

## DMSO – The Persecuted Drug

Dr. Stanley Jacob

A New York Times editorial on April 3, 1965 called DMSO the closest thing to a wonder drug produced in the 1960's. There was a great deal of publicity and controversy about DMSO in the 1960's and 1970's. On March 23 and July 6, 1980, Mike Wallace had two **60 Minutes** programs on DMSO.

***The Persecuted Drug – The Story of DMSO*** (from which the title of this chapter was borrowed) was written in 1972 by the late Pat McGrady Sr. In the opening of his book he wrote:

*This is the story of a drug which was glorified briefly as having almost panacean properties for the ailments of man and beast and diseases of plant life and then was banished by high United States authorities (the FDA) as dangerous and without merit.*

This is also the story of a mild-mannered scientist (Dr Stanley Jacob) who challenged the law and defied the officials and their police in a soul-searing struggle to make the drug available wherever there is life.

The drug is known as DMSO, or dimethyl sulfoxide (a liquid). It has been championed by reputable physicians as capable of healing or palliating many ailments. It has been represented as a “wonder drug” or a “miracle drug”. It is abundant; it can be extracted from such sources as coal, oil, or most commonly lignin, the material nature uses to cement cells together in trees; it

is cheap; it is most often administered by simply dabbing it on the skin, and, alone or as a carrier for other drugs, which DMSO often potentiates, it penetrates the skin to enter the blood stream where it is borne to all parts of the body.

Scientists contend that the (thousands of) papers published in professional journals refute virtually all the FDA charges.

On July 31, 1980, Senator Mark Hatfield of Oregon testified at a hearing of Senator Edward Kennedy's subcommittee on health:

*I cannot make an absolute statement that DMSO is indeed the wonder drug of our century; but every bit of evidence I encounter reinforces the premise that it is. After 1,200 scientific publications on the merits of DMSO, after international symposia in Germany, the U.S., and Austria – all concluding that DMSO is safe and effective – after three separate pharmaceutical firms have submitted for new drug applications to the FDA (all rejected), DMSO is still not available to Americans, although it is available in many other countries. I have urged the Senate to support my legislation (to approve DMSO) on behalf of all Americans who are suffering from diseases untreatable by any other known substance and those who may have need of this drug in the future.*

Strokes are the third biggest killer in the U.S., causing over 150,000 deaths a year. They are also “the primary

cause of serious disabilities”, U.S. News reported on March 30, 1998, “leaving 3,000,000 people annually unable to work or take care of themselves”. If given soon after a stroke, DMSO, one of the world’s greatest solvents, has been shown to dissolve the clot that causes the stroke, thus restoring circulation and avoiding paralysis. How soon? Dr. Stanley Jacob says within the first few hours is best and intravenously is better than oral, but oral works too. Once DMSO gets into the body either daubed on the skin, given I.V., or by mouth, it permeates the body and crosses the brain barrier, so even taken orally it can improve circulation. One man who had a stroke at 7:30 AM refused to go to the hospital until after his wife had spoken with Dr. Stanley Jacob, which didn’t happen until 6:30 PM. Starting at 7 PM the day of the stroke, she gave him one ounce of 50% DMSO in a little orange juice every 15 minutes for two hours and then every half hour for two hours. The next day, her husband was better and soon returned to normal. A substance that can stop a stroke as it’s happening is something many might want in their home medicine chest.

Neurosurgeon Dr. Jack de la Torre is professor of physiology and neurosurgery at the University of New Mexico in Albuquerque. He and Dr. Jacob believe that DMSO should be in every ambulance and emergency room so as to start giving it intravenously to stroke victims in the ambulance as soon as picked up or, at the

latest, as soon as the patient arrives at an emergency room. If such were the established practice, the number of people dying or incapacitated from strokes would plummet.

Not only would many lives be saved, but also the awful hardship of paralysis or loss of speech might be prevented. A stroke, even survived, can often bring a person's effective life to an abrupt halt. The savings to the medical system would be astronomical. The cost of the product: pharmaceutical grade DMSO retails at \$30-40 a gallon.

*DMSO's ability to stop strokes is only its most dramatic and unappreciated attribute, and the one which would save the most lives, the most suffering, and the most money.*

A close second is DMSO's effectiveness with head and/or spinal cord injuries. Dr. de la Torre states there are around 1,000,000 head injuries each year. Of these about 500,000 are hospitalized with 50-80,000 being severe, another 50,000 moderate, and the rest less serious. Of the 50,000 severe, 60-70% either die or have severe continuing neurological problems (i.e., paralysis), a multi-billion dollar a year expense.

Research in animals indicates to Dr. de la Torre that if Christopher Reeve had been given DMSO intravenously immediately after his accident, he might never have been paralyzed. Dr. Jacob first has given DMSO intravenously

to people who were already paralyzed – paraplegics – and little by little they regained use of limbs. One man, quadraplegic, recovered enough to go through college and then to work in a bank.

A recent study in Turkey combined DMSO with fructose diphosphate. In 20 patients with head injuries, the combination proved very effective in decreasing intracranial pressure. De la Torre declares that in his experience, nothing reduces intracranial pressure faster than DMSO. Animal tests in the 1960's and then human tests on prisoners in 1967 demonstrated that DMSO is non-toxic, indeed, less toxic than aspirin.

In Dr. de la Torre's tests on dogs, injuries that normally would have caused paralysis healed completely when DMSO was given. The mechanisms of action by DMSO are much the same in both strokes and spinal cord injuries. In DMSO, ***Nature's Healer***, Dr. Morton Walker summarizes Dr. de la Torre's testimony to Congress in 1980 on DMSO's methodology, based on his research with the drug which began in 1971:

*DMSO permits and promotes better blood flow by dilating blood vessels, thus increasing the delivery of oxygen and by reducing blood platelet stickiness.*

Because DMSO dilates blood vessels, carotid artery blood flow to the brain increases after DMSO is given intravenously.

After I.V. administration of DMSO, there is an elevation in the amount of spinal cord blood flow to the region of

trauma. One of the first things that happens after spinal cord trauma is that a reduction of oxygen and blood flow sets in, inasmuch as the blood vessels constrict or shut down... Without some treatment, the tissue swells. Eventually, this leads to paralysis. In a cerebral stroke, the animal will either become comatose or lethargic or die. With DMSO infusion immediately after injury (or stroke) all this is prevented.

Thirty minutes after giving DMSO I.V., there is an increase in the flow of cortisone, a natural body substance which helps fight off effects of trauma, even though the animal being tested had already stopped secreting cortisone. DMSO crosses the blood-brain barrier, enters the brain, picks up water from an injury, and rushes it out of the system, thus relieving intracranial pressure.

In animal tests, the animals are brought to a point where the electroencephalogram reading becomes flat, just preceding brain death... Ten minutes after injection of DMSO, the electroencephalogram returns and the brain becomes active again.

Dr. Walker adds, "DMSO tends to protect nerve cells... following injury. It provides better protection than any other treatments. Scientists have verified this by observation with the electron microscope and the light microscope. Thus DMSO prevents the paralysis that may ensue following trauma; it alters the severe effects seen after a brain stroke".

Drs. Jacob and de la Torre believe that DMSO is the

treatment of choice in strokes and note that de la Torre's work has been confirmed by at least three different groups of investigators in other parts of the country. They also believe that the combination of DMSO with fructose diphosphate should be the treatment of choice in spinal cord and closed head injuries, where the fructose diphosphate provides energy to help restore damaged tissue.

Dreaded Alzheimer's disease will also be another area, they expect, where the combination of DMSO and fructose diphosphate (patented by Dr. De La Torre) will become the treatment of choice, the fructose diphosphate being carried across the blood brain barrier by the DMSO to help restore energy to a deteriorating brain.

In experiments with rats, Dr. de la Torre has combined L-dopa with DMSO, which carries the L-dopa across the blood brain barrier into the brain where it becomes dopamine and turns off the part of the brain which causes the trembling and other symptoms of Parkinson's.

While strokes are the third largest killer in the US, heart attacks kill the most people – about 3/4 of a million per year. Remembering DMSO's ability to dilate blood vessels and improve blood flow, it is not surprising that South American research indicates that DMSO is effective in heart attacks and angina; prompt use of it in heart attacks has been credited with preventing damage

to heart muscle. Reporting this in his book, Dr. Morton Walker says, “There is a crying need for research on the use of massive doses of DMSO (2 grams per kilogram of body weight) in the treatment of heart attacks”.

***If DMSO is that good, then where is it? Why can't we get it? Why isn't it used? That is another story, and a sad one when one thinks of the suffering that could have been relieved or avoided if research in DMSO had not been stifled by the FDA.***

But this story isn't over yet. DMSO, in addition to being a very safe and effective non-toxic drug, is also a commercial solvent used in many industrial processes. Unlike Koch, Rife, or Krebiozen, it cannot be stamped out since it can easily be bought in many hardware stores. Everyone involved in DMSO research is upset at private use of commercial grade DMSO for any medical purpose, and with good reason since it contains impurities. However, people suffering from [arthritis](#) or other pains have taken matters into their own hands. There is a large underground market in the substance, and pharmaceutical grade can frequently be found, not sold for healing purposes, of course. Cutting in half or less the time to heal sprains, many athletes count on it. It's legal for veterinarians to use in dogs, cats, and horses.

It should have been otherwise. DMSO should be a prescription drug available to doctors for general use, as it is in Europe. Instead, it is approved by the FDA for use in humans in just one rare disease, a painful bladder condition called interstitial cystitis. ***The health uses of DMSO make it one of the most versatile substances ever found – a wonder drug indeed.*** It

was discovered in 1866 by Russian scientist Dr Alexander Saytzeff, who noted in a paper he published in a German medical journal the following year that it would dissolve virtually anything combined with it.

Entering the body either painted on the skin, taken orally, or via I.V., DMSO rapidly penetrates the cells and cleans them of toxins, a desirable mechanism which may explain much of its versatility.

Athletes still know about DMSO. June Jones, once quarterback and later coach of the Atlanta Falcons pro-football team, knows of DMSO. His career almost didn't happen, he told the House of Representatives Committee on Aging in 1980, which was investigating why the FDA was still telling people that DMSO was dangerous. With a bursitis calcification in his right shoulder, he could hardly lift his arm, let alone throw a football. From Oregon, he was aware of DMSO and of Dr. Stanley Jacob, and had used DMSO for sprains, like thousands of others. So he went to Dr. Jacob, who gave him a shot of DMSO in the shoulder and told him that the calcification might disappear if he used DMSO for 30 days straight. He followed instructions and it did disappear. The FDA still has not approved DMSO for sports medicine.

Former Oregon Governor Tom McCall knows about DMSO. Stricken suddenly by bursitis in 1963, two daubings of DMSO on his shoulder put an end to the problem as the DMSO dissolved the calcification that

caused the painful condition.

***A byproduct of wood pulp production, this “tree juice” as the late Pat McGrady called it, helps so many human problems that one is reminded of the Book of Genesis, where God said that He had placed on the Earth something for every human condition. It takes us awhile to figure some of them out, and then even longer to clear away the man-made obstacles to their use.***

In 1960, Robert Herschler, chemist and chief of research at Crown Zellerbach, a huge paper and pulp manufacturer near Portland, found an inexpensive way to produce DMSO as a byproduct of the pulp industry. He noted that the chemical had a remarkable ability to penetrate the skin and spread throughout the body very quickly. By itself not toxic, ***Herschler learned that when DMSO is put together with something toxic, there can be problems if the combination is put on the skin or ingested. Since DMSO is a solvent, he and an assistant regularly washed their hands in it until the day he did so after having handled pesticides and became quite sick.***

To this day, after many hundreds of thousands, probably even millions of people have been treated with DMSO and thousands of studies have been done, this is the only danger associated with DMSO, ***beware of what you mix it with.***

Realizing there could be medical possibilities in DMSO, in 1961 Herschler got permission from his superiors to check with the University of Oregon Medical School in Portland, and was introduced to Stanley Jacob. The

meeting made medical history. Dr. Stanley Jacob, brilliant graduate (in surgery) of Harvard Medical School and professor of surgery on the faculty of the University of Oregon Medical School, had published 40 papers in prestigious medical journals before he heard of DMSO. Holder of numerous academic and professional honors, he was already a pioneer. Heart transplants were still the stuff of science fiction in 1961, but even then Jacob and his associates were getting puppy hearts to beat in mature dogs for several days, and he was looking for ways to preserve them. He found it in DMSO, which is now used worldwide for storage of organ transplants. After hearing about DMSO from Robert Herschler, Jacob painted some on his arm and within moments became aware of its oysterish taste in his mouth. He knew that this meant that the substance had not only quickly penetrated his skin but that it had gone into his bloodstream and permeated his entire system. He realized that this could mean an entirely new medical principle for delivering medicines. As Pat McGrady put it, DMSO “was to change Stanley Jacob’s life and what he learned about it was to change the lives of many others and had the capacity to change many more”. Dr. Jacob and Herschler devised numerous experiments, one showing that mice which had sustained burns were more comfortable after being daubed with DMSO. Herschler soon profited from this knowledge. After an accidental chemical burn on his hands, arms, and

forehead, he called Jacob. "Apply DMSO on one side and see what happens", Jacob told him. Herschler called him back in 15 minutes, "The pain stopped. Now I'm going to do the other side". A few weeks later, one of Herschler's assistants sprained an ankle. In 15 minutes after DMSO was applied, the pain was gone and in 30 minutes the swelling as well.

