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How DMSO Eases Cancer's Hidden Burdens — Chemo, Pain, and Radiation Relief

Analysis by A Midwestern Doctor

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STORY AT-A-GLANCE

- Dimethyl sulfoxide (DMSO), a forgotten gem from the 1960s, effectively treats a broad spectrum of conditions, including strokes, tissue injuries, autoimmune inflammation, a myriad of skin diseases, and many challenging infections
- One of the least-known benefits of DMSO is that it also eliminates cancers (especially when combined with another therapy) and protects the body from damage created by conventional cancer therapies
- In dozens of experiments, DMSO has been shown to prevent the damage radiation does to cells, animals, and humans and to heal existing radiation injuries — something relevant not only to cancer patients but also to those receiving CT scans
- DMSO effectively prevents many of the illnesses and complications that follow chemotherapy. Likewise, it also protects patients from accidental chemotherapy injuries where the medication leaks into the tissue
- DMSO heals surgical wounds (which prevents many complications from cancer surgeries) and significantly extends the survival of patients whose tumors were surgically removed

DMSO is a remarkable naturally occurring substance that (provided it's used correctly[1]) safely and rapidly improves a variety of conditions medicine struggles with — particularly chronic pain. For example, thousands of studies show DMSO treats a wide range of:

- Injuries such as sprains, concussions, burns, surgical incisions, and spinal cord injuries (discussed here).
- Strokes, paralysis, many neurological disorders (e.g., Down syndrome and dementia), and numerous circulatory disorders (e.g., Raynaud's, varicose veins or hemorrhoids), which were discussed here.
- Chronic pain (e.g., from a bad disc, bursitis, arthritis, or complex regional pain syndrome), which was discussed here.
- Many autoimmune, protein, and contractile disorders such as scleroderma, amyloidosis, and interstitial cystitis (discussed here).
- Head conditions, such as tinnitus, vision loss, dental problems, and sinusitis (discussed here).
- Internal organ diseases such as pancreatitis, infertility, liver cirrhosis, and endometriosis (discussed here).
- A wide range of skin conditions such as burns, varicose veins, acne, hair loss, ulcers, skin cancer, and many autoimmune dermatologic diseases (discussed here).

Many challenging infections such as shingles, herpes, chronic ear or dental infections, and osteomyelitis (discussed here). In turn, since I started this series, it struck a chord, and I have received over 2000 reports of remarkable responses to DMSO, and many readers have had for a variety of "incurable conditions."

This begs an obvious question — if a substance capable of doing all of that exists, why does almost no one know about it? Simply put, like many other promising therapies, it fell victim to a pernicious campaign by the FDA, which kept it away from America despite decades of scientific research, congressional protest, and thousands of people pleading for the FDA to reconsider its actions. Consider for example, this 60 Minutes program about DMSO that aired on March 23, 1980:

Video Link

DMSO and Cancer

Since there is a longstanding tendency for any "unproven cancer therapy" to be targeted by the medical industry, once the pioneers of DMSO realized early research showed DMSO was also remarkable for cancer, a decision was made not to focus on that research as a justifiable fear existed that doing so would bury DMSO (particularly since DMSO was already in a precarious position with the FDA). As a result, there is very little knowledge of how DMSO changes the cancer paradigm. For example:

- There are hundreds of studies showing DMSO routinely transforms cancerous cells into noncancerous ones.
- DMSO directly inhibits the growth of a wide range of cancers.
- DMSO allows the immune system to regain the ability to target cancerous cells that have evaded the immune system,[2] which not only eliminates cancer but also can create permanent immunity to cancers.
- DMSO makes many conventional cancer therapies much more potent, both making a cure more likely and a far lower (and thus less toxic dose) dose needed to achieve it.
- Many natural therapies become dramatically more potent when combined with DMSO (e.g., one DMSO combination ranks amongst the most effective cancer treatments I've ever encountered).

Furthermore, in addition to directly eliminating cancers, DMSO's remarkable ability to heal and protect the body can also make challenging cancers far more manageable. In my eyes, the suppression of DMSO's uses as an adjunctive cancer therapy represents the most egregious aspect of this story as in those instances, it's not even competing with cancer treatments — it's just reducing the suffering they cause (which if anything should be good for the cancer business).

