DMSO Dimethyl sulfoxide

DMSO - an unappreciated miracle cure?

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As a by-product of pulp production has dimethyl sulfoxide or DMSO shortly come a long way: What began as an organic solvent, is now widely accepted as a versatile therapeutic agent. However, this rise was not carefree by equip, and after a severe crisis that lived there in the 1960s, the controversy surrounding the analgesic and anti-inflammatory agents DMSO is never completely subsided.

DMSO - a versatile therapeutic

Dimethyl sulfoxide (DMSO) has just celebrated in 2006 its 140th birthday. 1866, the substance with the chemical formula (CH₃)₂SO was first synthesized by the Russian scientist Alexander Saytzeff, who published his discovery in 1867 in a German chemistry journal. But only about a hundred years later, in 1961, the therapeutic benefit of the agent was detected. Actually, Dr. Stanley Jacob of the Oregon Health Sciences University was looking for a suitable preservative for intended for transplant organs, when he discovered one day that this clear, foul and slightly smelling of garlic liquid very quickly and deeply human in the skin penetrates. Jacob began to experiment - and soon found out that he seemed to have to deal with a versatile ingredient. The therapeutic range of DMSO is indeed great. To neutralize the substance, for example, hydroxyl radicals, one of the most abundant group of cell-damaging free radicals. DMSO combines with the hydroxyl radicals and with them forms a chemical complex that can be excreted by the kidneys. Also other free radical binding the substance in this manner. In addition, DMSO increases the permeability of cell membranes and facilitates the cell to get rid of toxins. Even allergic reactions may be alleviated with the help of DMSO, which in turn relieves the immune system. DMSO also shows activity in scleroderma, burns, inflammation, pain, arthritis, and rheumatoid arthritis, sinus infections, interstitial cystitis, herpes and shingles, multiple sclerosis, systemic lupus erythematosus, sarcoidosis, thyroiditis, ulcerative colitis, leprosy, cancer and other disease states.

Stop for DMSO by the American Food and Drug Administration

After the initial euphoria, to keep a supposed miracle cure in hand, 1965 was the provisional end for DMSO - the American Administration Food and Drug Administration (FDA) pronounced a ban because high doses of DMSO were performed in rabbits, dogs and pigs to myopia; other side effects could not be found. The "Run [...] the medicines legislation passed," in the words of journalist Peter Jennrich in one-time items from the September 6, 1974, the results of animal experiments, however, did not stop - at least 100,000 Americans, as suspected Jennrich, had between 1961 and 1974 already carried out a treatment with DMSO own. Later it turned out that the side effect myopia is limited to the three species concerned; other species, including man, are not affected. Numerous studies have been conducted, but the ultimate recognition of the effectiveness of DMSO by means of a double-blind study, such as the American FDA she calls is virtually impossible - the strong smell of the agent, which occurs regardless of the amount used, reveals his identity immediately.

The basic problem seems to have with DMSO, the FDA is that it sounds too good to be true. Dr. Jacob believes the reputation of being a miracle cure, DMSO had harmed, and the FDA'll still influence with regard to the means of this reputation. After all, was made in 1978 to use the approval by the FDA, DMSO for the treatment of interstitial cystitis, a painful bladder inflammation. This alone may prescribe the means American doctors - all other applications violate the law. The controversy took and takes continues to stubbornly and cleaves the Medicine: DMSO - senseless work of the devil or beneficial blessing?

DMSO for pain, inflammation and wound healing

Much evidence points to the latter. Dr. Richard D. Brobyn from the Medical Center in Bainbridge Iceland, Washington, writes:

"DMSO is one of the most studied and still poorly understood pharmaceutical products of our time. Worldwide, around 11,000 scientific articles on medical applications and more than 40,000 articles about the chemical properties have been published. In 125 countries, such as [the] USA, Canada, UK, Germany, Japan, among others indications for the use z. B. pain, inflammation, scleroderma, and arthritis and other diseases are described by doctors."

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Among the pharmacological properties of DMSO he leads among other things: penetration of biological membranes and transport other molecules across these membranes, inflammation, temporary blockage of pain-conducting nerves, growth inhibition for bacteria, a diuretic, reinforcement of certain drugs, cholinesterase inhibition, nonspecific promote resistance to infections, vasodilation, muscle relaxation, promotion of cell function, inhibition of platelet aggregation by protective properties of biological tissue by irradiation or frost, and tissue protection with circulatory disorders.

A special effectiveness writes Brobyn the remedies with regard to inflammation. Here namely shows the antioxidant property of DMSO as advantageous - it acts as a kind of "scavenger" in inflammation. After aspirin, writes Broyn, was "the first non-steroidal anti-inflammatory drug DMSO, which could even be administered intravenously." He continues:

"P. Gorog et al. demonstrated in 1968 that in chronic polyarthritis induced in rats suffering an anti-inflammatory effect occurred.Externally coated on the joints DMSO showed a potent anti-inflammatory effects in these experiments. These authors later described a similar effect with 70-percent DMSO in contact dermatitis, allergic eczema and induced calcification of the skin of rats. All these experimental infections could be significantly suppressed."