Someone complained to Dr. Jacob of a splitting headache and gave him permission to apply some DMSO after hearing of its capabilities. The headache was gone in minutes, came back in four hours, and left for good after DMSO was applied a second time. Used for one purpose, sometimes it did another; put on a cold sore, within a few hours it cleared up a woman's sinusitis. A woman who had had a stroke found after DMSO was painted on her painful jaw that she could now write with her paralyzed hand and could walk better. Dr. Jacob found that it could also suppress inflammation.

The tree juice worked in trees, too. Withered old apple trees became youthful and full of leaves after DMSO was injected under the bark.

Applying DMSO where it hurt to a six-year-old wasted from rheumatoid arthritis, in a half hour the child could move her shoulder and turn her head for the first time in two years. Persuaded to try walking, she managed a few steps and then burst into tears. "Why are you crying?" Dr Jacob asked her. "Because it doesn't hurt anymore", she replied.

DMSO was very cheap, Herschler told Jacob. “I could pipe it down here. You could have it by the barrel or the tank!”

Impressed with what he was seeing but wanting someone skeptical to play devil’s advocate, Dr. Jacob sought out Dr. Edward Rosenbaum, a physician in private practice in Portland. Rosenbaum did not pay much attention until a patient with severe bursitis started laughing, proclaiming his pain gone 15 minutes after his shoulder was painted with DMSO. Another colleague poopooed DMSO until after one of his bursitis patients had recovered via the chemical. He then declared that obviously the case must have been misdiagnosed – and asked if he should buy some stock in Crown Zellerbach (which produced DMSO).

In 1963, Dr. Jacob and Robert Herschler submitted two papers on DMSO to medical journals. Before the articles were published, the press broke the DMSO story on December 10, 1963 when Crown Zellerbach and the University of Oregon filed at the state capital a contract in which they became partners in the patented uses of DMSO. The patents were requested in the names of Herschler and Jacob and spelled out the major results seen from DMSO research, so the news was now public. On December 18, the ***New York Times*** carried the story on its front page and Crown Zellerbach’s stock jumped 10%.

The January and March 1964 issues of ***Northwest***

**Medicine** published articles by Jacob and Rosenbaum on bursitis and [arthritis](#). This gave some legitimization to DMSO in scientific circles but stirred up animosity as well among those who resented hearing about DMSO first in the popular press. When Jacob presented his work to the University of Oregon Medical School faculty, there were a few jeers of “liar, charlatan, quack”. It was hard for many to believe that something as versatile as DMSO could exist. Dr. Jacob sent a memo describing 20 of his cases to his immediate superior and friend, who replied with a note saying “This smacks of Andrew Ivy!” A few months later, the same friend told Jacob that he had dreamed the previous night that the DMSO affair had been turned over to the National Academy of Sciences. Then Stan Jacob remembered his father’s dream. A week before he died, his father said he had dreamed that Stan would find some wonderful chemical from wood, and people all over the world would be holding out their hands for it!

That dream was coming true. It would be eight years before his colleague’s dream came true, and a lot of fur would fly before then.

In 1965 Merck, Syntex, and Squibb Pharmaceutical all submitted New Drug Applications (NDA’s) to the FDA, stating that DMSO was ready to be a prescription drug. The FDA turned all of them down. In July 1965, the first international symposium on DMSO was held in Berlin. What happened to DMSO (and Krebiozen before it) is

hard to understand without recalling the crisis atmosphere in the early 1960's surrounding the sleeping medication thalidomide. The request for approval of the drug was assigned to Dr. Frances Kelsey, Chief of the Investigational Drug Branch. She processed the application by doing nothing at all with it for about two years. During that time a number of babies were born in Europe without arms or other limbs and the cause was traced back to thalidomide. Since Dr. Kelsey had not processed the application and thus "saved" Americans from the drug, she got a medal from President Kennedy, (The truth, Dr. Morton Walker tells in DMSO, ***Nature's Healer***, was somewhat different: 1,200 doctors in the U.S. had access to thalidomide through the FDA and there were thalidomide babies in the U.S. Some were children of doctors.)

After Dr. Kelsey was honored, every other FDA bureaucrat was on the lookout for ways to show vigilance and for things to stop. On February 8, 1981, Robert Herschler appeared on David Hartmann's ***Good Morning America*** show and told his host about DMSO's reception at the FDA. "They complained bitterly in 1964 that DMSO was both a commercial solvent and a drug. They could not control it. Frances Kelsey raised her hands and said 'We simply cannot cope with a product like DMSO. We envision hundreds of (new drug) applications coming in and we simply don't have budget or staff'. After that, the FDA took a hard line on DMSO".

Remembering thalidomide, the FDA apparently was looking for things to stop, and found its chance in late 1965. The FDA learned that tests in rabbits, dogs, and pigs (but not humans) had shown some problems. When quantities of DMSO equal to about ten times the maximum human dose (i.e., equal to 350 grams a day for a 175 pound man) were given every day over a period of six months, slight changes in the lenses of the animals' eyes would result, enough to produce a slight nearsightedness. The lens changes were not enough to cause dogs difficulty when running – they didn't bump into things – and in some cases, the changes disappeared after the massive DMSO doses were stopped. In no test at that time or since has DMSO ever caused cataracts, either in animals or in humans. The FDA decided that DMSO was the dangerous drug it was looking for. The first Dr. Jacob and his colleagues knew of the animal tests was on November 10, 1965. On that crucial date, the FDA sent notices to all the drug companies involved in DMSO research (Squibb, Syntex, Merck) that “administration of the drug must be discontinued and the drug recalled from all clinical investigation”. In addition, the FDA put out a series of press releases carried by media all over the world warning of the blinding effects of DMSO, and leading people to believe that DMSO caused cataracts. But no animals were blinded, and the FDA knew that. The “spin” was designed to show that once again the FDA had

“saved” us.

Thus research was stopped in its tracks on a drug which was stopping pain (when nothing else could) from bursitis, [arthritis](#) (including rheumatoid), and gout, which was cutting at least in half the time needed for recovery from athletic injuries, and which had even saved a boy’s life when his neck was broken in an accident. DMSO prevents swelling and rapid injection of the chemical soon after the accident prevented the swelling which otherwise would have choked him to death.

Drs. Jacob and Rosenbaum and Robert Herschler had constantly been looking for any indication of DMSO toxicity and had found none. Learning of the animal data, as quickly as could be arranged they brought past and current patients to the ophthalmologists at the University of Oregon to look for lens changes of any sort. After months of testing, absolutely no lens problems were found. To the contrary, several reported they could see better after using DMSO (on other parts of the body). So the order to stop research had been based on an inaccurate pretext.

Informed of the tests by Dr. Jacob and others showing that humans were not experiencing the same lens changes as the three animal species, the FDA at first seemed to have second thoughts. Had they overreacted?

An FDA less eager to play “gotcha” might have handled the situation quite differently. Upon receiving the initial

lens data, they might have immediately informed the drug companies and Dr. Jacob and asked them urgently to check if any humans were experiencing the same problems as the animals, which is what Jacob and his team did anyway, being responsible scientists.

Or, after its first release, the FDA could have announced that it was good to be vigilant but that DMSO was not causing the same results in humans as had been seen in some animals. It could then have said quietly to the researchers, “watch very carefully for human problems because if such occur, DMSO will have to be withdrawn”. If the FDA had done that, everybody would have been happy. The FDA would have shown its vigilance for drug dangers, which is what it’s supposed to do. And nobody would want to work with a medicine that caused eye problems.

Finally, FDA adopted an all too human attitude; they did not want to admit they had made a mistake. They apparently arrived at a decision that DMSO must be another thalidomide and that if FDA agents only looked hard enough, they would find the evidence and all would be heroes. If it had turned out that way, they would have been, but it didn’t.

In 1965, the JAMA printed an article by Dr. Jacob on DMSO. Interestingly, his trouble has only been with the FDA, not the AMA. The JAMA has never turned down one of his articles, and he regularly writes its book reviews.

Before freedom in DMSO research was withdrawn, orthopedic surgeon Dr. Forrest Riordan saw DMSO save a frostbite patient's limbs. Arriving home after midnight on a -15 degree F night, a 59-year-old woman slipped on the ice outside her garage, hit her head, lost consciousness, and lay beside her car for six hours. By the time Dr. Riordan saw her, her feet and hands were purple, and her fingers were turning black. Having already treated 50 patients with DMSO and being aware of its use in preserving and restoring tissue, Dr. Riordan decided to give it a try. Pat McGrady describes what happened. "The question was, would DMSO give new life to the lady's dying fingers and restore blood to her limbs? Ten minutes after Riordan had swabbed DMSO on the patient's hands and lower legs, the treated areas reddened with the return of blood. The DMSO odor was on her breath, showing that the drug was permeating the woman's system. On the second day, blisters had popped out on the frozen areas and that evening she regained consciousness... On the third day, sensation began returning to some of the toes and later the tips of the fingers began to have feeling again. By Day Seven, she was able to flex her joints. For an entire month, the patient was sloshed, swabbed, and dabbed with DMSO. Almost a gallon of it was used, but side effects amounted only to an occasional rash, a bit of burning and itching... By Day Fourteen, it was clear that all tissues were viable... Riordan concluded that the drug should be

applied within 12 hours of freezing and that 24 hours may mark the critical point in reversing damage to the involved blood vessels”.

This is the sort of experimentation that was going on before FDA halted DMSO research, a freedom to “try it since nothing else is working” approach, which in this case probably saved one lady her life and certainly her four limbs. How many others today might have saved limbs if the knowledge of this one case had been broadcast and DMSO’s use encouraged instead of discouraged?

Planning had been going on for some time for a Symposium on DMSO to be held in March 1966 at the New York Academy of Sciences. On November 9, 1965, a top FDA official told Dr. Jacob that he had it on good authority that the Symposium would never be held, not explaining that he would announce the DMSO ban the next day.

He was wrong. Dr. Chauncey Leake of the University of California Medical Center, who had agreed to chair the Symposium, told Dean Baird, Dr. Jacob’s superior at the Medical School, that he’d been asked to drop plans for the symposium on the grounds that it would be embarrassing for both the drug companies and the FDA. Baird replied “Chauncey, when have you and I as deans and educators ever let political or economic considerations compromise the search for scientific truth?” Baird also told Jacob that Crown Zellerbach,

unused to such controversy, had urged him to call off the symposium. The New York Academy of Sciences, a large, prestigious organization founded in 1828 with over 25,000 members, made their displeasure at political interference evident by putting up the \$60,000 cost of the meeting when pharmaceutical companies refused to do so.

Undeterred by the FDA, over 1,000 people from the world scientific community were in attendance when the symposium opened at the Waldorf Astoria on March 14, 1966, to go on for three days. When one of the FDA officials spoke, stating “this symposium is a measure of the freedom of investigation..., prevailing in this country”, people wondered if he was being ironic.

The papers presented showed great enthusiasm for DMSO and its unusual medical properties. Its ability to protect living cells from cold and radiation was discussed, and its lack of toxicity was stressed. Pat McGrady who attended, wrote, “the studies covered a spectrum of diseases probably far greater than any ever before considered in relation to a single drug”.

McGrady called special attention to an extraordinary paper presented by Dr. Eduardo Ramirez and Dr. Segisfredo Luza of the Ayetano Heredia University in Lima, Peru. After extensive tests on animals and then on normal humans, Dr. Ramirez reported “injecting 50% or 80% DMSO intramuscularly into patients with acute and chronic schizophrenia” and that “of the 14 acute cases,

every single one was discharged from the hospital within 45 days after the start of DMSO treatment... He said that 4 of the 11 chronic cases, one of whom has been ill for 14 years, were discharged eventually, and the other 7 improved a great deal and were given occupational therapy... He observed rapid decrease in agitation... recession of persecution feeling, a relatively sudden tendency to communicate and to stay clean.., the wane of obsessions, return to alertness, and a calmness where there had been restlessness and anxiety". The only side effects were the characteristic garlic-like odor of DMSO. At the end of the symposium, after an almost dazzling presentation of papers, McGrady reported that "an FDA agent turned to Ann Sullivan of the Portland Oregonian and said 'DMSO is through'. Ann looked at the man in amazement and asked 'Where did you ever get that idea?' 'My boss told me', the agent answered."

Meanwhile, the drug companies who had been doing clinical trials were reexamining patients and gathering data regarding possible eye damage. Squibb collected 3,000 cases, Merck 17,000 cases, and Syntex 7,000. No eye changes or damage or any other sign of toxicity were found. By this time, DMSO had been used in 100,000 people, and there had been no complaints of eye problems anywhere. Additionally, sufficient animal tests had been carried out to make it clear that the lens changes that had been observed were "species specific", i.e., they only occurred in dogs, rabbits, and

pigs, and not in monkeys, other primates, or any other animals.

Neither the pharmaceutical reports or the new animal tests seemed to have much effect on the FDA's new commissioner, Dr. James Goddard. Goddard soon showed that he intended to use the police powers that Congress had given him to investigate scientists, who had never before been treated that way by federal regulators. Quickly adopting a tough line, he took the FDA into some surprising new areas. Speaking to an AMA convention, he announced that "the FDA is now a third party to the practice of medicine", to the general consternation of the doctors. It began to look as though Dr. Goddard was out to prove he too could stop a thalidomide and that he suspected maybe DMSO was it. DMSO patients, however, did not agree. Those who had found DMSO a veritable WD-40 for arthritis were furious when their pain returned after the FDA stopped DMSO. They talked to the press, they called their senators and congressmen, and wrote angry letters to the FDA. Pat McGrady provides a few samples:

*My brother has [arthritis](#) of the spine. He is in pain and bedridden more than half the time. When he is treated with DMSO, he is able to lead a normal, active life... Just ONE application of this cheap, safe DMSO changed my brother from a grimacing patient into an active, pain-free man in exactly 30 minutes! Multiply him and my family by thousands of times, then think what the FDA's Divine*

*Right of Kings Law is doing to thousands and thousands of patients and their families.*

I had arthritis for four years, gradually getting worse until I was in such agony day and night. I was almost at my wit's ends... I heard of Dr Jacob and went to visit him... Almost from the first I began to get relief. Now I am on my feet, well and active... I have never in my life wished ill of anyone but experiencing the caliber of this agency (FDA) I wish every last one of them would suddenly have an attack of acute arthritis so painful that you could hear them yell from there to here and have to beg for the only drug discovered that could give them real help.

