

Dimethyl Sulphoxide

Also known as **DMSO**; Dimethylsulfoxide; RIMSO

Description

Sulfuric Compound originally used as an industrial solvent that since the 1960's has been recognized for various therapeutic benefits-its usage has been highly controversial.

Health Benefits of DMSO

Antioxidant

- DMSO deactivates **Hydroxyl Free Radicals** (DMSO combines with Hydroxyl Free Radicals to form Dimethyl Sulphone and Water which are then readily excreted from the body).

Detoxification

- DMSO (administered intravenously) facilitates the excretion of excessive accumulated **Amyloid** (amyloidosis).
- DMSO (applied topically) protects the body against the toxic effects of **X-Rays** [scientific research animals].

Excretory System

- DMSO (50% solution applied topically to the Feet) alleviates **Foot Odour** (Bromidrosis) [observations to date indicate that the longer that the DMSO solution is allowed to remain in contact with the feet, the longer thereafter the Foot Odour subsides].
- DMSO has been approved by the FDA in the treatment of **Interstitial Cystitis (IC)**, [scientific research-double blind human studies, DMSO markedly improves the condition of 93% of IC patients].

DMSO treatment for IC should be administered by a suitably qualified medical practitioner- the usual treatment protocol involves the administration of a 50% solution of DMSO intravesically (i.e. instilled into the Urinary Tract) every 2 weeks for 2 sessions of 4 treatments each.

Immune System

- DMSO helps to alleviate **Allergies** (by "unfolding" Cell Membranes, DMSO permits more Antigens to attach to Cell Membranes, where they are more effectively neutralized by Antibodies).
- DMSO significantly lessens **Inflammation** and swelling by reducing inflammatory exudates and enhancing the development of granulation tissue.
- DMSO facilitates the movement of **Macrophages** around and through the body's tissues (by increasing the body's production of **Migration Inhibitory Factor [MIF]**).

Musculoskeletal System

- DMSO (either applied topically or consumed orally) minimizes the damage caused by crushing injuries such as **Bruises** and pulled or wrenched **Muscles**:
DMSO is a powerful scavenger of **Hydroxyl Free Radicals**, which are responsible for much of the damage caused in these injuries.
If DMSO is applied quickly to an injury it is possible to eliminate entirely any Bruising.
- DMSO (applied topically) alleviates the lesions that occur as a result of **Herpes Zoster** (shingles).
- DMSO alleviates **Rheumatoid Arthritis** (by deactivating Hydroxyl Free Radicals which are the primary cause of the Inflammation and Pain associated with Rheumatoid Arthritis).
- DMSO (applied topically helps to dissolve the (skin) tissues involved in **Scarring** [scientific research-humans; a concentration of 50.80% DMSO applied topically 3

times per day flattens raised external scars after several months-microscopic examination of the skin will reveal loosening of Collagen bundles].

- DMSO (applied topically) potently alleviates **Scleroderma** (where Scleroderma affects the skin).

Nervous System

- DMSO (DMSO/Amino Acid Combination) therapy partially reverses some of the abnormalities that occur in **Down's Syndrome** [scientific research-humans: DMSO/Amino Acid therapy causes a tendency towards accelerated maturity in Down's Syndrome children treated, with marked progress in language integration. In some cases, this therapy causes the physical appearance of Down's syndrome children to more closely resemble that of normal children].
- DMSO markedly reduces the formation of the abnormal Antibodies that are characteristic of **Myasthenia Gravis** [scientific research-animals: note that this finding has not yet been confirmed in humans].

As a secondary means of alleviating Myasthenia Gravis, DMSO also inhibits the actions of Cholinesterases (similarly to the Anticholinesterase Pharmaceutical Drugs employed by orthodox medicine in the treatment of Myasthenia Gravis).

- DMSO alleviates **Pain** by impeding the conduction of Nerve Impulses relating to the pain sensation in the smaller Nerve Fibers.
- DMSO (1 gram per kg of body weight administered intravenously in a 40% solution within 1 hour of the occurrence of quadriplegia) helps to prevent **Paralysis** following injuries to the Brain or Spinal Cord.
- DMSO (1 gram per kg of body weight administered intravenously into the **Spinal Cord** in a 40% solution within 1 hour of the occurrence of quadriplegia) helps to prevent Paralysis following injuries to the Spinal Cord that would otherwise cause **quadriplegia** [scientific research-animals & humans: this treatment often results in total avoidance and reversal of paralysis/quadriplegia].
- DMSO (administered intravenously within 4 hours, and preferably within 90 minutes of its occurrence) helps to prevent the after-effects (including Paralysis) following (the Embolic and Hemorrhagic forms of) **Stroke** [scientific research-animals].