DMSO and Radiation Therapy

Many of DMSO's remarkable properties result from it effectively protecting cells from a variety of otherwise lethal stressors (e.g., burns,[3] freezing,[4] blood loss,[5] asphyxiation,[6] UV light,[7] and soundwaves[8]) and it significantly accelerates healing from injuries (e.g., sprains[9] or burns[10]).

In addition to protecting cells from other sources of injury, as early as 1961,[11] DMSO was also recognized to protect cells and tissues from radiation exposure, and by 1967,[12] to protect the skin. This is because DMSO prevents radiation from:

- Breaking apart chromosomes,[13] DNA, RNA, proteins,[14] and the mitochondria.[15]
- Creating damaging oxygen species[16] and free radicals.[17]
- Triggering an immune response (e.g., by reducing IL-1, IL-6, TNF-α, and TGF-β[18]), chronic inflammation, fibrosis, and adhesions.
- Putting cells into senescence[19] (a state of permanent growth arrest).
- Causing normal cells in the vicinity of the affected ones to die as well (e.g., when only 1% of cells are exposed to radiation, approximately 30% of non-irradiated cells will exhibit similar toxic effects too[20]), a fascinating phenomenon I believe is mediated through mitogenic radiation emissions.

Since cancer radiation therapy frequently creates a variety of acute and chronic injuries such as burns, fibrosis, and internal tissue adhesions (all of which DMSO treats), DMSO is incredibly valuable for cancer patients undergoing radiation therapy — particularly since DMSO not only prevents radiation damage but also rapidly heals the injuries radiation creates.[21,22]

Most importantly, DMSO's protective effects are specific to normal cells. In contrast, many studies show it increases cancer cells' susceptibility to radiation.[23]

Note: *I believe our focus on radiation therapy ultimately resulted from mining magnate James Douglas devising a way to produce cheap radium and then giving a large donation (along with subsequent donations) to America's premier cancer institute to create a program for developing cancer radiation therapy that then spread across the world.*[24,25]

Radiation Exposure Studies

Studies have repeatedly shown that DMSO protects cells[26] (particularly when given prophylactically[27]) from being damaged by (often otherwise fatal[28]) radiation. For example, DMSO was shown to protect skin cells from dying after exposure to gamma radiation[29] and make hamster cells four times as resistant to radiation.[30]

These same protective properties have also been found in plants[31,32,33] and many animals (e.g., mice,[34,35,36,37,38,39,40,41,42,43] rats,[44,45,46,47,48,49] rabbits,[50] newts,[51] and fruit flies[52]).

In animals, DMSO was repeatedly found to protect them from otherwise lethal radiation exposures[53,54,55] and protect their skin,[56] tails,[57] oral mucosa,[58] eyes,[59] kidneys,[60] intestines[61] (which are particularly vulnerable to radiation damage), and testicles[62] from radiation damage, along with protecting sperm from mutations[63] and to accelerate tissue cellular regeneration following an injury.[64]

Finally, DMSO was shown to prevent the psychological trauma and behavioral changes rats typically experienced from radiation injuries (presumably by preventing radiation from causing injury[65]).

DMSO also has a remarkable ability to protect and heal the skin from injury,[66] and since 1966,[67] numerous Russian, German, and Japanese studies have demonstrated DMSO's impressive ability to protect human skin (along with its collagen and mucopolysaccharides) from radiation.[68,69,70,71,72,73,74,75,76,77,78,79,80]

For example, DMSO has been shown to treat radiation fibrosis,[81,82] radiation dermatitis,[83] radiation injuries[84] and other local radiation complications.[85]

Note: *While DMSO can treat radiation injuries, it is the most effective if given immediately beforehand to prevent radiation injuries.*[86]

DMSO has also been shown to protect tissues besides the skin. For example:

- In 80 patients who'd developed late local radiation complications (induration, ulcers) from the treatment of breast or genital cancer (or a noncancerous disease) DMSO resulted in both a high efficacy of treatment with no side effects.[87]

- In 22 patients with cervical cancer topical found DMSO prior to internal gamma-ray radiation therapy prevented the normally expected radiation burns and other toxic reactions to the treatment (e.g., in the bladder and rectum) seen in 59 controls and that DMSO did not protect cancerous tissue.[88]