FDA statements continued to refer to DMSO's dangerous side effects but gave no specifics, no who, when, where. Pat McGrady pressed four consecutive FDA commissioners for data on the "dangerous effects". They all replied that the information was in their files. He asked them to produce it – four times. They promised to send it to him – four times, but it never came. While Official Medicine had stopped DMSO research in the U.S., at least it could go on freely elsewhere. A Third International Symposium on DMSO was held in Vienna in November 1966 and 250 scientists from 12 countries attended. Dr. Chauncey Leake, as keynoter, said, "Fortunately, members of the health professions throughout the world are not all bound by the bureaucratic regulations and judgments of the U.S. Food and Drug Administration". Pat McGrady, who also attended, commented "It was

strange hearing this statesman of science in this hall and this city, which less than a generation ago had been occupied by one of the bloodiest regimes in history, now apologize for regimentation in America”.

He also reported, “As at the Berlin and New York symposia, scientists said they had failed to induce eye damage with DMSO in any animal species close to the human, and they could find no evidence of eye troubles attributable to DMSO in any patient”.

Some of the interesting papers presented, McGrady wrote, showed that DMSO benefited 77% of patients with rheumatoid arthritis and 84% with osteoarthritis, controlled many kinds of pain, sped healing, offset injurious effects of radiation therapy, and proved superior to all other therapy for winter and sports injuries.

Experiments in animals showed that when given to mice ten days before infection, DMSO prevented typhus, and that DMSO tended to stabilize collagen, a possible anti-aging effect. McGrady noted that “scores of scientists confirmed the majority of claims Jacob had made...

Distinguished scientists clustered around him and congratulated him for what some called a classical contribution to science and medicine”. It was learned at the conference that Germany quietly was restoring DMSO to drugstores as a prescription medicine.

Dr. Richard Brobyn, while a consultant for Merck, had devised a plan for human toxicity experiments in prisoners. After the FDA crackdown, Merck lost interest

but Squibb liked his idea. Squibb proposed to the FDA that Squibb and FDA split the cost for Brobyn's plan and the FDA agreed. Arrangements were made for Dr. Brobyn to carry out the trials at the state prison in Vacaville California in the fall of 1967.

By this time, all research with prisoners was carried out in accordance with the ethical principles worked out by Dr. Andrew Ivy when he was the American medical ethics adviser at the Nuremberg trials. Years later, Dr. Brobyn told Pat McGrady that he himself took the amount of DMSO to be given to the prisoners "because I wouldn't expect a patient or experimental subject to do something I wouldn't do myself".

Brobyn's plan was for 67 male prisoners to cover themselves with ten times the permissible human dose of DMSO every day for two weeks, after which they were closely examined. Finding no trace of any effects other than a rash (an occasional result of DMSO applied to the skin), the second, 90-day phase of the test started. Forty prisoners similarly doused themselves each day with DMSO, which quickly penetrated the skin. Regularly put to numerous exams with special attention to eyes, at the end of 90 days no evidence of toxicity had been seen in the prisoners and the attending ophthalmologist saw no effect at all on the prisoners' eyes. Dr. Morton Walker observed in DMSO, ***Nature's Healer*** that "if sugar, salt, coffee, or tea had been taken by the prisoners over three months in quantities equal to the DMSO they absorbed,

it would have killed them”. Pat McGrady later asked Dr. Brobyn what if he had given the prisoners ten times the permissible dose of aspirin every day for three months. Brobyn replied, “You’re asking ... is aspirin more toxic than DMSO? My answer: Certainly”.

Brobyn was right. The classic test for toxicity is known as the LD-50 test, which measures the lethal dose (LD) at which half of a group of test animals is killed. The LD-50 tests for aspirin and DMSO show that aspirin is seven times as toxic as DMSO.

A year after the Vacaville tests, the FDA lifted its ban on clinical testing in humans and approved tests of DMSO in rheumatoid arthritis and scleroderma and, separately, in sprains, bursitis, and tendinitis. This did not release it to doctors for general use in these conditions, but only permitted drug companies to prepare complicated applications for testing in them.

In 1970, Dr. M. Brandsma of Los Angeles reported that a case of systemic lupus erythematosus, which had not responded to prednisone, had gone into remission for three years (at the time of reporting) from DMSO. The same year, British scientists found in two double-blind studies that DMSO combined with idoxuridine stopped the suffering from painful shingles in from 2 to 9 days. Various pieces of research had shown DMSO to be effective against viruses and an important clue as to why this happened was given in 1971 by Dr. M. Kunze and associates in Vienna. Their study checked the production

of interferon in mice following infection of the mice by the scientists with certain viruses. They reported that when DMSO was injected 10 minutes after the mice were infected with viruses, “the animals produced anywhere from 2 to 16 times as much interferon as they would have, had no DMSO been given after their being infected”.

The very significant fact that DMSO would cross the blood brain barrier had been evident from Dr. Jacob’s early research. For those interested in “smart pills”, the early 1970’s work which John L. Brink and Donald G. Stein of Clark University published in Volume 158 of Science magazine is relevant. Magnesium pemoline (PMH) had already been noted to improve learning in rats and in humans. Brink and Stein reported that PMH dissolved in 100% DMSO greatly increased rats’ learning abilities over what was achieved with pemoline alone. Injecting into rats a solution of radioactive PMH or a solution of radioactive PMH dissolved in DMSO, they noted that the DMSO/PMH solution was from 50%-100% more successful in crossing the blood-brain barrier than the PMH+water solution alone.

Pat McGrady once asked Dr. Stanley Jacob who would gain the most from DMSO. Here is Dr. Jacob’s answer. “Quadraplegia is the saddest thing that happens to people. It occurs most often to the young and healthy, to soldiers fighting our wars, to youngsters driving, to athletes in personal contact games. As a quadraplegic,

you lie in bed, a total vegetable. Your mind functions but you cannot pass urine or have a bowel movement without help... So many of them eventually say to me 'Dr. Jacob, I couldn't even commit suicide'." Jacob told McGrady about one such patient, a case where he was called in almost immediately following an accident. "A 16-year-old girl, a fine athlete, who dove off a board and landed on her neck on the bottom of the pool. Her doctor was pessimistic but willing to try almost anything that offered a glimmer of hope. She was a complete quadraplegic, utterly helpless. She was on DMSO for an entire year. Gradually – one by one, it seemed – her organs began to function again. Eventually, she walked. And now she is in college, doing very well."

This was accomplished with the medicine on which FDA banned research in the U.S. in 1965. It was 13 years later before the FDA approved DMSO as a prescription drug for use in interstitial cystitis.

Grey Keinsley of Littleton, Colorado, is the one-time quadraplegic mentioned earlier by Dr. Jacob, who went on to college and to a job in a bank. But Keinsley did not start DMSO until February 1965, two years after his accident. By August 1965, he lifted both arms over his head and put on a T-shirt unassisted. A little later sensation began to return to his lower chest and his right hip. Then the FDA banned DMSO, and he was deprived of it for three years, starting again only in 1968. The next year, he received his bachelor of arts degree in

economics. His mother told McGrady that Dr. Jacob not only did not charge for his services, but paid bills for extensive medical examinations which were done in Colorado. McGrady reported that as of 1973, Grey Keinsley could move both of his legs. Grey Keinsley is the only known case of a quadraplegic regaining movement of the lower limbs when therapy was started two years after the accident. Dr. Jacob has seen two quadraplegic patients recover completely when DMSO was started within one hour after the accident.

In 1971, Squibb Pharmaceutical again filed an NDA, stating once more that DMSO was ready to become a prescription drug, and again was turned down by the FDA.

In 1972, the prediction in 1964 of Stanley Jacob's colleague came true; the FDA asked the National Academy of Sciences (NAS), through its National Research Council to make an "independent review" of all information on the effectiveness and toxicity of DMSO. However, the NAS got much of its funding at that time from the FDA. An NAS officer told Pat McGrady "we have been asked to wash the FDA's dirty linen, and we have agreed."

McGrady learned that the NAS intended to take 4 months just to plan how it would read the 1,200 papers (at that time) on DMSO, and then to take 18-24 months to do so. At a press conference, McGrady told the NAS president that, having read all the papers, he calculated

that he, as a slow reader, could read them all in three weeks, or a fast reader could go through them all in two weeks.

Instead of taking two years to read the material, McGrady challenged, why not set three fast readers to go over the papers in two weeks and then free the drug for medical use if no reason was found to continue the ban. This would be preferable, he pointed out, to holding up research on DMSO, since the published studies seemed to show no toxicity to humans. He further suggested that the FDA be required to provide solid evidence of toxicity, if they had any, while Dr. Jacob and his colleagues be invited to provide all favorable and unfavorable reports.

These suggestions were apparently far too sensible to be taken seriously. When the report came out in 1974, it seemed as though the Official Medicine of the FDA was speaking through the mouth of the NAS. The report stated (despite 1,200 papers to the contrary) that “there was inadequate scientific evidence of effectiveness of DMSO for the treatment of any disease, and that the toxicity potential was sufficiently great that the drug should remain an investigational drug”. Thus DMSO would not be released for doctors to use in general practice, but would remain bottled up.

In 1974, another symposium on DMSO was held at the New York Academy of Sciences. In 1975, the universally liked Pat McGrady, once science advisor to the American

Cancer Society, died of cancer. His DMSO, ***the Persecuted Drug*** is a classic on the early years of DMSO.

Meanwhile, in Houston, Dr. Eli Jordon Tucker, an elderly and highly respected orthopedic surgeon, was treating cancer with a combination of DMSO and hematoxylon, a non-toxic dye sometimes used as a medicine. In experiments in cancerous mice conducted by Thomas D. Rogers, PhD, under the supervision of Vernon Scholes MD at North Texas State University, the mixture was seen to go directly to tumors and nowhere else, where it effectively starved them. Hematoxylon without DMSO was found to have no effect at all on cancer. In 1972, Houston KHOU TV newsman Ron Stone did a documentary on Dr. Tucker's achievements in cancer. Dr. Tucker himself never published his DMSO-hematoxylon results after 1968 out of concern over losing his license for using an unapproved drug. Dr. Morton Walker devoted 30 pages of his DMSO, ***Nature's Healer*** to the fascinating story of Dr. Tucker. (With Dr. John Sessions, Dr. Walker has also written ***Coping with Cancer***, a further discussion of DMSO therapy for cancer; both books are available from Freelance Communications, 484 High Ridge Road, Stamford, CT 06904-3095.) Finding his DMSO-hematoxylon mix effective in large cell lymphosarcoma and adenocarcinoma in dogs, Dr. Tucker worked out a human dosage which he gave only to terminal patients.

One who remembers the DMSO combination and Dr. Tucker very well is Alva Ruth Wilson in the Houston area. She qualified for his treatment because when she sought him out (after hearing the TV program), she had been given six months to live from lymphosarcoma. Starting in January 1973, she took an intravenous drip of the DMSO-hematoxylon mixture five days a week. Before requesting Dr. Tucker's treatment, Mrs. Wilson had maximum amounts of chemotherapy and radiation, but neither helped – the tumors kept on spreading. Chemotherapy had to be stopped because its side effects were giving her leukopenia, a disease in which her white cells had dropped to way below normal, leaving her with almost no immunity. While she was on Dr. Tucker's program, her conventional doctor wanted to give her more radiation. Dr. Tucker told her that since she was on DMSO, the radiation would not hurt her, a fact well established by clinical studies in various countries and virtually ignored in the United States. Although no primary source of her cancer was ever found, some cloudiness in X-rays of the stomach aroused suspicion, so that was where the radiation was directed. Another woman (not one of Dr. Tucker's patients) who started radiation of the stomach the same day returned for the second treatment in a wheelchair, so ill had the radiation made her, and for the third on a stretcher as a patient in the hospital. But Mrs. Wilson, taking her daily DMSO I.V., took the same radiation and felt great. By January 1974,

after a year on Dr. Tucker's program, no more tumors could be found and she continues in fine health in 2000. As far as Dr. Jacob knows, DMSO was not used on those who suffered radiation damage at Chernobyl. Another of Dr. Tucker's success stories, Joe Floyd of Spring, Texas, was 71 and in good health when interviewed by Dr. Walker in 1989. In 1974, Floyd was stricken with deadly adenocarcinoma. By coincidence, his doctor's wife had the same kind of cancer and the doctor urged Floyd to take the chemotherapy his wife would take. Floyd demurred and sought out Dr. Tucker. Six months later, he was back at work, but the doctor's wife was dead.

Clyde Robert Lindsay knows about DMSO. At 3 years of age, in 1966, he was given up for dead with cancer. Dr. Tucker gave his mother a dropper bottle of DMSO +hematoxylon and told her to give him 5 drops in distilled water every morning on an empty stomach. In 1992, Dr. Walker found him to be a big, strong young man of 29. While researching for DMSO, ***Nature's Healer***, Dr. Walker visited Dr. Tucker, who gave him his formula. Then, as Walker explains, "Dr. Tucker himself came down with a form of cancer that would have responded to his DMSO+hematoxylon treatment, but before he could administer it to himself, he fell into a coma". No one had access to the formula, and Dr. Walker did not know that Dr. Tucker needed it until after Dr. Tucker died. To make sure Dr. Tucker's formula does not get lost, Dr.