The former American podiatrist Dr. Morton Walker, who works as a medical journalist and author today, DMSO has in his book "DMSO - Nature's Healer" a number of beneficial health properties. These include an anti-inflammatory, vasodilatory, bacteriostatic, fungi static and antiviral effect, the elimination of painful conditions, the binding of free radicals, stimulating the immune system and promote wound healing. Yes, even against X-ray radiation appears to protect the funds. In addition, Walker explains how DMSO can enhance its ability to penetrate cell membranes, the effect of various drugs, for example, of penicillin and cortisol.

**DMSO - amazing success with "hopeless" cases**

In his book, Walker also performs a series of case studies on how the 65-year-old Anna Goldeman that could be treated at the Health Center in Auburndale, Florida, because of bursitis in her right shoulder. But not only the inflammation improved dramatically, and the phantom pain disappeared, who had tormented the patient after amputation of the left leg. The attending physician and director of the clinic, Dr. Avery Lorae indicates that the patient was symptom-free, ten years after treatment thanks DMSO as before.

Even more dramatic is perhaps the success Lillie Forister from Artesia, New Mexico, has to say. At the age of 25 she was diagnosed with scleroderma, and in the course of the disease it had to be amputated several toes. For 19 years she suffered from severe pain despite medication permanently. In July 1979, she went to see Dr. Jacob. After one week of treatment with DMSO, the pain was significantly subsided, and four months later she felt him hardly. More amputations were no longer necessary.

Even against bacteria shows DMSO effect by inhibiting it directly in growth or sensitive makes for other drugs, so reduces their resistance. Brobyn relates inter alia to a study by Jacobs began even before the discovery of DMSO:

"H. Basch et al. described from 1953 to 1968 a marked inhibitory effect on a variety of bacteria and fungi in concentrations of 30 to 50 percent. 80 percent concentration in some viruses are inactivated: RNA Viruses: Influenza A, Influenza A2, Newcastle disease virus, Semliki Forest virus, and DNA viruses.

Besides noticed that DMSO can affect the resistance of bacteria to antibiotics for humans positively. Pottz et al. 1966 have demonstrated that the sensitivity of tubercle can be increased by a factor of 200 by the bacteria were pretreated with 0.5 to five percent DMSO."

Also in the reduction of scar tissue and the treatment of rheumatic diseases good progress has been made, for example, by the research project "Topical application of DMSO in scars and in diseases of the rheumatic type of MHH Hannover / Annastift, Ambulatory Operations Center (ADP)" under the medical direction of Dr. Jörg Carls, in collaboration with the Academy for hand rehabilitation Bad Pyrmont. Scar tissue formed visible back, and swelling sounded drastically.

**DMSO is effective for acute pain "almost immediately"**

In particular, the analgesic effect of DMSO sets, according to Dr. Stanley Jacob "almost immediately" one - at least for acute pain; in chronic can it claimed that take up to six weeks, the duration of treatment. He sees DMSO less than medicine than as a "therapeutic principle", as a "new principle in medicine", the will usher a new phase in the treatment therapy after antibiotic and cortisone-principle.

How quickly DMSO actually works, experienced Stanley W. Jacob and Edward E. Rosenbaum, as they treated seven test patients in Portland, Oregon with the agent. All seven people suffered from bursitis in the shoulder joint, the "them in such a violent pain [caused], that the patients do not even turned on or off could unaideed. After at least a week or two relieving
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the pain was to be expected, "as it says in a Spiegel article from the May 5, 1965. But there was a surprise: "The doctors rubbed with the test substance, the shoulders of the patient - and after a minute they were able to observe a striking effect. After 20 minutes', so the physicians reported Edward E. Rosenbaum and Stanley W. Jacob, professors at the University of Oregon, all seven patients were either completely or almost completely free of pain. All were the diseased shoulder joint move noticeably freer than before."
The anti-inflammatory effect of DMSO was in 1978 in a study by the Cleveland Clinic Foundation in Cleveland, Ohio, confirmed, attended by 213 patients with inflammatory genitourinary disorders. For the majority of patients a significant improvement in the state could be detected thanks to DMSO.

In particular, the analgesic property is characteristic of DMSO. Laboratory studies showed that DMSO pain "suppressed nerve blockade of pain-conducting, peripheral C-fibers" by one. Thus, the pain quickly and for up to six hours disappears.