- In 807 patients with cervical uterine cancer, putting 10% DMSO into the bladders an hour before receiving weekly internal irradiation therapy, dropped the radiation damage to the rectum from 19.0% to 9.5% and to the bladder from 8.8% to 7.1% (both of which dropped to 1.7% if metronidazole was also used).[89]

- In another study, DMSO had a 50% success rate in treating patients which chronic radiation cystitis (e.g., from prostate cancer therapy).[90] Likewise, a 1979 study also used DMSO to treat radiation cystitis.[91]

- In 22 breast and cervical cancer patients, DMSO protected them against radiation dermatitis (e.g., erosion, blistering, itching, and pain) while also enhancing cancer sensitivity to radiation (as the DMSO treated areas showed skin reddening and exfoliation earlier) and accelerating the regrowth of normal tissues.

  Additionally, when DMSO was only applied to one side, the non-applied side did worse, the hyperpigmentation that follows radiation therapy was greater in DMSO treated patients, and that only one of the 22 patients had to stop DMSO (due to having a skin eruption which may have been linked to DMSO).[92]

- This author detailed a case of a patient with lung cancer that was treated with three months of radiation therapy but severely damaged her lungs (making her require oxygen and leaving her unsure if she'd survive) — but after topical and oral DMSO, she had a rapid recovery.

  Likewise, he also shared a case of another woman with lung cancer who was expected to have significant lung complications from the treatment (as she required a borderline lethal dose), but took topical DMSO prior to each treatment and instead had no complications and was fully healthy three years later.[93]

It is thus quite remarkable that all of this remains unknown. To quote the author of a 2022 study[94] which found DMSO prevented testicular damage (and loss of hormonal function or fertility) following radiation therapy:

> *"Currently, there is no approved agent for the prevention or treatment of radiation-induced testicular injury ... In summary, our findings demonstrate the radioprotective efficacy of DMSO on the male reproductive system, which warrants further studies for future application in the preservation of male fertility during conventional radiotherapy and nuclear accidents."*

Similarly, in addition to the higher doses experienced from radiation therapy, diagnostic radiation, specifically CT scans (which expose the body to much higher radiation doses than X-rays) also pose a cancer risk — particularly since the dose of radiation with CT scans can have over a 10-fold variation.[95]

In turn, a CT scan was found to make you 17% to 24% more likely to develop cancer,[96] with the risk increasing[97] the younger you were at the time of the scan and is much higher for certain types of cancers.[98,99,100,101,102] A 2009 study estimated 29,000 cancers were caused by the CT scans performed in America in 2007.[103]

As such, I avoid CT scans, which I do not feel are essential (particularly since a detailed physical exam frequently provides more actionable information). It is my sincere hope at some point in the future, DMSO will be given in conjunction with CT scans (but

unfortunately their use keeps going up, and they are viewed as a highly lucrative growth market[104]).

Tumor Surgery

Since DMSO rapidly accelerates the healing of tissue and addresses the neurological components of pain, **many studies have found that DMSO greatly facilitates surgical recovery** (e.g., by accelerating healing, improving the strength of the final scar, reducing surgical site pain and eliminating fibrosis, enlarged scars, or tissue adhesions).

As cancers are frequently treated with surgical removal, DMSO can also greatly aid the recovery from these surgeries (e.g., in dogs that required a unilateral mastectomy, giving IV DMSO 15 minutes before the surgery's conclusion significantly reduced post-surgical inflammation[105]).

Likewise, studies such as a 1992 trial[106] of 198 patients with Stage III colon cancer, and a 1992 trial[107] of 228 patients with stomach cancer found DMSO significantly reduced the chance that those cancers would relapse.

Extravasation Injuries

Since the medical field has been extremely reluctant to consider any alternative cancer treatment that could threaten its bottom line (regardless of how much data is behind it), DMSO has essentially not been utilized in the treatment of cancer. However, there is one exception to this rule, as DMSO is able to address a challenging issue encountered with chemotherapy without threatening the existing market.

Since many chemotherapy drugs are quite toxic, they have to be administered in a tightly controlled manner. Unfortunately, in many cases however, the drug gets through the injected vein (extravasates) and leaks into the surrounding tissue.

Note: *Since extravasations are often not reported, estimates widely vary on how common they are (e.g., according to one study, in 0.1% to 6% of adults who receive chemotherapy[108] while another made a compelling case extravasations occur in 39% of patients[109]).*

Due to how toxic some of the chemotherapy drugs are (particularly the anthracyclines), when that leakage occurs and the drugs concentrate in one area, it can often cause significant damage to the surrounding tissues and lead to ulceration or necrosis (tissue death).