Walker printed it in DMSO, ***Nature's Healer***, with complete instructions for preparation and dosage. Walker notes that the treatment solution can be taken orally (the way Clyde Robert Lindsay took it). Dr. Tucker's remarkable work, as yet unnoticed by conventional medicine, should not be considered surprising since there have been numerous studies indicating that DMSO either by itself or in combination with other drugs can be helpful in cancer. As mentioned earlier, DMSO is known to stimulate the body's production of interferon which, synthesized, has been used in cancer treatment. DMSO has been found to potentiate certain chemotherapies while rendering them less toxic, and this has been reported in the medical literature. DMSO would permit safer and more effective use of radiation in cancer treatment, because of its protective action (as noted in Mrs. Wilson's case). This was originally reported in 1961. The March 1985 Russian radiological journal ***Meditsinskaya Radiologia*** reported on the use of DMSO with radiation in cancer treatment. Pat McGrady noted that the late Dr. Florence Seibert, one of the researchers in pleomorphic organisms, observed that "organisms frequently found in cancer and leukemia patients suspected as a cause for cancer (the sort that Royal Rife and Dr. Gruner of Montreal saw) stopped growing when exposed to 25% DMSO... Dr. Robert Schrek and associates of the Veterans Hospital in Hines, Illinois, found that two per cent DMSO, which had

no effect on normal cells after two days, killed 90% of the leukemic cells in a single day... Noted virologist Dr. Charlotte Friend of New York's Mount Sinai School of Medicine transformed leukemic cells back to normal, hemoglobin manufacturing cells with a very weak concentration of (2%) DMSO added to the medium in which cells were growing... In April 1973, Drs. Etienne and Jennie Lasfargues of the Institute of Medical Research in Camden, NJ, reported that while DMSO increased the number of virus-infected mouse breast cancer cells sixfold for awhile, by the end of three months, DMSO had completely rid the cultures of infected cancer cells”.

McGrady also noted that “Dr. Leo Stjernvall, a University of Helsinki pathologist, and his associate Dr. K. Setala... reported that cancer cells... build a protective ‘cytoplasmic barrier’ which prevents the poisons of (various cancer drugs) from seeping inside the cells and killing them or arresting their growth. Stjernvall dissolved the anti-cancer drug vinblastine sulfate in DMSO and dabbed it on cancer that he had induced with chemicals applied to a mouse's skin. The fibrous cytoplasmic barriers melted away and other structures changed so that the cancer cells took on the appearance of benignly overgrown but otherwise normal cells. Other common anti-cancer drugs became equally effective when dissolved in DMSO. The experiments showed that DMSO transported-drugs can alter the malignant cell

toward normal.” The fibrous barrier referred to by Dr. Stjernvall is the fibrin cover described in the Hoxsey chapter. Whatever will dissolve that cover opens up a cancer tumor to attack by the body’s immune system – if it is healthy – or by cancer cell killing (cytotoxic) drugs so much in current use.

How did the National Cancer Institute’s “War on Cancer” overlook the extensive research on DMSO and cancer?

***Heart attack, cancer and stroke – the three greatest killers in the U.S. – and DMSO has relevance to them all, but how many people know this?***

The FDA, at least, knew about Dr. Tucker. Invited to New York in 1978 by doctors wanting to learn about his cancer treatment, he asked Joe Floyd to go along. While planning the trip, Tucker received a call from Dr. K. C. Pani, the FDA official in charge of DMSO since 1968. Pani had heard of Tucker’s work and invited him to stop in Washington en route to New York. Tucker visited Pani, showing him various patient records, X-rays, and slides. Dr. Morton Walker tells the story, “When they came to Floyd’s record, Dr. Pani asked ‘How long did this one last?’ Tucker replied ‘He’s sitting down in the lobby’. Pani said ‘I want to meet this dead man’. They sought out Mr. Floyd, who told his story. Then the FDA official, visibly impressed, said he would be in touch with Tucker soon. He also mentioned that he was in contact with Dr. Stanley Jacob of Oregon and that he was monitoring the

use of DMSO.”

About one week later, the FDA approved the use of DMSO in the treatment of interstitial cystitis. This 1978 action was the first time FDA had approved DMSO as a prescription drug for any human ailment. Considering that it had been 13 years since the crackdown, it was a major breakthrough, and it certainly seemed that Dr. Tucker had had something to do with precipitating it. Unbelievably, as we enter the 21st century all these years later, it is still the only FDA approved human use for DMSO. It is also approved for the preservation of frozen human tissues, the first use to which Stanley Jacob put DMSO. Ironic to think that surgeons soak in DMSO tissues such as the bone marrow which they will later place in human bodies. This chemical is famous for its penetrating abilities, so such transplants are obviously drenched in DMSO. It's considered safe enough to be approved for that, but not for general medical use, for doctors to use in any of the hundreds of ways where DMSO can be effective.

What does the FDA think it is saving us from?

The FDA used the bogus issue of eye damage for several decades to hold back DMSO. Dr. Walker points out that “adverse eye findings have been reported with all the arthritis drugs, such as Anaprox, Naprosyn, and Motrin (as per their package inserts) yet no one has suggested that these minimally effective drugs be taken off the market.”

As far as eyes are concerned, the evidence on DMSO is quite to the contrary. When several patients treated with DMSO for muscular problems reported to Dr. Jacob that their vision had improved, he sent them to Dr. Robert O. Hill, ophthalmologist at the University of Oregon Medical School. Confirming the favorable changes, Dr. Hill began his own experiments with DMSO (after it was known that the lens changes did not happen in humans). His research showed drops of 50% DMSO to be effective in retinitis pigmentosa and macular degeneration, and presented a report on this at the New York Academy of Sciences symposium in 1971.

In the 1970's, my late mother developed macular degeneration. Having read Dr. Hill's study, I called him. In addition to what he had written, he added that one should use cold compresses after using the drops. I relayed this to my mother and when she was at home one summer, her housekeeper put two drops of 50% DMSO in each eye twice a day. When my mother was getting ready to return to Florida for the winter, she said, "Those DMSO drops worked. When I came home in June, lying in bed I could not see the individual slats on the venetian blinds in my bedroom and now I can".

Deise, a friend from Brazil (where DMSO is legal), told me that a New York eye doctor had told her she was developing macular degeneration, so I told her the above story. A year later, she informed me that the same doctor had told her that her signs of macular degeneration had

disappeared. The previous year, she had persistently put DMSO drops in her eyes several times a day.

Telling another friend with macular degeneration of Deise's experience, she looked for DMSO at a health food store and then balked. The bottle of DMSO, she pointed out, was clearly labeled "Do not get into the eyes. Do not touch the skin. If gets on skin, call a physician". The label also read "This is sold only as a solvent". Calling the 800 number on the label, I learned that the product was pure DMSO, not industrial grade. With that sort of warning on the label, how could anyone guess that the liquid in that bottle is used on the skin of many athletic teams when there are muscular injuries. Such is the result of FDA's policy of censoring truthful health claims, preventing Americans from learning what this and other products can do for them.

In 1978, Dr. Arthur Scherbel, then chief of Rheumatology at the Cleveland Clinic, carried out a study of the use of DMSO intravenously in scleroderma, a particularly miserable disease affecting around 150,000 Americans. Parts of the body increasingly calcify and become rigid, an eventually fatal condition for which there was then and still is no cure. Dr. Scherbel found clear evidence of DMSO's efficacy in scleroderma and submitted his trial with a New Drug Application (NDA) to the FDA, which turned him down. DMSO is approved for use in scleroderma in Canada.

Something else happened in 1978 that opened windows

in the overregulated U.S. medical system. The chemical EDTA has long been on the “GRAS” list (Generally Regarded As Safe) and is FDA approved for use intravenously for the removal of lead, in cases of lead poisoning. Reasoning that if EDTA could remove lead it might also remove calcium, certain medical pioneers tried EDTA to deal with calcified arteries, and saw patients’ circulation improve. The late Dr. Ray Evers was one of the foremost of those pioneers. Soon the FDA came down on him for his “unapproved” use of EDTA. Instead of caving in, Dr. Evers sued the FDA in Federal Court, asking for an injunction to stop the agency from interfering in his practice of medicine. This was not their business, he declared, but rather making sure that drugs are safe. Since FDA had long since declared that EDTA was safe for use in humans, he told the court that as a licensed physician it was his right to use a safe drug in whatever way he found to be useful. The FDA’s interpretation of current law was then and still is that it requires them to control every usage of every drug. To their chagrin, the Court agreed with Dr. Evers, stating, “Congress did not empower the FDA to interfere with medical practice by limiting the ability of physicians to prescribe according to their best judgment”. The FDA appealed, and he won again. The FDA did not appeal a second time, letting the ruling stand. The Evers Ruling thus makes it legal for a doctor to use an FDA approved drug in any way he/she thinks fit.

Combined with the FDA's 1978 approval for use in interstitial cystitis, this meant that since DMSO had been approved for one human use, doctors could now use it for other human uses, and many did.

In 1979, just to make sure the FDA didn't interfere, the Oregon legislature passed a bill protecting Dr. Jacob's right to use DMSO within the state.

In September 1979, the FDA published a regulation abolishing its 1965 regulation which had banned general research in DMSO, but its posture was still suspicious. The unbending bureaucracy was beginning to bend a bit, but it was a little late. FDA had said no so many times that drug companies were beginning to believe they meant it and medical studies began to slow down. It was taking the patience of Job to persist with DMSO against such opposition, a repeat of the pattern with Dr. Ivy. The FDA had put out so much static that the scientific community began to back off.

Still, the Evers Ruling had opened things up considerably, and certain bold doctors proceeded to use DMSO intravenously, often seeing dramatic results. One of those pioneers was Dr. William Campbell Douglass, a person used to making his own decisions. Mrs. Ruth Lewis of Sarasota, Florida, told Dr. Morton Walker of her experiences with Dr. Douglass. Rheumatoid [arthritis](#) caused her so much pain she could not walk without a cane. After a back injury, she was told she had to remain in bed for six months. Realizing that if she did so she

might never walk again, even with canes, she decided to try something else. Her son and husband literally carried her into Dr. Douglass' office, then in Marietta, Georgia, "unable to put both feet on the ground", she told Dr. Walker. "After 2 1/2 weeks of DMSO treatment, I walked out of that office without any help whatsoever or a cane. I had been unable to close my right hand completely for over a year. It kept me awake at night with pain. But after the I.V., topical, and oral treatments, I can now close my hand tightly. The arthritis has not returned."

In DMSO, ***Nature's Healer***, Dr. Walker explains DMSO's action in arthritis, "DMSO is a scavenger of hydroxy radicals, and this chemical ION is dominant in arthritis. Hydroxy radicals are responsible for breaking down the synovial fluid and the cartilage of the joints. [DMSO is] one of the few known substances responsible for detoxifying this radical... Neutralizing this highly toxic free radical causes the reduction of inflammation and the diminishing of pain in arthritis. It is probably the primary mechanism that allows DMSO to work effectively against arthritis".

Dr. Douglass told Dr. Walker of another startling case. Penelope Pappas of Sarasota, Florida, then six years old, put her index finger into a live light socket. Before she could withdraw it, it was "cooked through and burned ash white at the tip". Within 30 minutes, Dr. Douglass was able to have the finger soaking in full-strength DMSO as the child screamed with pain. By the end of 20

minutes immersion in the liquid, the child had stopped crying because she felt no more discomfort. She slept undisturbed all night and the next day showed a pink and healing index finger. At the time... it was felt that she would probably lose the tip of her finger from gangrene. The finger healed completely.

In 1980, Mike Wallace featured DMSO on two programs, first on March 23. and then on July 6. Dr. Richard Crout of the FDA appeared on the March show, insisting that there could be no FDA approval of DMSO without double-blind studies. He knew as well as anybody that this is virtually impossible with DMSO because of its smell; anyone who takes DMSO either orally, topically, or via I.V., will soon exude a characteristic garlic-like odor, and if it is taken orally, it has an oyster-like taste. In a double-blind test, neither doctor nor patient is supposed to know who is getting the drug being tested, and who is getting a placebo. How could this be done with DMSO? And how could it be done with chemotherapy, with its sometimes burning and poisoning effects? For similar reasons, double-blind tests are impossible with many chemotherapies, but the FDA allows the use of these very costly drugs, which are so profitable to the pharmaceutical companies.

Mike Wallace presented Sandy Sherrick of Riverside, California, on the March show. She had lived for two years in constant pain following a whiplash injury from an auto accident. "The pain was extremely bad. I was to the

point where I cried continuously. I did not cook meals. I did not clean. I barely got myself dressed.”

Learning of DMSO in November 1979, she flew to Portland and Mike Wallace filmed her treatment. Dr. Walker describes the program, “By the third day of I.V. and topical applications, the patient began to feel somewhat better, reported Wallace. “60 Minutes” followed her progress on videotape. Dr. Jacob showed her where and how to apply DM80. The television camera then switched to Mrs. Shenick in her Riverside home. She was taking no medicine for pain relief. She said ‘The pain is totally, completely gone from my neck.. .I’m telling the honest-to-God truth’. She could do her housework, drive a car, lift packages. ‘I’ve not found anything I can’t do’.”

The **60 Minutes** show had an estimated 70 million viewers. Dr. Jacob’s office was swamped with calls, begging for pain relief. Their calls might better have been directed to their congress people, demanding that the FDA get out of the way.