DMSO “safer than aspirin”
Of 21 November 1967 to 20 February 1968 a long term study was under the direction of Richard Charles Lebo, MD, in the State Prison Hospital in Vacaville, California, performed, should provide information on the general toxicity of DMSO. The subjects were given a 80-percent DMSO gel was applied to the skin, and in a much higher dosage than the usual. Brobyn summarizes the outcome of the trial:

“It was an extensive toxicological study performed with three to 30-fold higher doses than required for normal medical use. DMSO stood under the terms of this particular study is considered very safe.”
Robert Herschler, co-discoverer of the pharmaceutical effect of DMSO, describes the toxicity of DMSO as a "very low". DMSO was "safer than aspirin," he says. The fact that the FDA does not grant full permission for the agent, in his view, is by the fact that the authority was simply overwhelmed with an agent such as DMSO. He quotes Francis Kelsey of the FDA, saying that they had "not enough budget nor staff" to meet an agent such as DMSO can. At least 100,000 patients reports are FDA Herschler According to that would be allocated for evaluation, that an authorization cannot be refused. J. Richard Crout of the FDA defended the actions of the authority so that DMSO did not sufficiently attracted attention in the professional world, "to go through disciplined, controlled type of evaluation, the need to go through any medications" the.

That the pharmaceutical industry is not very interested in the material, is easily explained. Of importance is certainly one hand, the wide range of ailments, against the DMSO has an impact - the means thus would be in competition with many in-house products. Secondly, can be attributed to DMSO, which comes not only in pharmacological, but also in industry for application, obtain a patent - this is market-strategic point of view not an attractive aspect. Many companies have defensively out that there was sufficient material with the same effect as DMSO. Terry Bristol, PhD, and Chairman of the Institute for Science, Engineering and Public Policy in Portland, Oregon, the Stanley Jacob stood at his studies aside, sees the benefits still in DMSO:

"DMSO is far less toxic than other fabrics, and also has less side effects."
According therapeutic index DMSO is actually seven times safer than aspirin. The only previously observed side effects are a garlic-like odor and skin irritation that fail individually, according to Walker due to the drying of the skin and usually subside after repeated application of DMSO. However, DMSO vapors should not be inhaled. Intravenous administration of DMSO can cause temporary headaches. Toxicity or carcinogenic effects were not detected.
DMSO treatment is straightforward and versatile
DMSO can, according to Dr. Morton Walker applied externally, but internally taken orally administered by injection or drip heads or. According to Walker is important here is that the DMSO used pharmaceutical and food quality has to ensure safe use. Due to the high penetration of the agent also advised otherwise impurities in the DMSO freely in the human body and can damage the liver and other organs. Administered through the skin, the highest concentration is achieved in the blood serum after four to eight hours, orally usually after four hours. After 120 hours no more DMSO is usually detectable.

DMSO in Germany
As a “disassembled miracle” DMSO is called in a Spiegel article from November 24, 1965, shortly after the FDA had the funds in the United States slowed down. They compared it did with the thalidomide scandal four years earlier, still cast its shadow. Reason was the aforementioned damage to the eye lens in animals with DMSO. This was preceded by the "dismantling of a miracle" hunting German pharmaceutical companies after a promising prey. In the Spiegel article states:
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The thalidomide - Schering AG (Berlin), Squibb / von Heyden AG (Munich), Mack (Illertissen), Sharp & Dohme GmbH (Munich) and - all awkward experiences in defiance: "Five companies participated in the Run for the miracle - Herstellerfirma Grünenthal.

The German pharmaceutical manufacturers had only little research results be presented, as they applied to register their preparations at the Federal Health Office; they referred to the American test series. The end of August 1965 were the drugs officially approved."

In November 1965, after the outcry from the FDA in the USA, the short glory of DMSO on the German market was once history:

"The drug wholesalers stopped on the instructions of the manufacturer, the delivery of DMSO preparations."

As rash rapid market introduction was beunkt; suddenly no one talked about the pharmaceutical benefit. When it turned out that the damage to the eye lens, which was observed as a side effect of DMSO in animal studies, did not apply to the people, the situation for DMSO relaxed again in the German-speaking countries. In 1966, the average at a DMSO-Symposium in Vienna was to certify that it is "at least for the treatment of trauma disorders in trauma and sports medicine for the treatment of superficially situated inflammation and inflammation of superficially situated cutaneous veins (own). Even in the treatment of chronic diseases such as disc disease and degenerative joint disease, the scientists endorsed the oxide a supportive function."

The reintroduction of DMSO as an active ingredient in the German market took place in 1982 with DOLOBENE gel, ointment Sport of the pharmaceutical company Merckle. The gel contains a DMSO content of 15 percent and is thus relatively low doses. "We are currently the only ones to our knowledge," Dr. Christine Steinhauser, says Medical Information Manager Orthopedics at Merckle Recordati GmbH pharmaceutical company, "use the DMSO in Germany as an active ingredient in a drug for muscle and joint disorders. Virunguent ointment [of Hermal; Note d.. Aut.] Against herpes labialis also contains DMSO 0.18 g to 10 g ointment. Verrumal solution [also of Hermal], a wart remover containing as an adjuvant DMSO 8 g per 100 g of solution."

This in contrast to DOLOBENE gel highly concentrated drug Paravac, a DMSO-emulsion is not currently allowed in the testing phase and, but can already be prescribed as a prescription drug by the doctor. It depends, inter alia, in the cancer therapy used.

Watch out! Due to legal requirements

- be issued by us no treatment recommendations. The bodies of diagnoses and prescribing therapies are HCPs reserved within their legal framework.

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