

PHARMACOLOGY

DMSO Future Dimmed

The so-called 'miracle drug,' DMSO, has been banned from interstate shipment and its production halted because of the undesirable side effects it produces.

► **PREMATURE PUBLICITY** on a so-called miracle drug has caused annoyance among some writers now that DMSO, short for dimethylsulfoxide, has been banned from interstate shipment.

What is the story behind DMSO, which ranks with the old extravagantly advertised patent medicines as being able to cure nearly every ailment known to mankind? And why has the Food and Drug Administration halted testing on humans?

Early reports in popular magazines announced that DMSO could be rubbed on the forehead to get rid of headache pain for hours. If you had a sprained ankle or finger, or an aching jaw, you merely applied this compound and the swelling and pain would miraculously subside. A few drops were supposed to cure an earache or clear up colds and sinusitis.

Even cold sores were said to be speeded in their healing. It was stated that DMSO, when added to other drugs, speeds up their absorption by the body when applied to the skin or taken orally. The drug was reported to reduce water in tissues, to be successful as a tranquilizer and to kill germs!

This is not all—the most dramatic therapeutic possibility was the claim that this wonder drug alleviates the severe pain of bursitis and rheumatism simply by painting on a generous layer of the compound to the affected areas.

Here is the story of how DMSO's fame began. As a by-product of the paper-manufacturing industry it has been widely known and used by chemists for a number of years because of its exceptional properties as a solvent.

The therapeutic possibilities were initially investigated by the Crown Zellerbach Corporation, the second largest paper producer in the United States. There, a young chemist named Robert J. Herschler was trying DMSO as a solvent for hard-to-dissolve substances like pesticides. During this work, he and a technician became seriously ill after being exposed to a poisonous insecticide which normally would not be absorbed through the skin. Other Crown Zellerbach chemists had experienced a strong garlic-like smell on their breaths after getting DMSO on their hands, but at the time did not realize the implications of this strange experience.

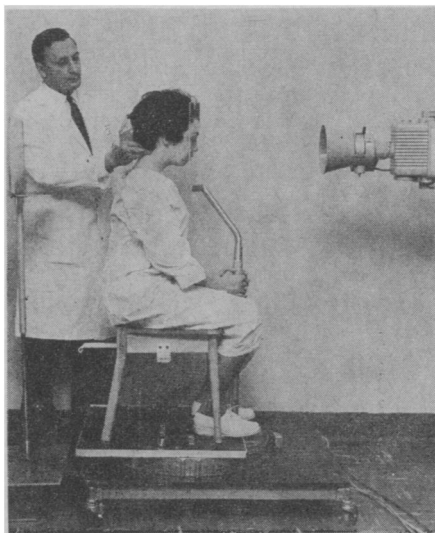
During the same period, Dr. Stanley W. Jacob, a young surgeon at the University of Oregon Medical School, became interested in DMSO as a possible antifreeze for the preservation of organ transplants. He and a laboratory assistant also applied DMSO to their hands in the course of their work, and both noticed the peculiar smell of garlic on their breaths. Dr. Jacob rea-

soned that this could only be due to the fact that DMSO had rapidly penetrated the skin and entered the bloodstream. Later it was determined that some of this material had broken down to dimethyl sulfide, which was responsible for the peculiar odor observed, thereby confirming Dr. Jacob's astute observation. Realizing that a compound with this quality could have a tremendous value in medicine, Dr. Jacob, in conjunction with the Crown Zellerbach Corporation, began to explore its medical uses.

Subsequent work, first on burns, then on other types of pain, led to fascinating discoveries which have received wide publicity, including write-ups in leading magazines and newspapers.

The first scientific reports received a great deal of attention and also sharp criticism from well-known researchers. Many felt that these findings were premature, as a relatively small number of cases were studied and little was known of the possible undesirable actions on the human body.

Nevertheless, on the basis of these early experiments, a number of large drug companies have been working extensively for the past two years on potential therapeutic applications of DMSO. Two U.S. firms were



NIH

CURVED SURFACE X-RAY—Research technologist Joseph M. Morel of the National Institutes of Health Clinical Center's diagnostic X-ray department demonstrates the tomographic device he designed for obtaining panoramic X-ray views of organs of the body. The method is called "curved surface radiography."

on the verge of marketing products utilizing this compound until just recently, when clinical testing of the experimental drug was halted by voluntary agreement of the drug's sponsors, according to a report by the U.S. Food and Drug Administration.

Dr. Joseph F. Sadusk Jr., FDA medical director, stated that the action was taken because of undesirable side effects that were observed in the eyes of laboratory animals. He commented that the eye changes had been observed by scientists of the Huntington Laboratories in England and at two U.S. firms, Wyeth, and Merck Sharpe and Dohme. Although the FDA does not have any reports of direct connection between the taking of DMSO and the occurrence of adverse reactions in humans, caution in usage of this drug has been advised. Telegrams have been sent to approximately 1,000 doctors who have been testing this compound on many human patients, mainly for the relief of arthritis and bursitis pain.

Nevertheless, FDA officials are not ready to write off DMSO until further laboratory work is done. Also, clinical use could be allowed if physicians and patients are aware of the possible danger in using the drug experimentally in conditions that resist other treatment. Physicians must write to the Acting Commissioner of the ADA, W. B. Rankin for permission to use the drug in special cases.

• Science News Letter, 89:19 January 8, 1966

BIOCHEMISTRY

New Harmless Hormones Promise Fertility Control

► **A NEW CLASS** of chemicals promises to control fertility and has already favorably affected the prices of shares on the New York Stock Exchange.

Soon to be ready for testing on humans, the resorcylic acid lactones, or RALs, promise to be extremely popular with scientists as well as stock market investors. RALs seem to act like steroid hormones, but without the side effects.

Purdue University's Research Foundation was assigned a U.S. Patent (No. 3,196,019) last July 20 for work done by Profs. Martin Stob and F. N. Andrews, who are physiologists at the School of Agriculture.

Now, Dr. Andrews, working with Commercial Solvents Corporation, which has an exclusive license for production under the patent, sees a wide variety of potentially important drug uses.

The clinical programs scheduled by the corporation will include tests on fertility control in men as well as in women, improved resistance to a number of disease-causing organisms, and the retention of calcium and nitrogen in elderly people who thus can look forward to better health.

Imagine the excitement generated by one experimental study in which a 12% increase in the fattening of steers was shown by injecting a small quantity of RAL. No wonder the stock market performance was dramatic.

The program for humans will get underway as soon as approval for this step has been obtained from the FDA.

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