Wallace had scheduled his show on the eve of congressional hearings on DMSO, which began the next day. Dr. Crout testified at the hearings and immediately demonstrated that he did not understand the first thing about DMSO – its remarkable ability to penetrate the entire body no matter where applied. Explaining why he had not approved Dr. Scherbel’s scleroderma application, Crout described Dr. Scherbel’s test; a person

with both hands affected by scleroderma would dip one in DMSO, the other serving as a control. Since both hands began to heal, not just the treated one, Crout said it was impossible to say if DMSO had worked or not. He ignored the fact that the hands had not healed before application of DMSO, and that DMSO had simply done what is in its nature to do; applied to one hand, it had gone through the system and reached the other one. Dr. Crout showed the same bias as Dr. Frances Kelsey had done 17 years before when he said, "DMSO is unorthodox. It would be far easier for a new drug to have its application approved if it was closer to something already in the marketplace, such as a new antibiotic or tranquilizer that duplicates an existing one". So much for innovative breakthroughs. Dr. Kelsey had admitted years earlier that since aspirin has 38 indicated usages, it would have trouble being approved under present rules. And DMSO has been called the aspirin of the 20th century. Crout even told Congress that the DMSO new drug applications for the previous 17 years had all been faulty, submitted by companies who did not know how to prepare a proper application. He was referring to Squibb, Merck, and Syntex, who all had had many drugs approved by the FDA. Dr. Crout had shown his underlying philosophy in 1976 when he stated that when investigational new drug applications come from institutions other than the NCI or top universities, "You want harsh regulations... sometimes we say it is proper

to hinder research”. One couldn’t accuse the man of not practicing what he preached.

A year later, appearing with Robert Herschler on **Good Morning America**, Dr. Crout stated that “DMSO is not dramatically effective and a number of people have recognized that.” Did he not see Sandy Sherrick and others on the very show on which he too appeared? Actually, Dr. Crout’s own Bureau of Drugs, which he directed, contradicted his statement, Dr. Walker points out. The FDA has a classification for new drugs in which 1A means a breakthrough discovery. Of 34 drugs within a certain period, only four were rated 1A by Dr. Crout’s department and DMSO was one of those four.

Mrs. Jean Puccio of Washington, DC testified at hearings of Senator Edward Kennedy’s sub-committee on health in 1980 on her recovery from scleroderma. Diagnosed in 1971, she was told that no medication would help, and that she would probably soon face a wheelchair and early death. By the time she found Dr. Jacob (through word of mouth), she told the Senators, “I was having difficulty breathing, walking, and eating”. The disease “thickens the tissue and makes your skin so tight you cannot move. It was difficult for me to drive.., to turn the ignition in my car or turn my body”. Her dentist could not work on her for awhile because she could not open her mouth. “Now”, she said, “I can open my mouth like anybody”. After her sensitized skin burned from topical application of DMSO, Dr. Jacob suggested taking it

orally. “Within six months”, she testified, “my condition reversed almost immediately. I can do anything anybody else can do now.”

In 1980, Senator Mark Hatfield of Oregon introduced legislation to approve DMSO, but the Senate did not pass his bill, and the FDA did not budge.

Following the March 1980 hearing of the House Committee on Aging, Lillie Forister of Artesia, NM, had written to Chairman Claude Pepper telling of her 19 year battle with scleroderma, during which she lost 3 toes to amputation from the disease. She wrote “you can’t sleep for the pain. The pain is with you day after day until you don’t think you can take it anymore... That’s the bad side of scleroderma. Now for the good part, the only ray of hope I’ve had in 19 years. I went to Portland to see Dr. Stanley Jacob last July (1979). He started me on a treatment with DMSO. After the first week, I felt better than I had in 19 years. I could button my own clothes, reach behind my head. Four months later, I no longer had chest pains... I feel that now I might have a chance to see my children grown and to be able to enjoy my grandchildren. Please help us. We need you to help us fight for a better pain-free life.”

The Florida State Legislature passed legislation authorizing the use of DMSO given topically, orally, or intravenously. Shortly after, the Florida Medical Society (Florida branch of the AMA) put out an announcement that doctors who used DMSO for anything other than

interstitial cystitis would be dropped from their malpractice insurance, which they obtained from the Society at favorable rates.

In 1980, the famous “PDR”, the ***Physician’s Desk Reference***, listed DMSO for the first time, stating that there are “no known contraindications”. With Americans dying from FDA-approved drugs in scandalous numbers, how many drugs can be described this way?

Compassionate Dr. Jacob, after a full day of surgery at the University of Oregon Medical School, would treat patients with a large variety of problems with DMSO – for free. Unlike many of his colleagues, he did not maintain a private practice in downtown Portland, and regularly overextended himself helping others. Generous to a fault, he would even borrow money to lend to those in need. In 1982, his generosity was seen as a fault. Dr. Pani, the FDA man handling DMSO, was losing his wife to cancer. Dr. Jacob had tried to help, but to no avail. Dr. Pani was having a hard time with astronomical medical bills, so Dr. Jacob loaned him money. This was done by personal check, and Dr. Pani repaid the loan by personal check. Unfortunately, the FDA got wind of it and decided that Dr. Jacob was trying to suborn a federal official. In 1982 the FDA secured the indictments of both Dr. Jacob and Dr. Pani. The first trial, like Dr. Koch’s, ended in a mistrial. Dr. Pani then plea bargained to a misdemeanor and lost his job, but Dr. Jacob fought, certain he had done nothing wrong. The second trial started. When the FDA’s Justice

Department attorneys saw that the judge and jury were much more likely to believe in Dr. Jacob's well-known generosity than in his conspiring to bribe a federal official, they withdrew the charges. They stated, "We are dropping all charges against Dr. Jacob and we wish to take this opportunity to commend him for his good service to the community". Dr. Jacob was vindicated. In 1993, thirteen years after Jean Puccio had testified at the Senate Hearing, the FDA finally approved a new drug application for scleroderma – but in 2000, it is still not approved as a prescription drug for this purpose, although it is in Canada.

In 1992, the FDA approved an Investigational New Drug (IND) application to permit DMSO to be tested in severe closed head injuries. Drs. Jacob and de la Torre formed PHARMA-21 in Escondido, CA, to carry out the clinical tests and to develop their DMSO/fructose diphosphate product, patented in 1996. However, funds have been slow coming in to finance human trials. Meanwhile, a substance which might have prevented Christopher Reeve's paralysis, and that of other less famous paralyzed persons, is not approved by the FDA.

The FDA turned down three applications for clinical trials of DMSO in arthritis. How far off course have we gotten in our regulatory procedures? What is the FDA doing stopping research in non-toxic therapies for pain relief? As Dr. Morton Walker puts it, "if something is safe enough to use internally, why is it not safe enough to

paint on sore joints?”

Dr. Stanley Jacob has said from the beginning that DMSO is not a new drug but a new therapeutic principle. Dr. Morton Walker quotes chemist Dr. Harry Szmant as explaining the principle in this way, “Cellular damage can be repaired and cells healed and restored to near normal by changing the water structure within a cell” – and DMSO can do this. Cell wall permeability, increased by DMSO, also “alters what normally goes into and comes out of a cell, permitting the flushing of toxins out of the cells”. Dr Jacob points out that water bonds with DMSO one-third more tightly than with other water molecules; because it can flow through cell membranes, it can carry water into cells, replenishing and renewing them. DMSO can also carry other substances which normally would not move through cell membranes – i.e., it is a new therapeutic principle, a new way of cleansing and supplying nutrition to cells. ***DMSO also boosts the immune system,*** increasing the production of white cells and macrophages, and facilitating their movement as they search the body for materials that should not be there (such as microorganisms), destroying them. In an age where bacteria are becoming more resistant to standard antibiotics, a hugely significant aspect of DMSO’s therapeutic principle is that it sensitizes bacteria to antibiotics and other drugs to which they have always been or have recently become resistant. Dr. Jacob told a convention of the American College for Advancement in

Medicine (ACAM) “I would combine DMSO with antibiotics, since it will convert bacteria resistant to antibiotics to being sensitive to that antibiotic”. Dr. Morton Walker comments, “This DMSO characteristic of resensitizing bacteria could possibly restore an entire group of obsolete antibiotics for the use of medical practitioners”. In a 1968 test in Portland, DMSO accomplished this feat by dissolving part of the coating of a bacillus, or bacteria, thus allowing antibiotics to destroy it.

Has this aspect of DMSO been forgotten? At a time when we hear of outbreaks of “Strep-A” carrying people off in three days, this long overlooked capability of DMSO needs to be remembered and used.

DMSO has anti-viral capabilities, and it is likely, Dr. Walker points out, that DMSO, the great solvent, “dissolves a virus organism’s coating of protein and leaves it unprotected with only its core of nucleic acid exposed to the immune system”. Could this be an approach to AIDS? Since DMSO functions systemically, it could dissolve the protein coating of the viruses throughout the body, leaving them exposed to whatever potent antiviral the DMSO had been combined with. Could the Hanta virus be attacked in the same way?

French scientists in 1988 reported improved dissolution of cholesterol gallstones when DMSO made up 30% of a solution containing methyl tert-butyl, a chemical frequently used for that purpose. A previous Japanese

report indicated that DMSO helped to dissolve the calcium type of gallstones.

DMSO's vast range of applications is why Dr. Jacob thinks of DMSO as a new therapeutic concept rather than as a new drug. For those accustomed to thinking of one drug, one application, DMSO's variety of usages is almost unbelievable. But this is not the fault of DMSO but of our current licensing laws, which treat toxic and non-toxic substances exactly the same way. When something has been demonstrated to be absolutely non-toxic, as is the case with DMSO, why should the FDA be involved at all?

Why shouldn't the market in non-toxic therapies be freed so that doctor and patient together can decide how to use them?

Dr. Jacob wryly observed to Pat McGrady that he made a mistake right from the beginning, "If I'd shown that DMSO was good just for sprains, but only sprains of the left foot, DMSO would be on the market."

Dr. Richard Brobyn (of the Vacaville tests) felt that DMSO would have fared better if only one condition had been highlighted. "Like hemorrhoids", he told Pat McGrady. "The clotted hemorrhoid is common – 15-20,000,000 Americans get it. DMSO is the ideal treatment; it reduces the pain, swelling, and inflammation. If DMSO had started with something like this, it would have been on the market in 1967."

One of DMSO's most significant features is its ability to

combine with other therapeutic substances, but after 1965, research in DMSO needed a freer atmosphere than that in the U.S. Nicolas Weinstein, PhD in chemistry and a pharmaceutical chemist by training, owned the Laboratorios Recalcine, the largest independent pharmaceutical company in Santiago, Chile. Intrigued by Stanley Jacob's 1965 article in the JAMA, he acquired some DMSO and began testing in rats and other animals. Confirming Jacob's findings, he tested DMSO in humans. When the Winter Olympics were held in Portillo (Chile), a woman skier recovered overnight from a twisted knee and sprained wrist with Dr. Weinstein's DMSO spray. The next day, she won a gold medal. In 1971, Weinstein visited New York, told Pat McGrady what he had accomplished, and the following is excerpted from McGrady's book.

Combining antibiotics and antivirals with DMSO, Weinstein amazed veterinarians by curing hoof and mouth disease (aftosa). With his combinations he saw shingles, asthma, peritonitis, and burn wounds heal rapidly. Born in 1901, he was especially interested in working with the aging. Putting DMSO together with the amino acids GABA, GABOB, acetylglutamine, acetylcholine, and the memory enhancer centrophenoxine, he formulated a product called Merinex. In another called P-92, he combined DMSO with magnesium pemoline. In one called Ipran, DMSO was combined with procaine, which Romanian Dr. Ana

Asian made famous for combating senility.

Treating 84 elderly men and women suffering from various psychological problems with Dr. Weinstein's products, Dr. Gustavo Muinzaga, professor of neurology at the University of Chile, reported that 95% showed favorable responses. Other neurologists found that Ipran produced benefits in 75 out of 100 senile persons with cerebrovascular diseases, and helped people recover from strokes faster. In another study, neurologists treated 70 men and women with anxiety and depressive neuroses and intellectual deterioration. Weinstein told McGrady, "More than one half with various neuroses enjoyed excellent responses to Merinex... Those with neuroses lost their anxiety, irritability, and aggressiveness".

Dr. Morton Walker, too, checked on Weinstein's work and found that Dr. Carlos Nasser, head of the Department of Abandoned Children of the Chilean National Health Service, had conducted a research project in 1969 on 44 school-age children with learning disabilities. Some had been retarded in learning to walk or speak. Some had "unmotivated aggressiveness, rebellion, irritability, and convulsive attacks". IQ's ranged from 35 to 85. The experiment with DMSO-based therapy (Merinex and Ipran given both by capsule and injection), went on for 6 to 10 months, with the IQ test repeated at 3, 6, and 10 months. Dr. Nasser saw "an increase in the IQ... an overall improvement in intellectual capacity, evident

progress in reading, writing, and mathematics, and a decrease of behavioral problems... The doctor... observed the elimination of anger for no reason, a general reduction of irritability, and a lessening of disobedience". And all without Ritalin.

In his DMSO, ***Nature's Healer***, Dr. Walker explains what could cause these results. "The amino acids in (Weinstein's) products are agents for the resupply of the nervous cells and are considered indispensable for the biochemical process that controls the cerebral metabolism. The products have been used for the treatment of depressive neuroses, anxiety, psychic disorders connected with menopause, apathy and fatigue of geriatrics, and poor intellectual performance in children. With assistance of DMSO, the amino acids penetrate the brain and activate the neuronal function, which is suppressed in many syndromes of mental retardation. In children, the earlier this treatment is begun, the greater the possibility of achieving patient improvement."