Since the existing treatments don't always give satisfactory results and DMSO **is extremely effective at healing a wide range of tissue injuries**, it eventually got used as a treatment for these injuries and quickly caught on. For example:

- A 1981 rat study of doxorubicin extravasations showed that daily topical applications of 1 ml 90% DMSO with 10% α-tocopherol significantly reduced ulcer diameter.[110]
- A 1982[111] and 1986[112] study tested numerous agents on ulcers created by applying intradermal doxorubicin to pigs and rats and found DMSO was the only agent that prevented or healed those ulcers.
- A 1984,[113] 1987,[114] and 1994[115] pig study along with a 2007 rat study[116] also found DMSO treated or prevented extravasation injuries.

Likewise, in humans:

- A 1983[117] case report, another 1983 case report,[118] a 1989 series[119] of 4 patients, a 1991 series[120] of two patients, a 1994 series of two patients[121] and a 2001 case report[122] reported that DMSO prevented extravasations from causing ulcerations of tissue death or healed existing injuries (e.g., with "striking" improvement).
- A 1988 study gave topical DMSO for anthracycline extravasations every 6 hours for 14 days to 20 patients, which prevented all of them from developing ulcerations. In the 14 who were evaluated at 3 months, there was no sign of residual damage in six

patients, while a pigmented indurated area remained in ten.[123]

- A 1995 study gave topical DMSO (for 8 hours a day over 7 days) alongside 3 days of intermittent cooling to every patient who experienced an extravasation over a 3.5 year period (which was either from doxorubicin, epirubicin, mitomycin, mitoxantrone, cisplatin, carboplatin, ifosfamide, or fluorouracil).

  Of those 144 patients, 127 could be evaluated, of whom only 1 ultimately developed an ulceration from the extravasation, and none experienced side effects from DMSO (beyond temporary skin irritation and a breath odor).[124]

- A 1996 study of ten successive patients who experienced extravasation from chemotherapy were given DMSO and alpha-tocopherol, all of whom avoided ulceration or tissue death.[125]

- A 2004 study of 147 patients with extravasations of anthracyclines (which typically leads to 28% developing ulcerations), found 99% DMSO caused only 1% to 2% of them to develop ulcers.[126]

- A 2007 study explored applying DMSO and α-tocopherol as a gel rather than a liquid solution to treat extravasation injuries (which appeared to hold promise).[127]

Chemotherapy Injuries

In addition to addressing extravasation injuries, DMSO has also:

- Been found to prevent doxorubicin cardiac toxicity.[128]

- Successfully treated palmar-plantar erythrodysesthesia resulting from doxorubicin treatment.[129]

- Prevent the skin death that is often associated with injecting doxorubicin into the eyelid (which is done to treat eye spasms).[130]

- Protect against birth defects caused by hydroxyurea.[131]

- Reduce the carcinogenicity of chlorambucil (which often causes a secondary tumor to form after the initial treatment).[132]

- Decrease the lung injuries (e.g., pulmonary fibrosis) and weight loss caused by bleomycin.[133,134,135]

DMSO has also been found to improve many other symptoms associated with chemotherapy (e.g., DMSO **is frequently used to treat hair loss** from a variety of causes, including chemotherapy) since it saves normal cells on the verge of dying following chemotherapy.

Note: *We find* ***Ultraviolet Blood Irradiation following chemotherapy*** *to be the most effective option for protecting a patient's healthy cells from dying.*

Cancer Pain

Cancer (and its treatments) are often accompanied by many other debilitating symptoms, including pain — which is so severe that opioids, rather than being restricted, are routinely used to treat it (e.g., fentanyl is often used to treat advanced cancer pain — but in 10% to 20% of patients the pain is severe enough that even the strongest opioids can't address it[136]).

Since DMSO has a rather unique mechanism of treating pain, it is often able to treat a wide range of challenging pain conditions nothing else works on (e.g., I've now had hundreds of readers **share life-changing pain improvements** from topical DMSO nothing else they'd tried had ever worked on). As such, many over the years have found it provided incredible relief for metastatic cancer pain.