Respiratory System

- DMSO (placed directly into the nostrils) can open the blocked sinuses that are associated with **Sinusitis** [scientific observation-humans: relief occurs within minutes].

DMSO Enhances the Function of these Substances

DMSO enhances the bioavailability of many substances (it has the capability to transport therapeutic substances across the body's Cell membranes without altering the integrity of Cell Membranes). By increasing their bioavailability, DMSO permits a lower dosage of some drugs than would otherwise be required.

ENDOGENOUS SUBSTANCES

Enzymes

- DMSO inhibits the release of Cholinesterases (i.e. it possesses similar properties to Pharmaceutical Anticholinesterases).

Immune System Chemicals

- DMSO can enter Cells to prime or activate the sub-cellular mechanisms involved in the production and release of **Migration Inhibitory Factor** (MIF) and in addition, produces a cofactor that enhances MIF or has MIF-like activity.

Neurotransmitters

- DMSO facilitates the transport of (supplemental) **Gamma Aminobutyric Acid** (GABA) across the Blood-Brain Barrier (without DMSO as a carrier-vehicle, GABA poorly crosses the Blood-Brain Barrier).

EXOGENOUS SUBSTANCES

Hormones

- When exogenous forms of endogenous **Steroids** (including Testosterone and the Hydrocortisone form of cortisone) are dissolved in DMSO prior to topical application, their topical bioavailability increases by 300% [scientific research-humans].
- DMSO readily crosses the **Blood-Brain Barrier** (this property of DMSO allows its utilization as an effective vehicle for transporting other substances that may not normally cross the Blood-Brain Barrier).
- DMSO is excreted from the body partly in an unchanged state and partly as its metabolite-Demethyl Sulphoxone (DMSO₂).

Pharmaceutical Drugs

- DMSO enhances the bioavailability and effectiveness of many **Anti-Viral Pharmaceutical Drugs** (DMSO facilitates their transport directly across Cell Membranes into Cells where they are most potent against viruses.
- DMSO facilitates the absorption of **Penicillin**-i.e. Penicillin can be dissolved in DMSO and applied topically where they are efficiently transported across the skin.

These Substances Enhance the Function of DMSO

Antioxidants

- Antioxidants counteract DMSO's tendency to convert to Sulphoxide Free Radicals.

Side Effects of DMSO therapy

Excretory System

- DMSO (temporarily) causes Halitosis in the form of a garlic-like odor of the breath (this odor is very unpleasant and appears to be the major practical drawback in the usage of DMSO).

Free Radicals

- After chemically reacting with Hydroxyl Free Radicals, DMSO is converted to a Sulphoxide Free Radical.

Musculoskeletal System

- Itching is a common side effect of topical DMSO therapy- this side effect can usually be avoided by diluting the concentration of DMSO.
- Skin Rashes are a common side effect of topical DMSO therapy- this side effect can usually be avoided by diluting the concentration of DMSO.

Myths Dispelled

Musculoskeletal System

- Orthodox medical practitioners due to UNFOUNDED fears that it can cause Cataracts and other changes within the human eye often avoid DMSO.

This aspect of DMSO toxicology has been extensively tested in both animals and humans: the results clearly show that DMSO *does NOT* cause Cataracts in humans even at extremely high dosages for periods up to two years. No adverse changes were found in human or monkey eyes after prolonged, high levels (up to 30 times the usual dosage) of DMSO treatment.

The myth regarding DMSO's toxicity to human eyes arises from toxicology studies that show that DMSO *DOES* cause cataracts and other changes in the eyes to both dogs and rabbits, however the toxicity of DMSO to the eyes of these animals definitely differs from that of humans.

Bioavailability

- DMSO has the ability to pass through every tissue and **Cell Membrane** of the body except the Enamel of teeth, fingernails and hair without destroying the integrity of these tissues and cell membranes (i.e. it is a membrane penetrant).