At the 1974 symposium at the New York Academy of Sciences, five prominent doctors from Chilean hospitals and universities presented a very extraordinary study of the use of the DMSO-amino acid Merinex therapy in the severe mental retardation known as Down's Syndrome. Taking a group of 55 children with the syndrome, holding 24 as controls, 31 were treated over one year with Merinex given by intramuscular injection. In the treated

group, all measurements improved and the doctors declared that the DMSO-based medicine offered “an evident advance in the therapy of this syndrome”. In later work, they mentioned that they gave higher doses and saw better results.

This was no surprise to Dr. Jacob, who had seen similar improvements with Down’s Syndrome children brought to him for treatment. To check on the reports of the Chilean doctors, he flew to Santiago and was given a hero’s welcome.

Dr. Weinstein was so enthusiastic about his DMSO-based products that, with an eye to distributing them in the U.S., he invited the FDA to come to Chile to look into the research. FDA sent representatives to visit Weinstein and for awhile even permitted Merinex to be sent into the U.S. for clinical studies. However, Weinstein and his sons found that the FDA was always asking for more and more data. After Nicholas Weinstein died in 1980, sales of the DMSO-based products dropped off, and they were eventually discontinued.

After Mike Wallace’s two **60 Minutes** shows on DMSO in 1980, a number of clinics opened in Tijuana to treat arthritis with DMSO given intravenously for three days. The characteristic DMSO odor was the worst problem. This was easily resolved by staying an extra two days and enjoying the beach, after which the smell disappeared.

As we enter the 21st Century, use of DMSO in Brazil is

second only to the United States. Dr. Efraim Olszewer of Sao Paulo, one of the leaders of the “orthomolecular” movement, as non-conventional medicine is called in Brazil, estimates that he has successfully treated around 6,000 people for arthritis with DMSO.

By 1991, over 3,000 clinical studies had been carried out with DMSO involving over 500,000 patients. DMSO has the widest range of therapeutic applications of any single chemical.

The FDA never was able to document its earlier concern over human vision problems from DMSO, since they only occurred in certain animals. These concerns seemed particularly strange in 1998 with the advent of the male potency pill Viagra. On May 11, 1998, ***Business Week*** reported that “The FDA has issued plenty of material on (Viagra’s) risks, which include headaches, blackouts, and vision problems” – yet it approved Viagra as a prescription drug.

The persecution of DMSO – and Pat McGrady chose the right word – teaches us a great deal about what’s wrong with our therapy regulatory process. It has been known since 1967 that it is almost impossible to give a human enough DMSO to do harm. It is seven times safer than aspirin, safer than penicillin, and safer than arthritis drugs. The Vacaville trials proved DMSO was non-toxic in 1967, and it should have gone on the market then. Considering all the people who have suffered – and are suffering – from pain, from [arthritis](#), bursitis, traumatic

injuries, strokes, scleroderma, and from unnamed other conditions where DMSO would help either alone or in some combination, the FDA is light years late in approving DMSO for general medical use. FDA has no business having jurisdiction over non-toxic therapies at all.

**Once he was convinced that it was non-toxic, Dr. Stanley Jacob has taken an ounce of DMSO orally every day; as of the Year 2000, it is 40 years.** He says that he decided that if long-term use was going to have a harmful effect on a human body, he preferred it would be his. Effects? He hasn't been ill in years. Considering all those many attributes of DMSO, that's not surprising. And its versatility continues to amaze him. He even found and patented a method to use DMSO as a spray to solve one of mankind's oldest problems – snoring! In the best of all worlds, Stanley Jacob would already be a Nobel Laureate for having discovered the healing properties of DMSO. With the patience of a saint and the persistence of a bull-dog, he is still dedicated to bringing to the world the benefits of **one of the most versatile and extraordinary compounds the Almighty ever put here**. For **DMSO is not a concocted, man-made chemical; this “tree juice” is a gift of God**. And many people would be a lot better off if more use were made of it.

Why are we being “protected” from DMSO?

1. **The Persecuted Drug**, by Pat McGrady

## 2. DMSO, *Nature's Healer*, by Dr. Morton Walker

### ***Webmaster's Note – not necessarily the Opinion of the Author of above Article:***

DMSO available in Agricultural Feed Stores and in some Healthfood Stores and also on the Internet. Strangely enough, you may also find it in some Hardware Stores. Make sure the label reads something like "Pure DMSO... 99.9%" That is the stuff veterinarians use – it is high purity and therefore good for humans too regardless of what the politically inspired warnings on the label may say. Be sure to use DMSO (at least 99.9% purity) only in concentrations recommended in the above article. No danger to put it full strength on arms, legs, hands and feet – if they are clean (without any trace of toxic substances, like nicotine, pesticides, cement, or any kind of harmful chemical).

DMSO can also be taken orally (more effective & no skin irritation). Start out mixing 1 table spoon of DMSO with a glass of orange or grapefruit juice. Concentration may be increased to [one ounce per day diluted in a tall glass of fruit juice](#).

This link right below has an index of many article located at the site and is quite handy:

<http://healthnews.benabraham.com/html/>

**If that link does not work go here :** <http://healthnews.benabraham.com/>

The Article and post is for entertainment purposes only. Please use your own brain and do your own research for decisions for yourself. Capeche?

<http://www.politicsinhealing.com/>

Cut and paste from <http://www.apricotsfromgod.info/natureshealer.htm>

**“DMSO – NATURE’S HEALER” by Morton Walker, M.D.**

The American Medical Association (AMA) held a leadership conference the weekend of February 14, 1981, and one of its speakers was Otis R. Bowen, M.D. Dr. Bowen is former governor of Indiana, a leader in medicine, management, and politics. In his presentation to the AMA, he shocked the assembly by admitting that he took the law into his own

hands and used an illegal drug to ease his wife's pain when she was dying. Beth Bowen died January 1, 1981, after months of agony from multiple myeloma, a type of bone cancer.

Dr. Bowen, who was preparing to step down from the governorship at the time, turned to dimethyl sulfoxide, or DMSO, to ease his wife's intense pain. He had obtained the liquid solvent from a veterinarian and found that it relieved his wife's suffering "in minutes," he said.

The Food and Drug Administration (FDA) forbids the use of DMSO in humans except in treating a rare urinary bladder condition. Even in the face of the government ban, Dr. Brown did what he knew was right for his wife by administering intravenous DMSO. "Why can't dying persons, with severe pain, have easy prescription access to it?" He asked in his speech. "The only excuse I could find was that, after prolonged use and heavy dosage, it caused an occasional cataract in dogs only."

Before you've read very far into this book, you'll probably be asking questions similar to Dr. Bowen's. It won't be difficult to identify with the patients involved here, some of whom have been forced to take treatment into their own hands by turning to DMSO.

In fact, DMSO has not been found unsafe for humans. Any side effects are merely minor irritations. DMSO stops bacterial growth. It relieves pain. As a vasodilator, the drug enlarges small blood vessels, increasing the circulation to an area. It softens scar tissue and soothes burns. DMSO's anti-inflammatory activity relieves the swelling and inflammation of arthritis, bursitis, tendinitis, and other musculoskeletal

injuries. And it does many more good things of a therapeutic nature for anyone who is injured or ill.

I recommend that you use DMSO strictly under the supervision of a doctor who is skilled in its application. Only the pure pharmaceutical grade should be employed, not the crude industrial grade.

DMSO is both a drug and a good solvent. Industry values it for removing paints and varnishes, and dissolving certain plastics such as rayon, polyvinyl chloride, polyurethane, methacrylate, and acrylic. It doesn't affect cotton, wool, nylon, leather, or polyesters.

Most important, it benefits human body cells, tissues, and organs in unique ways. DMSO is the twenty-first century's newest healing principle with a very wide range of usefulness. It represents an entirely different means of treating diseases – not as an ordinary drug works for a given disease, but as a holistic ingredient that brings whole-body cellular function back to normal.

Dimethyl sulfoxide has had a bettered thirty-year history. But because of the general public outcry about its ban, DMSO has become a household word and a medical-political cause célèbre. Those of us who have been using the drug for twenty-six to twenty-eight years never dreamed that it would become a focal point in the continuing battle between individual freedom and the power of government

My colleagues and I have been criticized, ridiculed, and even persecuted in some medical circles for promoting and using DMSO. But I, and others like me, came to the conclusion, having observed establishment medical thinking for forty years that the only way a truly revolutionary treatment

principle can be brought to the patient is by appealing to the general population through the information media. That is the purpose of this book.

Much of my material will appear anecdotal to the scientist, but such language is what the public understands best. And sometimes a hundred patient stories, heard by a sensitive and intelligent physician, are as good as or better than a double-blind research project. Double-blind studies are often just that – everyone involved is blind and stays that way until, many years later and thousands of patients later, it is discovered that the particular drug doesn't work or is too toxic to warrant its use.

Good examples of toxic drugs are the arthritis agents Motrin, Tolectin Nalfon and Naprosyn. They all underwent extensive double-blind testing. All are weak organic acids and prostaglandin inhibitors – like aspirin. About as effective as aspirin, these four drugs have two distinct differences: they are more toxic than aspirin and cost ten to thirty times more money. So much for double-blind studies. Whether you agree or disagree with current claims, it's likely you'll affirm that if a drug has been proven safe, doctors should be free to use this agent when they believe it will help their patients. With all the extremely potent and dangerous drugs on the market, it is absurd to keep such an effective product as DMSO from pharmacy shelves.

Certainly not all of the claims for DMSO will prove to be valid, but in my opinion, many of them have already shown themselves to be true. And the most dramatic use of the medication is likely yet to be discovered.

Another purpose for my book is to point out the myriad

applications of this unique substance. Once DMSO is legalized for use in all states and ethically produced for topical, parenteral, and oral administration, people won't have to smuggle the feed-store grade and the crude industrial grade into their homes to paint on their arthritic joints.

DMSO will eventually find its place in the armamentarium of American medicine. We who believe in the substance want to see it happen sooner than later. The clinical evaluation of DMSO began in the United States in 1963 and now, in 1992, the FDA still has not approved the drug for more than one use. This situation gives rise to some underlying questions you may find running throughout this book. How do we get the FDA to see beyond its blind spot? How can we either bring DMSO to the people or declare the substance useless once and for all?

You will find lots of answers in these pages. DMSO needs even more public pressure than has been leveled at the regulatory process already. We want doctors to be able to prescribe DMSO without fear of censure from the medical world or the hospitals that employ them. If this doesn't happen, it appears that little will be done to ensure that a pure, medical grade of DMSO will be made available for patients.

In writing this book, I have found a distinct reticence by doctors to have their names mentioned in connection with DMSO. Often they provided me with glowing case reports of successes with the drug treatment, but their fear of colleague criticism prevented my revealing their identities. I had to discard such reports, and there were hundreds of

them.

DMSO has the largest potential number of uses ever documented for a single chemical. My wish is that this book will bring more of them into the public domain than has been allowed to this point. It should be well understood by everyone at the outset that I don't say the substance is some kind of miracle cure. More properly, DMSO is a very effective and versatile compound that has been successfully adapted for a number of health problems. I want to get it into the hands of more people so that they may be relieved of discomforts and diseases for which DMSO is appropriate. I hope you will agree that mine is a worthy goal.

Morton Walker, D.P.M.

Stamford, Connecticut

## CHAPTER 1 – The Painkiller with a Problem

In the late spring of 1980, Eva Lee Snead, M.D., then a family practice specialist in San Antonio, Texas, learned that her friend, thirty-two-year-old psychologist Marjorie Saloman, was supposed to undergo a hysterectomy, the removal of her uterus. Mrs. Saloman's genital system problem arose from a stenosis of the cervical os. This condition is a narrowing or stricture at the mouth of the neck-like opening to the uterus where it extends into the vagina.

The psychologist described to Dr. Snead how several unsuccessful attempts at cervical dilatation had been attempted by her gynecologist. He tried to relax the cervix by injecting local anesthesia at its lower quadrant. Such an anesthetic technique usually is simple and effective, but this particular block had been no help to the woman even after

many tries. Mrs. Saloman's gynecologist admitted that for her the attempted cervical dilatation was a complete failure. The pain had been so great for this patient that when the dilatation instrument was inserted she had fainted. Her gynecologist quickly removed the instrument because the anesthetic was not allaying the pain. None of his attempts to relieve the problem worked; surgical removal of the uterus was the next procedure of choice.

Dr. Snead asked her friend to wait a week before having the hysterectomy, if delay was agreeable to the gynecologist. Complying with this request, Marjorie Salomon had her physician telephone Dr. Snead to learn the medical reasoning behind it.

Having some prior experiences with DMSO (dimethyl sulfoxide) treatment, Dr. Snead persuaded him to combine the substance with vitamin E and apply it topically to the patient's cervical area. Dr. Snead wanted to try to reduce the woman's scar tissue and adhesions, which DMSO is able to do.

"I was lucky enough to run into the gynecologist on the day that we were going to apply the DMSO," Dr. Snead wrote me, "and he inserted the substance himself with the vitamin E. Before five minutes were over, his instrument slipped into the cervix without any sensation felt by the patient."

A month later, the gynecologist rechecked the woman's constricted cervix and found it was still overly narrow. He repeated the application of DMSO and vitamin E and after a few minutes was able to insert the instrument to stretch the opening without any problem. This time it was a highly successful procedure, and the hospital appointment for

surgery was cancelled.

The patient wore a device that was inserted to keep the cervical canal's wall stretched. In the meantime, Dr. Snead placed her friend on megavitamin therapy using high doses of nutrient substances to restore health to surrounding tissues.

One month after the device had been inserted; the woman was again checked by her gynecologist who found the cervical ok perfectly expanded. He was able to insert probes without first applying DMSO or anesthesia and without the patient feeling any discomfort. Marjorie Saloman had definitely been saved from having a hysterectomy.