One of the most well-known examples was Otis Bowen MD (a popular second-term Indiana governor), who "illegally" used topical DMSO to treat his wife's pain from terminal multiple myeloma and then publicly denounced the FDA's absurd embargo on it at the AMA's 1981 national meeting.[137]

Remarkably, a few years later, Bowen became Reagan's Secretary of Health and Human Services. Still, even then, with this highly ethical doctor at the helm of the HSS, DMSO was unable to overcome the FDA's prohibition of it — which helps to highlight the incredible challenge RFK Jr. is now facing (but gradually surmounting). Likewise, a few studies have shown that DMSO can treat cancer pain:

- A 1967 study included two older patients with cancer pain, one of whom had an excellent response to DMSO and one who had a good response.[138]
- A 1967 study found that of 7 patients with metastatic cancer pain, DMSO gave 2 full and 2 partial remission.[139]
- A 2011 trial gave DMSO and sodium bicarbonate to 26 patients with advanced cancers who were experiencing significant pain (even with all the available treatment options).[140] This greatly improved their pain, their quality of life (e.g., chemotherapy symptoms), their blood counts, and their organ function:

	Day of treatment					
	3	10	20	30	60	96
Reduction in medication use for pain in%	46%	68%	69%	74%	81%	83%
Number of patients who needed morphine (Baseline: 26 patients)	12	6	5	2	0	0
Number of patients achieved pain score reduced by ≥20%	13	18	21	25	23	24
Number of patients with reduction of ≥20% medication use for pain	15	19	22	23	24	25

	Number of patients with symptoms (of a total 26 patients)						
Symptoms	Baseline	Day 3	Day 10	Day 20	Day 30	Day 60	Day 96
Fatigue	18	13	11	8	6	6	5
Headache	10	6	4	4	3	2	2
Fever	7	5	3	2	0	0	0
Confusion	9	6	4	0	0	0	0
Depression	7	5	3	3	3	2	2
Anorexia	10	8	6	5	3	3	2
Constipation	11	8	6	5	5	4	3
Nausea	13	10	6	4	2	3	3
Vomiting	6	3	2	0	0	1	1
Bleeding	5	3	2	1	0	0	0
Pruritus	5	2	1	0	0	0	0

Note: *A 2010 paper further discusses DMSO's ability to treat intractable cancer pain.*[141] *It highlights that this may be due to DMSO's ability to address membrane hyper-excitability (e.g., through suppressing NMDA and AMPA induced ion fluxes — which are linked to central pain sensitization*[142,143] *and may explain why DMSO also effectively treats complex regional pain syndrome*[144]*).*

Conclusion

DMSO's ability to heal the body and restore its normal function transformed the practice of medicine, and had the FDA not buried DMSO sixty years ago; our medical science would be leaps beyond where it is now. In this article, I've tried to show how DMSO helps to address one of the most challenging decisions many will face in their lifetimes — is it worth tolerating the immense damage conventional cancer therapies will cause in return for them saving one's life?

As such, it's unconscionable that DMSO was never incorporated as an adjunctive therapy for conventional cancer care, particularly in the case of radiation therapy, since a vast body of literature shows simply applying it shortly beforehand can prevent most of the complications from radiation therapy and significantly increase its ability to treat cancer.

However, while it has been immensely painful to watch the unnecessary suffering created by our outdated and pathological medical practices, for the first time in my life, I am simultaneously immensely hopeful. That is because Make America Healthy Again has created the window to spark the momentum to begin revisiting many of our long accepted medical practices and have our society ask if there is actually a better (or more affordable) way to do things.

Author's Note: *This is an abridged version of* ***a longer article*** *that reviews how DMSO also directly treats cancer (e.g., by turning cancer cells back into normal cells or mobilizing the immune system to eliminate them) and how it greatly enhances the effectiveness of both conventional and natural cancer therapies (along with guidance for using DMSO to treat cancer and many other related conditions). That article can be read* ***here****.*

A Note from Dr. Mercola About the Author

A Midwestern Doctor (AMD) is a board-certified physician from the Midwest and a longtime reader of Mercola.com. I appreciate AMD's exceptional insight on a wide range of topics and am grateful to share it. I also respect AMD's desire to remain anonymous since AMD is still on the front lines treating patients. To find more of AMD's work, be sure to check out The Forgotten Side of Medicine on Substack.

Sources and References

- [1] See all references