inflammation of the bladder. This means DMSO can't be used for other conditions. However, research is ongoing.

How does Dimethyl Sulfoxide (DMSO) work as a Cancer Treatment?

Recent studies of the effects of dimethyl sulfoxide (DMSO) on cancer cells suggested that DMSO could help prevent the growth of cancer cells by activating apoptosis, or normal cell death.

Cells have a specific set of instructions (called the cell cycle) for creating new cells. It helps ensure that cells are created properly and ready to perform their necessary function.

However, these instructions are sometimes missing or incorrect, which can lead to defects in a cell that could become cancerous. Apoptosis is the process by which cells “self-destruct” if they notice any defects while replicating that could cause a cell to become cancerous.

Other studies have shown that DMSO can promote the function of genes designed to stop the development of cancerous cells. Specifically, DMSO could activate certain “**tumor suppressor**” genes, which can help trigger cell death and prevent the proliferation of cancer cells.

While there is a growing body of research indicating DMSO’s potential for cancer treatment, more research, including human clinical trials, is needed before any conclusions can be made about its effectiveness.

Science on DMSO: Can DMSO cure cancer?

There is no evidence that DMSO can cure cancer. It is not approved for over-the-counter use due to a lack of information about potential side effects. However, DMSO has analgesic (pain-relieving) and anti-inflammatory properties. It is also known to trap free radicals that can cause oxidative damage. Oxidative damage is a well-known cause of cancer. Many studies have shown that DMSO has anti-tumor effects, as detailed below:

DMSO stimulates the tumor suppressor protein HLJ1 in lung adenocarcinoma. By up-regulating HLJ1, DMSO can significantly inhibit cancer cell proliferation, invasion, and migration.

Exposure of human carcinoma cells to DMSO in the laboratory was found to cause loss of tumorigenic and metastatic potential (ability to form tumors and spread).

DMSO has demonstrable anti-inflammatory activity. The connection between chronic inflammation and cancer is well understood.

DMSO was found to produce tumor retardation in mouse breast cancer cells. These anti-tumor effects provide insight into potential new avenues in immunotherapy.

DMSO has shown benefit in managing intractable cancer pain.

DMSO can be used to carry anti-cancer drugs further into the skin to effectively treat skin cancers in a less invasive manner.

How does dimethyl sulfoxide (DMSO) help other cancer treatments?

While there is a growing recognition of dimethyl sulfoxide's (DMSO) role in targeting cancer cells and treating cancer at its source, DMSO can also help other cancer treatments work more effectively. In fact, it's more commonly used for this purpose than as a stand alone treatment.

One such use is to treat [chemotherapy extravasation](#), or "leakage," which refers to a scenario where chemotherapy "leaks" from a vein and gets trapped in the surrounding tissue, including the skin.

Many cancer treatment clinics have strict policies and practices in place to prevent leakages from happening, [though it can affect up to 6% of chemotherapy patients](#). When leakage does happen, it can cause swelling in the affected area. Some chemotherapy drugs can even cause tissue damage if left untreated.

DMSO comes in by using its ability to get through membranes like the skin. Some research has suggested that applying DMSO to the skin can help treat chemotherapy leakages by pulling out excess water from cells and blood vessels in tumors.

[Get Help in Finding a Clinic](#)

How is DMSO administered?

DMSO can be administered in a number of ways, including pill form, topically (applied to the skin), or as an IV infusion. You can also get DMSO as an over-the-counter supplement or a prescription.

However, it's important to talk to your doctor before starting DMSO for your cancer. They can walk through the pros and cons of taking DMSO and ensure you take a safe dose, especially if you take medications like blood thinners or steroids. DMSO can make some medications more potent. In the case of blood thinners and steroids, this can cause serious complications.

What are the risks of DMSO?

Dimethyl sulfoxide (DMSO) is an inexpensive, naturally derived, non-toxic solvent that has many therapeutic benefits.

However, there are some caveats to its use. You should not take DMSO if you are pregnant.¹ For the most part, small doses of DMSO appear to be safe. The most common side effects associated with DMSO are mild and transient skin reactions and gastrointestinal trouble. Some patients report a garlicky taste in the mouth and halitosis (bad breath) following the use of DMSO.

Other DMSO adverse effects that have been reported include hypotension (low blood pressure), sedation, agitation, and discoloration of the urine. Animal studies have shown that DMSO can cause neural damage in mice; however, the clinical relevance of this finding in humans is unknown.