Yet Dr. Eva Lee Snead had her medical license revoked for repeatedly employing DMSO and other forms of complementary medicine – what some have labeled “quackery” but that rightly may be considered alternative methods of healing. The state of Texas is not predisposed to allowing deviations from the medical mainstream. And, as you will see, use of dimethyl sulfoxide by forward-looking physicians is out of the medical mainstream.

Lorae Avery, Ph.D., director of The Health Center, Inc., an acupuncture and nutrition clinic in Auburndale, Florida, expressed her amazement to me at the effectiveness of DMSO in eliminating pain. She saw excellent results when physicians working for The Health Center applied the substance externally to patient. One of them was sixty-five-year-old Anna Goldeman, who had been suffering for years with bursitis of the right shoulder. She went to The Health Center for relief of the bursitis in November, 1980, and was

gratified by the results of DMSO treatment.

More dramatic than the patient's alleviation of her shoulder pain was the easing of a discomfort that had begun four years previously. Mrs. Goldeman had undergone amputation of the left hip high in the groin, which resulted in "phantom limb pain." After amputation of a limb, or a portion of it, the amputee may experience strange sensations as though the part were still there. This feeling of phantom pain is generally considered to be a stump hallucination. It arises from various types of nerve stimuli, resulting in burning, tingling, pricking, tickling, or really severe pain. Such sensations are not uncommon for an amputee and are not readily treatable. With application of DMSO to her right shoulder, phantom limb pain with its constant twitching went out of Mrs. Goldeman's left groin. She no longer sensed that she still had an extremity. Now she could feel more at peace with her situation.

Dr. Avery said, "We did not attempt to treat the phantom limb pain; our physicians were concerned with the bursitis. Yet, the phantom pain disappeared coincidentally from application of DMSO to the woman's shoulder. Thus, what happened is, DMSO applied to one part of the body caused phantom pain to go away in another part of the body. And it's permanently stayed away."

Checking back with Dr. Avery over ten years later, I learned that Mrs. Goldeman continues in comfort knowing that DMSO is available to cease her pain whenever needed.

---

Murray Franklin, M.D., of Chicago, is a Clinical Associate Professor of Medicine at the University of Illinois College of

Medicine, as well as the medical director of the Union Health Service, the largest pre-paid medical plan in the state of Illinois. He received a supply of DMSO in the fall of 1980 and decided to try it for the benefit of some patients for whom nothing else had worked. One of the people receiving topical therapeutic applications was Lucas Scheinholtz, fifty-two, who had been troubled with rheumatoid-osteoarthritis of both knees for more than a decade. Mr. Scheinholtz, hobbling with the assistance of two canes, arrived at Dr. Franklin's office complex to visit another physician. The patient had previously received many injections of cortisone, which his regular physician administered routinely. But no appreciable improvement in his arthritis had been observed by either the patient or his doctor.

"I suggested to the man's physician that we might paint some DMSO on both of his painful knees," Dr. Franklin said. "His right knee was swollen; the left knee was not. The right knee was warm to the touch. The patient's doctor agreed to a therapeutic trial, and I applied DMSO in three applications. Since I was not fully acquainted with how to use the solution, I allowed an application to dry and then put in on again and again. Within fifteen to twenty minutes the patient said he felt no pain and was able to walk practically without the use of a cane.

"He returned in one week and described his pain the left knee as having disappeared completely," said Dr. Franklin. "There just wasn't any. The pain in the swollen right knee had returned just a little. I applied the DMSO again and the man got a similar result within a quarter of an hour. No more pain! I haven't seen him since and presume he is

feeling fine.”

## THE NEW MEDICAL BREAKTHROUGH FOR PAIN

The people have a new medical breakthrough for pain: dimethyl sulfoxide, called DMSO. By itself or in combination with other medical ingredients, dimethyl sulfoxide should be useful in treating almost every disease known to mankind. The substance, a byproduct of pulp and paper manufacturing, has been employed safely and successfully by millions of people around the world to control swelling; reduce discomfort; take away inflammation; slow the growth of, and in many instances kill, bacteria, viruses, and fungi. It heals burns and relieves sprains, strains, and arthritic joints. It has worked effectively against cataracts, sports injuries, scleroderma, myasthenia gravis, tuberculosis, and even lessened mental retardation in people with Down's syndrome.

Cancer seems to respond well to DMSO. At Mount Sinai Hospital in New York City, Charlotte Friend, M.D. has turned cancerous cells into harmless normal ones in the test tube by putting them in touch with the DMSO solutions. Thus, DMSO cancer research is in progress.

Reported in the Journal of Clinical Oncology, in November 1988, twenty cancer patients with extravasations of anthracycline (destructive secretions from tissues of the toxic chemotherapeutic agent anthracycline onto the recipient's skin with the potential to form cancerous ulcers) were treated on a single-arm pilot study with topical-applied 99 percent dimethyl sulfoxide and observed for three months with regular examinations and photographs. DMSO was applied to approximately twice the area affected by the

extravasations and allowed to air dry. This was repeated every six hours for fourteen days. The initial signs of extravasations included swelling, redness, and pain. The median area of damage on the skin of these patients was 8.25 square centimeters (cm<sup>2</sup>) and a median of twenty-five minutes elapsed between extravasations and application of DMSO.

In no patient did extravasation progress to ulceration or require surgical intervention, as is usual with this toxic chemotherapeutic agent for cancer. The authors of this report suggest with 95 percent confidence that ulceration was likely to have occurred in at least 17 percent of these patients. They go on to say that at three months there was no sign of residual damage in half the patients, while a pigmented indurate area remained in ten. The only side effects of DMSO included a burning feeling on applications, subsequently associated with itch, redness, and mild scaling. Slight blisters occurred in four patients, and six reported a characteristic breath odor associated with oysters. The oncologists stated that topical DMSO appears to be a safe and effective treatment for the cancer-related condition, anthracycline extravasation.

DMSO tends to prevent the formation of scar tissue, or to dissolve it once present. The contracture (drawing together) of scar tissue ordinarily left after a burn doesn't take place. Chilean physicians have published their results of using the substance, which indicate that it reduces the incidence of heart attacks or angina pain. It has been credited with preventing damage to heart muscle when tested in animal experiments. As with its use in stroke, DMSO may be

lifesaving if employed early in heart attacks. Investigation is continuing.

Studies in Chile also show DMSO to be able to penetrate across the blood-brain barrier. It carries drugs effective against certain forms of mental illness directly into the brain.

Placed into the nostrils, DMSO can open blocked sinuses within a few minutes.

It transports antibiotics right into the middle ear to lessen infections. It does the same against viruses and reduces the symptoms of herpes zoster (shingles) and herpes simplex (fever blisters). The viruses are hit with antiviral drugs by the DMSO transport. Furthermore, the herpes II venereal disease is greatly relieved by application of DMSO directly to the genitalia.

Periodontitis in Poland has cleared up gum disease and reduced tooth decay and their associated pain by painting DMSO on the involved areas. Some pioneering dentists are dropping it into empty tooth sockets after extractions, especially those for wisdom teeth. It stops post-extraction swelling.

A 1987 paper coming out of Russia described the treatment of patients having generalized Periodontitis with indomethacin in a suspension of dimethyl sulfoxide. Periodontitis is a disease of the structures supporting the teeth such as the gums, periodontal membrane and alveolar bone. The action of bacteria on food debris accumulated around the margins of the gums causes the formation of plaque, which eventually forms a hard deposit, tartar (or calculus). This accumulates in the gingival crevices (the spaces between the gums and the

surface of the teeth), which become abnormally enlarged to form gingival pockets. It's an early stage of periodontal disease.

In chronic gingivitis, the gums are marked by chronic inflammation, and they become swollen and bleed easily. Calculus accumulates in the gingival pockets, causing bleeding and ulceration. Untreated, the plaque spreads to the underlying periodontal membrane and alveolar bone, which are destroyed. In this stage of chronic Periodontitis, the teeth become loosened and eventually fall out.

Periodontal disease is the major cause of tooth loss in middle-aged and elderly people. It is brought on by poor oral hygiene and also by ill-fitting dentures and badly made artificial crowns and fillings. The early stages of Periodontitis are treated by scaling to remove the calculus and polishing to remove the plaque, combined with careful oral hygiene. In advanced disease the gingival pockets are surgically removed by gingivectomy (gum excision).

Now periodontal disease is being treated with indomethacin and DMSO, in combination. Indomethacin is a drug with anti-inflammatory, anti-fever, and pain-killing properties, but containing no corticosteroids. Its mode of action, like that of certain other anti-inflammatory drugs, is not known.[1]

Before this Russian publication, clinical results from the treatment of a hemorrhagic form of Periodontitis were reported from Bulgaria. The clinicians used a complex herb extract and 15 percent DMSO to rid their patients of periodontal disease.[2]

American podiatrists have found DMSO effective for the treatment of painful corns, calluses, ingrown toenails,

bunions, hammertoes, heel spurs, and even the inflammation of gouty big toes. DMSO appears to control gout pain after just seven days of application.

All this happens in a way that medical scientists have yet to fully understand. They don't know how DMSO actually works. For this reason primarily, DMSO is not approved by the United States Food and Drug Administration (FDA) for any other human medicinal use except as a treatment for interstitial cystitis, a condition that causes scarring and gradual shrinkage of the bladder.

Bruce H. Stewart, M.D., of the University of Alabama, administered DMSO to 213 patients and found it quickly healed the bladder condition despite the fact that the patients had not responded to traditional treatment. Before the success of DMSO, people suffering with interstitial cystitis faced either major surgery of the bladder, or even its complete removal. They suffered from the urge to urinate as frequently as every ten minutes.

Unlike criteria laid down for studying the use of DMSO for other conditions, the study on interstitial cystitis was done following an elementary protocol. The patients were ill, didn't improve spontaneously, and all forms of treatment were ineffective. They then received DMSO and improved markedly. DMSO had eliminated the patients' health problems and won approval by the FDA for use in bladder treatment – but only for interstitial cystitis.

#### THE FDA OBJECTION TO OTHER DMSO USES

“The fundamental problem from the point of view of the FDA is the quality of the scientific information that is available to support the various claims that are made for DMSO,” said J.

Richard Crout, M.D., Director of the Bureau of Drugs with the Food and Drug Administration. Dr. Crout made his statement at a hearing before the House Select Committee on Aging, 96th Congress, held March 24, 1980.

Dr. Crout continued, "I want to make it clear that the Food and Drug Administration has approved DMSO for the indication for which there is evidence that meets the statutory standard. We are prepared to approve it for any other indications when the evidence comes along that it does meet that statutory standard."

In brief, the drug can be approved if clinical researchers show substantial evidence of its effectiveness by providing the FDA with well-controlled trials. The "possibility" that DMSO is effective, according to the present statute, is simply not enough. For this reason, the only thing holding up FDA approval of DMSO for any of the substance's indications is the availability of well-controlled trials that meet statutory standards, said Dr. Crout. There is a basic conflict between the quality of the scientific evidence available and the statutory standard for approval.

This fundamental confrontation is best illustrated by a new drug application (NDA) submitted in 1978 by Research Industries Corporation of Salt Lake City, Utah, the major producer of a human medicinal grade of DMSO in 50 percent concentration Rimso-50. Research Industries Corporation wanted to extend the use of its product and market it for the symptomatic relief of pain and ulceration in the fingers of patients with scleroderma. Scleroderma is a rare collagen disorder that results in thickening of the skin from the swelling of fibrous tissue. It most often involves the

hands, especially causing ulcers on the fingers, and less frequently on other tissues in the body. After detailed review by the FDA's Bureau of Drugs staff and its Arthritis Advisory Committee, the NDA was refused on the grounds that the available clinical trials did not yet demonstrate that DMSO was effective for scleroderma. Medical science's current investigative techniques using double- or single-blind studies seemed inadequate for evaluating the effectiveness of DMSO in this instance.

Research Industries Corporation relied principally on one particular study to demonstrate DMSO's effectiveness against scleroderma. This study had each patient dip only one hand into a solution of DMSO. The untreated hand was observed as a control. Both hands had ulcerations of the skin of the fingers, and investigators thought that DMSO's effectiveness in healing sclerodermatous ulcers would clearly be shown by what happened to the two hands.

Dr. Crout described what happened. "There was a general improvement trend in the healing of ulcers of the fingers in many patients, and in a few this was quite striking. Interestingly, however, this improvement occurred in both hands in these patients with scleroderma; that is, both the treated and untreated hands tended to heal."

Now, DMSO is different from any other known medical substance in that it is easily absorbed into the body. Paint an amount the size of a silver dollar anywhere on your upper body and in thirty seconds you'll taste it on the tip of your tongue. It penetrates the skin and travels through the blood stream that fast.

The officials of the Research Industries Corporation argued

that both hands of the affected patients healed because DMSO worked equally well on the hand in touch with the liquid and on the control hand. Simply, DMSO healed the control hand by traveling through the blood stream to the ulcer site. Absorption of the substance into the body from the treated hand was inevitable because of its unique power of penetrability. Current techniques utilizing the scientific method as it is understood today cannot be applied to the study of DMSO.

Dr. Crout said, "Our staff and advisory committee felt, to the contrary, that improvement of the untreated hand raised the strong possibility that the general improvement trend in the whole trial was attributable to a nonspecific effect of DMSO. Everyone agreed that the trial showed that DMSO may be effective, but few felt that the trial proved the point. "Because the statutory standard for approval of a drug is substantial evidence of effectiveness as shown by well-controlled trials, not simply the possibility of effectiveness," continued the FDA chief, "we are unable to approve DMSO for this indication at this time."