DMSO also permits the passage of a number of compounds across the barriers of cell membranes.

- DMSO is readily absorbed when administered topically onto human skin-peak levels occur after 4-8 hours. Topical administered DMSO is slightly less bioavailable than orally ingested DMSO.
- Orally ingested DMSO is also rapidly absorbed and reaches a blood serum peak in 4 hours and becomes undetectable after 120 hours.

Forms of DMSO

- DMSO is manufactured in liquid and gel forms.

Dosage Recommendations

Less DMSO is required to achieve therapeutic results as time passes (i.e. the cumulative effects of DMSO appear to increase with the passage of time).

Method of Administration

Dosage

Topical applications:

The liquid form of DMSO is the most effective form of topical DMSO application, although most people prefer the gel form.

Topically applied DMSO is not rubbed onto the skin but painted or patted on in a thin coating.

The concentration of DMSO used in topical treatments should ideally be individualized on a case-by-case basis- the optimal concentration varies from 50-80% DMSO.

The face and neck are more sensitive to topical DMSO than other parts of the body- the maximum concentration of DMSO for application to the face or neck should be no greater 50%.

Topical applications of DMSO should not exceed 70% in areas of the skin affected by poor circulation.

It is desirable to commence topical DMSO treatment at low concentrations until skin tolerance builds up.

The skin must be clean, dry, and unbroken before topical application of DMSO.

Aloe Vera gel is an excellent remedy for the temporary skin irritation that sometimes occurs as a result of topical DMSO therapy.

Oral application:

The usual oral dosage of DMSO is 1-2 teaspoons per day.

Oral DMSO is normally mixed with tomato juice or grape juice to mask its "foul" taste.

Intravenous Injection:

Up to 20 cc DMSO that has been diluted to a 25% concentration with sterile water is often administered by suitably trained physicians in the treatment of the more serious degenerative diseases.

Injected DMSO is not administered by infusion or by the drip technique but is administered by the "slow push" method, which involves a slow push into the bloodstream all at once.

Intravenous Drip:

The slow intravenous drip method is applied over a 2-3 hour period. It involves the addition of 50-100 cc DMSO to a 500 cc glucose or saline solution, dripped into a vein in the patient's arm.

Commercial Availability of DMSO

Caution: many of the industrial grade DMSO solutions intended for use as solvents have an acid or Acetone contamination of several percent. Acetone contamination can lead to serious medical consequences, -because of its small molecular weight; Acetone is readily carried into the blood by acetone-contaminated DMSO.

In the USA, commercially manufactured DMSO is derived from Lignin.

DMSO/WATER COMBINATIONS

Brand	Composition	Description
RIMSO-50	50% DMSO 50% water	Pure pharmaceutical grade DMSO manufactured by Terra Pharmaceuticals Inc. of Buena Park, California. Supplied in 50 cc vials.
Domosa:	90%DMSO 10% water	Pharmaceutical grade DMSO suitable for injection or for further dilution with water for topical or oral ingestion. Supplied in pint bottles and in gallon bottles for veterinary use.
Dimexide:		Brand name for DMSO in Russia.

DMSO/Amino Acid Combinations

Brand	Country Available	Description
Akron:	Argentina	DMSO combined with Amino Acids (Gamma-Aminobutyric Acid [GABA], gamma-Amino-Beta-Hydroxybutyric Acid [GABOB] and Acetylglutamine).
Merinex:	Chile	

5 ml ampoules (for intramuscular injection) and capsules (for oral administration).

The dosage protocol for DMSO/Amino Acid combinations

involves one intramuscular injection every 2nd day and 2 or 3 capsules orally each day. Injections are suspended every 40 days for a rest period of 1 month during which capsules are still used. This program of treatment normally lasts for 1 year.

Akron and Merinex are not approved by the FDA for use in the USA.

Vasoactive DMSO Combinations

Brand	Country Available
Ipran	

Description

Ipran is not approved by the FDA for use in the USA.

DMSO'S Chemical Structure

The DMSO molecule is ten-sided with a center occupied by a Sulphur atom. It contains two-methyl groups-an oxygen atom and a nonbonding electron pair-located at the points of the tetrahedron.

Molecular weight:	78.15
Freezing point:	68 degrees Fahrenheit

See Also:

Methylsulphonylmethane

Sulphuric Compounds