

## DMSO and its EFFECTS

THESE ARTICLES WILL SHOW THE SIGNIFICANCE ON THE EFFECT OF DMSO AND IT'S DERIVATIVE MSM ....AND WHY YOU MIGHT WANT TO INCORPORATE THEM IN YOUR SYSTEM THERE IS A BOOK OUT ON DMSO AND IT'S USES AND HISTORY, AND THE WHY'S IT IS NOT PART OF THE HEALING MODALITIES IN MODERN (SCIENCE) MARKETING THE PHARMA CORPS TODAY ARE AS USUAL MORE CONCERNED ON THERE PROFITS RATHER THEN YOUR WELL BEING...SAD REALLY IF THERE WAS THAT A REAL CONCERN THEN THESE MEGALITHS WOULD HAVE MADE HUMANKIND BETTER....BUT HERE LIES ANOTHER WAY WHERE BY YOU MIGHT HAVE A RESOLUTION TO A CURRENT PROBLEM OR POSSIBLE A PREVENTATIVE FROM A POTENTIAL ONE(S) ALL IN ALL ENJOY

### The Biochemical Reasons for the Health Benefits of DMSO (or MSM)

Within an individual cell, the oxygen transport system will work to smooth-out differences in oxygen potentials between different organelles lowering the potential for damage in some while making more oxygen available to the mitochondria for metabolism. Of course, the mitochondria have to be able to use the oxygen effectively, which means the multitude of reaction systems employed by the metabolic process must be able to utilize the oxygen. As discussed in the "Antioxidant" Health Note, these reactions are promoted by enzymes supported by a wide range of other antioxidants. Thus, the DMSO-MSM transport system will provide additional energy only if the rest of the system can accept the increased oxygen availability. When they are all working together (as a complete, matched set), I believe that we are looking at a remedy for many degenerative diseases.

### A First-Line Treatment for A Multitude of Medical Diseases/Disorders

Once it is understood that DMSO (& MSM) acts as a profoundly effective oxygen transport system, this opens up the opportunity to use this information to treat a multitude of medical disorders, immediate and long term that are caused by a deficiency of oxygen transport. As one example, it has been reported that DMSO is greatly helpful in minimizing the damage from a traumatic brain injury due to a blow to the head or a stroke. Now the explanation as to why it helps is clear. Brain cells, more than any other cells in the body cannot tolerate a lack of oxygen for an extended period of time. The DMSO will enhance oxygen transport to the brain cells until there is sufficient healing to where blood flow and the conventional oxygen transport system is reestablished

### DMSO Penetrates Membranes and Eases Pain

The first quality that struck Dr. Jacob about the drug was its ability to pass through membranes, an ability that has been verified by numerous subsequent researchers.<sup>1</sup>

DMSO's ability to do this varies proportionally with its strength--up to a 90 percent solution. From 70 percent to 90 percent has been found to be the most effective strength across the skin, and, oddly, performance drops with concentrations higher than 90 percent. Lower concentrations are sufficient to cross other membranes. Thus, 15 percent DMSO will easily penetrate the bladder.<sup>2</sup>

In addition, DMSO can carry other drugs with it across membranes. It is more successful ferrying some drugs, such as morphine sulfate, penicillin, steroids, and cortisone, than others, such as insulin. What it will carry depends on the molecular weight, shape, and electrochemistry of the molecules. This property would enable DMSO to act as a new drug delivery system that would lower the risk of infection occurring whenever skin is penetrated.

DMSO perhaps has been used most widely as a topical analgesic, in a 70 percent DMSO, 30 percent water solution. Laboratory studies suggest that DMSO cuts pain by blocking peripheral nerve C fibers.<sup>3</sup> Several clinical trials have demonstrated its effectiveness,<sup>4,5</sup> although in one trial, no benefit was found.<sup>6</sup> Burns, cuts, and sprains have been treated with DMSO. Relief is reported to be almost immediate, lasting up to 6 hours. A number of sports teams and Olympic athletes have used DMSO, although some have since moved on to other treatment modalities. When administration ceases, so do the effects of the drug.