In order for a new drug to be recognized by the FDA it must conform to section 505 of the Food, Drug, and Cosmetic Act, which holds that the standard for effectiveness is "substantial evidence" of effectiveness. This means evidence must come from controlled clinical investigations conducted by experts qualified by scientific training and experience to evaluate the effectiveness of drugs.

Dr. Crout declared that applications for an investigational new drug (IND) submitted for DMSO during the previous eighteen years were faulty. They had not been assembled

into scientifically designed studies. They had not followed that certain discipline required by research. All INDs must go through a standard FDA procedure to win approval. The prior investigational new drug applications submitted by three pharmaceutical companies of national repute were poorly prepared, said Dr. Crout, and the companies did not know how to present an IND application to the FDA to show proper evidence of value in the use of DMSO. He made this statement despite the fact that these same pharmaceutical firms had previously won approval for other drugs.

#### FLAWS IN FDA PROCEDURE

Of course, the pharmaceutical companies disagreed. The co discoverer of the therapeutic properties of DMSO, Stanley W. Jacob, M.D., Associate Professor of Surgery at the University of Oregon Medical School, certainly disagreed. He believed the advisory committee that made recommendations against FDA approval of DMSO was biased against DMSO. Dr. Jacob told the House Committee of Aging: "I am not at all satisfied that the FDA is giving DMSO a fair shake."

The DMSO researchers who worked with patients on a case-by-case basis pointed out that the FDA advisory committee was negatively disposed. The committee members had never themselves used DMSO as a therapeutic tool. And this was admitted by Dr. Crout. The Honorable Claude Pepper, former Chairman of the House Select Committee on Aging, was inclined to agree with the analysis made by Dr. Jacob. Congressman Pepper told Dr. Crout, "If there is a drug that was being pressed upon you by three drug companies who apparently thought

the drug had enormous potential, in a case like that, I would think that you would be eager to see if the claims that were made could be justified. You would be looking for a satisfactory proof that would square with your conscience and your judgment that that product might give relief to a lot of people and could be put on the market.

“Now, the public – and I must say up to now I share the opinion – has the impression that your agency in its desire to be careful and its desire not to let anybody be hurt, has denied perhaps a lot of people relief in fear that if they allowed the thing to be approved as it was being presented, that they might be hurt by it; that yours is a negative attitude, that you don’t tell them what is wrong with the application in an informal way so they can attempt to correct it and the like; that you are not eager to see the users of the country that might profit from it get the advantage of it,” said the Congressman.

“You say, ‘It is no skin off my back,’ as the old saying goes, ‘if these folks cannot comply with the technicalities. That is the law; it is none of our responsibility. Let them get a better lawyer or somebody else. We are not running it. We are just sitting up here trying to protect the public interest.’

“Are you sure that there is no justification for the public or even members of Congress having that impression of our regard of your duties?” asked Congressman Pepper. “Are you sure there is no foundation for that fear?”

Dr. Crout discounted such a possibility and implied that DMSO was having difficulties because it was so unorthodox. He said it would be far easier for a new drug to have its application approved if it was closer to something

already in the marketplace, such as a new antibiotic or tranquilizer that duplicates an existing one.

DMSO is a substance totally strange to medical science. It has a novel mode of action not understood within the context of our current healing concepts. It is an altogether new principle that will possibly revolutionize therapeutics once it is studied in a more exacting way. For now, however, DMSO is not being studied in accordance with the standard double- or single-blind procedures commonly used in the scientific method. This is the present problem. And it is one that has perplexed the medical community ever since DMSO was first discovered to have therapeutic value to counter human injury and heal human disease.

The existence of this new anti-inflammatory painkiller raises the questions: How can it be established with certainty the degree to which DMSO does or does not work for the numerous and varied conditions reported in the medical literature by clinicians using it successfully? Are we able to break the logjam that enables a federal agency to keep this drug from general use because its research studies don't conform to the regulations laid down by that same federal government for its citizen's protection? Does DMSO have a history of controversy among pioneering health professionals and bureaucratic medical conservatives alike, because neither group truly comprehends how radically this substance departs from known principles of healing? Must DMSO remain controversial?

## CHAPTER 2 – DMSO's Controversial History

On November 10, 1980, United States Food and Drug Administration officials entered the office of Dr. Stanley

Jacob at the University of Oregon Health Sciences Center. They were looking for research reports on possible damage to human eyes from the use of DMSO. They had an administrative search warrant issued by a federal judge and were prepared to rifle through and seize the files kept by Dr. Jacob.

William Zuber and Dr. Alan B. Lisook of the FDA were refused access to any documents by Jacob even in the face of the federal warrant. Instead, Jacob's attorney, Jay Geller, answered the warrant point-by-point in federal court. Mr. Geller said such reports or documents didn't exist or, if they did, were not in Jacob's possession .

Geller added that certain documents requested were privileged patient information and not available even under court order except in cases where patients give permission. Zuber and Lisook walked away with only one paper that Jacob provided a two-page memo on DMSO and its legal use in treating interstitial cystitis. Otherwise, they got no response to questions they asked. Zuber admitted he did not have any authority to question the physician, since the Food, Drug, and Cosmetic Act does not give the FDA "access to people, just things."

When Lisook asked Geller whether the reports had ever been in Jacob's possession in the past, Geller assured the investigators that they had not and that no documents had been removed from the doctor's office since the warrant was issued. Zuber and Lisook then terminated the meeting, saying they didn't believe they could obtain any information "central to this warrant."

Geller accused the FDA of harassing Jacob. He said much

of the information requested in this federal warrant was on record from previous hearings.

Jacob said there was no evidence of damage to the human eye caused by DMSO. “Allegations of hidden toxicity are false,” he stated.[3]

Such controversy, with legal actions and reactions, has commonly surrounded the puzzling painkiller dimethyl sulfoxide. Its exciting biological and medical uses have made the substance one of the stormiest and most disputed drugs of our day. It lay dormant for nearly one hundred years after its discovery; now it had burst on the medical scene amidst contention, discord, charges and countercharges – literally a war intended to convince others of the truth.

The loser in all this intraprofessional argument is the medical consumer. Patient advocacy doesn't seem to exist when it relates to DMSO. Welfare for the people has been abandoned. The facts remain undetermined with certainty; guidance to help victims of illness make the wisest health decisions for themselves has been ignored. Health professionals and medical bureaucrats apparently are failing to fulfill their responsibilities to the public.

#### THE SOURCE AND ORIGIN OF DIMETHYL SULFOXIDE

DMSO was first synthesized in 1866 by Russian scientist Alexander Saytzeff in Kazan, on the Volga River in Central Russia. He saw that the substance was colorless, had a garlic-like odor, felt oily to the touch, looked like mineral oil when poured from the test tube, and left an aftertaste similar to clams oysters. It had laboratory curiosity value for Dr. Saytzeff and his fellow chemists because dimethyl sulfoxide

combined with almost any chemical he dropped into the liquid. It was an excellent solvent, useful as a degreaser, paint thinner, and antifreeze. For about eighty years, the only publication advising scientists about the stuff was a paper Dr. Saytzeff had submitted to an obscure German chemistry journal that printed his article in 1867.

After World War II, chemists started to show active interest in the substance. A number of papers appeared in chemical literature in 1948, showing DMSO to be an excellent solvent. In 1959, a group in Great Britain demonstrated that the solvent would protect red blood cells and other tissues against freezing conditions.

Dr. H. Harry Sczmant, Chairman of the University of Detroit's chemistry department, explained that the liquid has a tremendous capacity to dissolve substances. It is a reagent that can speed up some chemical reactions a "billion fold." "The unique capability of DMSO to penetrate living tissues without causing significant damage is most probably related to its relatively polar nature, its capacity to accept hydrogen bonds, and its relatively small and compact structure," he said. "This combination of properties results in the ability of DMSO to associate with water, proteins, carbohydrates, nucleic acid, ionic substances, and other constituents of living systems. Of foremost importance to our understanding of the possible functions of DMSO in biological systems is its ability to replace some of the water molecules associated with the cellular constituents, or to affect the structure of the omnipresent water." [4]

Controversy began to surround DMSO in 1962 when Dr. Jacob first became interested in how to safely freeze human

kidneys and considered the solvent for this purpose. He asked Robert Herschler, a chemical applications supervisor at the Crown Zellerbach Paper Company, for some of the chemical. Crown Zellerbach had plenty to spare, since DMSO is a byproduct of its paper-making process. For five dollars a quart it can be produced commercially in crude form for refining into human medicinal application.

At their first meeting, Robert Herschler mentioned that he had difficulty washing the stain off his hands when both DMSO and dye got on them. Dr. Jacob recalls: "We painted DMSO on our skin and within fifteen minutes noticed an oyster and garlic taste. The skin where the chemical had been was dry."

The drying effect of dimethyl sulfoxide set off the DMSO explosion. Dryness of a therapeutic agent makes it valuable in the treatment of burns, since moisture tends to promote infection. Jacob and Herschler tried it on burned rats and found those treated were quieter in behavior than the untreated. The drug relieved burn pain. "From that point on, DMSO usage just spread like wildfire," Dr. Jacob said in an interview.

In the United States DMSO is derived from lignin, the cement substance from trees. In Europe and other places it is synthesized from coal, petroleum, of other organic substances.

Collaborative efforts between Jacob's staff representing the University of Oregon Medical School and Herschler representing Crown Zellerbach Corporation demonstrated in laboratory tests that DMSO would not only pass through the skin and mucous membranes, but during passage would

carry with it a certain number of other substances. For instance, penicillin can be dissolved in DMSO and be carried through the skin without a needle. Local anesthetic can be carried the same way.

In these early studies, DMSO was shown to relieve pain, reduce swelling, slow the growth of bacteria, improve blood supply, soften scar tissue, enhance the effectiveness of other pharmacologic agents, act as a diuretic, and function as a muscle relaxant. It eliminated the pain of sprains, strains, and arthritis, and even the pain of broken bones. Veterinarians used the substance, by prescription, for arthritic conditions or injuries in animals. In arthritic greyhounds, an injection of either DMSO or corticoid (a substance that has an action like a hormone of the adrenal cortex) will enable the animal to race again. In six months 60 percent of the corticoid-treated dogs will have a recurrence, but less than 20 percent of the dogs treated with DMSO show such recurrence.

## THE FDA ENTERS THE PICTURE AND CONTROVERSY STARTS

The first report on the use of DMSO as a pharmacologic agent was written by Jacob in 1963 and published February 1, 1964. It caused a flood of trials and wild enthusiasm over the new “miracle” drug that carried other substances through the skin and into all organs of the body. It was soon obvious that the chemical could relieve inflammation and pain in many conditions, some heretofore untreatable any other way.

The first investigational new drug (IND) application for the clinical study of DMSO in humans was submitted to the FDA

on October 25, 1963, and subsequently approved. Enormous interest in the drug developed rapidly, to the point where it began to be used very extensively, especially for the treatment of sprains, bruises, and minor burns. The drug was supplied at no charge to great numbers of investigators in general medicine, specialty medicine, and to paramedical professionals, including physiotherapists, a few dentists, nurses, and the author of this book, a former practicing podiatrist.

By 1965 an estimated 100,000 patients had received the medication. Studies were being conducted but the FDA did not consider them to be well enough controlled to document clearly that the observed benefits were actually due to the drug. The New York Times, in a lead editorial on April 3, 1965, called DMSO “the closest thing to a wonder drug produced in the 1960s.” An international symposium of medical scientists in Berlin, West Germany, in July 1965, was held to exchange information on the effects of DMSO. Still, when three new drug applications (NDAs) on DMSO were submitted to the FDA in 1965, all three were turned down. The pharmaceutical companies Merck, Syntex, and Gibb submitted their NDAs with the statement that DMSO was ready to be a prescriptive agent. The FDA denied their statement and applications, and in fact published its own statement in the Federal Register terminating all clinical use of DMSO. The agency cited toxicological studies showing that high doses of the drug changed the refractive index of the eye lens in experimental animals. That is, a change occurred in their focusing power and a certain cloudiness came over the lenses.

The agency's concern was that visual damage might occur in humans exposed to DMSO. Researchers and bureaucrats didn't know at that time that the eye changes were limited to particular species. Nothing happens to monkeys or, most important, to human beings.

A year later this prohibitive policy was relaxed somewhat. The FDA permitted new investigations for the clinical evaluation of DMSO in serious conditions, such as scleroderma, persistent herpes zoster, and serious conditions, such as scleroderma, persistent herpes zoster, and severe rheumatoid arthritis, for which no satisfactory therapy is available.

In September 1968 the FDA published a further revision, a relaxation of its DMSO policy that allowed topical application to the skin for not more than fourteen days for less serious disabilities such as acute musculoskeletal conditions – for example, sprains, bursitis, and tendinitis. This relaxation of rules was based on a toxicological study of people that provided a reassuring result: no evidence of human eye toxicity due to DMSO was present.

[1] Babenko, V.N. "Treatment of patients with generalized periodontitis with a suspension of indomethacin in a dimexide solution." *Stomatologiya* (Mar./Apr. 1987); 66(2): 26-28.

[2] Goranov, K.; V. Zarankova; M. Velceva; and S. Dermendzieva. "Clinical results from the treatment of a hemorrhagic form of periodontosis with a complex herb extract and 15 percent DMSO." *Stomatologiya* (Nov./Dec/ 1982); 65(6): 25-30.

[3] "DMSO Documents Sought," NHF Public Scrutiny. Vol.

XXVII, No. 27, January, 1981, p. 29.

[4] Szmant, H. Harry. "Physical properties of dimethyl sulfoxide and its function in biological systems," *Biological Actions of Dimethyl Sulfoxide*, Stanley W. Jacob and Robert Herschler (eds.), New York: Annals of the New York Academy of Science, Vol. 243, January 27, 1975, pp. 20-23.