Domosol (DIMETHYL SULFOXIDE) Solution
90% Dimethyl Sulfoxide — Medical Grade
For Animal Use Only

CAUTION

Federal law restricts this drug to use by or on the order of a licensed veterinarian.

Dimethyl sulfoxide (DMSO), an oxidation product of dimethyl sulfide, is an exceptional solvent possessing a number of commercial uses. DMSO is a combination of a number of alkyl sulfides with a general formula of $\text{R}_n\text{S}_m$. Its structural formula is:

$$\text{CH}_3\text{–S–CH}_3$$

It freely mixes with water with the evaporation of heat and the freezing point of aqueous solutions. It is soluble in many other compounds including ethanol, ethyl ether, glycerin, benzene, and chloroform. DMSO is a solvent for many organic and unsaturated hydrocarbons as well as inorganic salts and nitrogen-containing compounds. DMSO has a high dielectric constant and a high boiling point, and is soluble in many other compounds including ethanol, acetone, diethyl ether, glycerin, and water. DMSO is a hygroscopic, stable organic liquid essentially odorless and water white in color. Other physical characteristics include:

- Molecular weight: 78.13
- Boiling point: 189°C

Each mL of DOMOSOL (dimethyl sulfoxide) Solution contains 90% dimethyl sulfoxide and 10% water.

METABOLISM

Dimethyl sulfoxide when administered topically or orally is rapidly absorbed and distributed in living material.

LD$_{50}$, the lethal dosage to 50% of the animals, was determined for a 1% solution of radioactive DMSO administered by the intraperitoneal route to mice. The organs but the concentration in the treated skin and underlying muscle was measured. The main route of ejection is via the skin partially dependent on the species and route of administration. In the albino mouse in the administration half-life of 8 to 6 hours following intravenous or cutaneous administration; in the dog, the elimination half-life was 24 hours. In the rabbit, the elimination half-life was 73 hours. Using S$^{35}$-labeled DMSO (1), the maximal blood concentration after cutaneous application was found to be 150 mg/dL. A maximal blood level of 35 mg/dL was measured following percutaneous application of the label in rat's sciatic nerve (41). The results indicate that DMSO is a weakly lipophilic substance. DMSO is dialyzable across the dialysis membrane and is able to diffuse across tissue which acts as a source of water.

In early studies with plants it was claimed that DMSO exerted a profound effect on the biologic substance did not accumulate in the organs but the concentration in the treated skin and underlying cation about 55% of the administered material was eliminated within 14 days. The radioactivity elimination was not due to irreversible damage to the stratum corneum (28).

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In one of the first studies reported in animals, various drugs were added to 15% solution of DMSO. Several sera were used as a control group. Using S$^{35}$-labeled DMSO (1) the maximal blood concentration after cutaneous application was found to be 150 mg/dL. A maximal blood level of 35 mg/dL was measured following percutaneous application of the label in rat's sciatic nerve (41). The results indicate that DMSO is a weakly lipophilic substance. DMSO is dialyzable across the dialysis membrane and is able to diffuse across tissue which acts as a source of water.

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are characterized by a decrease in the normal relicity of the lens cortex, causing the normal central zone of the lens to become a "biconcave". When exposing the human of affected animals, it is necessary to protect the normal iris with a small piece of microscopic, thin plastic material.

The lens changes were first observed in disease involving 5 mg DMSO after 9 weeks of administra-
tion. At this dose level, the changes were more noticeable at 10 mg DMSO. In each of these cases the changes were seen after 90 days of topical application. It is possible that the changes may be more noticeable at higher doses and this study was terminated after 90 days of application.

No effects were noted following eye drop application of aqueous solutions varying from 1% to 2% which were made up in saline solution. The topically applied doses were made up in saline solution and were 20 mg in each eye at a time.

The side effects which were observed in these studies were temporary and are not considered to be of serious consequence. Changes in the refractive index of the lens may occur. This may result in a change in the focal length of the lens, with a resulting change in the position of the image. The changes may be due to a decrease in the ability of the lens to accommodate or to a change in the shape of the lens.

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