Dr. Jacob said at a hearing of the U.S. Senate Subcommittee on Health in 1980, "DMSO is one of the few agents in which effectiveness can be demonstrated before the eyes of the observers....If we have patients appear before the Committee with edematous sprained ankles, the application of DMSO would be followed by objective diminution of swelling within an hour. No other therapeutic modality will do this."

Chronic pain patients often have to apply the substance for 6 weeks before a change occurs, but many report relief to a degree they had not been able to obtain from any other source.

### DMSO and Inflammation

DMSO reduces inflammation by several mechanisms. It is an antioxidant, a scavenger of the free radicals that gather at the site of injury. This capability has been observed in experiments with laboratory animals<sup>7</sup> and in 150 ulcerative colitis patients in a double-blinded randomized study in Baghdad, Iraq.<sup>8</sup> DMSO also stabilizes membranes and slows or stops leakage from injured cells.

At the Cleveland Clinic Foundation in Cleveland, Ohio, in 1978, 213 patients with inflammatory genitourinary disorders were studied. Researchers concluded that DMSO brought significant relief to the majority of patients. They recommended the drug for all inflammatory conditions not caused by infection or tumor in which symptoms were severe or patients failed to respond to conventional therapy.<sup>9</sup>

Stephen Edelson, MD, F.A.A.F.P., F.A.A.E.M., who practices medicine at the Environmental and Preventive Health Center of Atlanta, has used DMSO extensively for 4 years. "We use it intravenously as well as locally," he says. "We use it for all sorts of inflammatory conditions, from people with rheumatoid arthritis to people with chronic low back inflammatory-type symptoms, silicon immune toxicity syndromes, any kind of autoimmune process.

"DMSO is not a cure," he continues. "It is a symptomatic approach used while you try to figure out why the individual has the process going on. When patients come in with rheumatoid arthritis, we put them on IV DMSO, maybe three times a week, while we are evaluating the causes of the disease, and it is amazing how free they get. It really is a dramatic treatment."

As for side effects, Dr. Edelson says: "Occasionally, a patient will develop a headache from it, when used intravenously--and it is dose related." He continues: "If you give a large dose, [the patient] will get a headache. And we use large doses. I have used as much as 30 ml IV over a couple of hours. The odor is a problem. Some men have to move out of the room [shared] with their wives and into separate bedrooms. That is basically the only problem."

DMSO was the first nonsteroidal anti-inflammatory discovered since aspirin. Mr. Bristol believes that it was that discovery that spurred pharmaceutical companies on to the development on other varieties of nonsteroidal anti-inflammatories. "Pharmaceutical companies were saying that if DMSO can do this, so can other compounds," says Mr. Bristol. "The shame is that DMSO is less toxic and has less in the way of side effects than any of them."

### Collagen and Scleroderma

Scleroderma is a rare, disabling, and sometimes fatal disease, resulting from an abnormal buildup of collagen in the body. The body swells, the skin--particularly on hands and face--becomes dense and leathery, and calcium deposits in joints cause difficulty of movement. Fatigue and difficulty in breathing may ensue. Amputation of affected digits may be necessary. The cause of scleroderma is unknown, and, until DMSO arrived, there was no known effective treatment.

Arthur Scherbel, MD, of the department of rheumatic diseases and pathology at the Cleveland Clinic Foundation, conducted a study using DMSO with 42 scleroderma patients who had already exhausted all other possible therapies without relief. Dr. Scherbel and his coworkers concluded 26 of the 42 showed good or excellent improvement. Histotoxic changes were observed together with healing of ischemic ulcers on fingertips, relief from pain and stiffness, and an increase in strength. The investigators noted, "It should be emphasized that these have never been observed with any other mode of therapy."<sup>10</sup> Researchers in other studies have since come to similar conclusions.<sup>11</sup>

## Does DMSO Help Arthritis?

It was inevitable that DMSO, with its pain-relieving, collagen-softening, and anti-inflammatory characteristics, would be employed against arthritis, and its use has been linked to arthritis as much as to any condition. Yet the FDA has never given approval for this indication and has, in fact, turned down three Investigational New Drug (IND) applications to conduct extensive clinical trials.

Moreover, its use for arthritis remains controversial. Robert Bennett, MD, F.R.C.P., F.A.C.R., F.A.C.P., professor of medicine and chief, division of arthritis and rheumatic disease at Oregon Health Sciences University (Dr. Jacob's university), says other drugs work better. Dava Sobel and Arthur Klein conducted their own informal study of 47 arthritis patients using DMSO in preparation for writing their book, *Arthritis: What Works*, and came to the same conclusion.<sup>12</sup>

Yet laboratory studies have indicated that DMSO's capacity as a free-radical scavenger suggests an important role for it in arthritis.<sup>13</sup> The Committee of Clinical Drug Trials of the Japanese Rheumatism Association conducted a trial with 318 patients at several clinics using 90 percent DMSO and concluded that DMSO relieved joint pain and increased range of joint motion and grip strength, although performing better in more recent cases of the disease.<sup>14</sup> It is employed widely in the former Soviet Union for all the different types of arthritis, as it is in other countries around the world.

Dr. Jacob remains convinced that it can play a significant role in the treatment of arthritis. "You talk to veterinarians associated with any race track, and you'll find there's hardly an animal there that hasn't been treated with DMSO. No veterinarian is going to give his patient something that does not work. There's no placebo effect on a horse."

## DMSO and Central Nervous System Trauma

Since 1971, Dr. de la Torre, then at the University of Chicago, has experimented using DMSO with injury to the central nervous system. Working with laboratory animals, he discovered that DMSO lowered intracranial pressure faster and more effectively than any other drug. DMSO also stabilized blood pressure, improved respiration, and increased urine output by five times and increased blood flow through the spinal cord to areas of injury.<sup>15-17</sup> Since then, DMSO has been employed with human patients suffering severe head trauma, initially those whose intracranial pressure remained high despite the administration of mannitol, steroids, and barbiturates. In humans, as well as animals, it has proven the first drug to significantly lower intracranial pressure, the number one problem with severe head trauma.

"We believe that DMSO may be a very good product for stroke," says Dr. de la Torre, "and that is a devastating illness which affects many more people than head injury. We have done some preliminary clinical trials, and there's a lot of animal data showing that it is a very good agent in dissolving clots."

## Other Possible Applications for DMSO

Many other uses for DMSO have been hypothesized from its known qualities have been tested in the laboratory or in small clinical trials. Mr. Bristol speaks with frustration about important findings that have never been followed up on because of the difficulty in finding funding and because "to have on your resume these days that you've worked on DMSO is the kiss of death." It is simply too controversial. A sampling of some other possible applications for this drug follows.

DMSO as long been used to promote healing. People who have it on hand often use it for minor cuts and burns and report that recovery is speedy. Several studies have documented DMSO use with soft tissue damage, local tissue death, skin ulcers, and burns.<sup>18-21</sup>

In relation to cancer, several properties of DMSO have gained attention. In one study with rats, DMSO was found to delay the spread of one cancer and prolong survival rates with another.<sup>22</sup> In other studies, it has been found to protect non-cancer cells while potentiating the chemotherapeutic agent.

Much has been written recently about the worldwide crisis in antibiotic resistance among bacteria (see *Alternative & Complementary Therapies*, Volume 2, Number 3, 1996, pages 140-144) Here, too, DMSO may be able to play a role. Researcher as early as 1975 discovered that it could break down the resistance certain bacteria have developed.<sup>23</sup>

In addition to its ability to lower intracranial pressure following closed head injury, Dr. de la Torre's work suggests that the drug may actually have the ability to prevent paralysis, given its ability to speedily clean out cellular debris and stop the inflammation that prevents blood from reaching muscle, leading to the death of muscle tissue. With its great antioxidant powers, DMSO could be used to mitigate some of the effects of aging, but little work has been done to investigate this possibility. Toxic shock, radiation sickness, and septicemia have all been postulated as responsive to DMSO, as have other conditions too numerous to mention here.