SAFE USE

A Pharmacokinetic Dose-Escalating Evaluation of MSM in Healthy Male Volunteers.

Research Summary:
The investigation examined the absorption and excretion of OptiMSM®, and its impact upon sulfate and homocysteine metabolism, following a single dose of 1, 2, or 3 grams. Each subject was administered each of the three doses in a randomized, cross-over design, separated by 7 days. With the 3-gram dose blood MSM peaked within 90 minutes. MSM also appeared to "persist" in the body for at least 7 days, as subjects who received a 1-gram dose of MSM first showed higher blood MSM concentration a week later. This study shows MSM is rapidly absorbed, uniquely modifies sulfur metabolism and is retained in the body for extended periods of time. Surprisingly blood sulfate concentrations showed an inverse relationship, declining over time. This was accompanied by reduced urinary excretion of sulfate over a 24-hour period. The 3-gram dose of MSM also promoted a favorable change in blood homocysteine levels which is consistent with results from the Kim study. This study does not rule out sulfur donation by MSM; however the pharmacodynamics suggest MSM functions as a sulfur metabolism modifier, promoting the apparent retention of sulfur and rapidly altering sulfur metabolism as evidenced in the changes seen with homocysteine.


Single and 13 - Week Repeated Oral Dose Toxicity of Methylsulfonfylmethane in Mice.
Takiyama K, Konishi F, Nakashima Y, Momamoto C, Maruyama I

Research Summary:
This is the second toxicology study performed on OptiMSM® and published in a peer reviewed journal. It was published in the Japanese peer reviewed journal, Oyo Yakuri Pharmacometrics. OptiMSM® was the test article. Horvath established no toxicity when administering 2.0 g/kg-BW in a single dose as well as administering 1.5g/kg-BW daily for 90 days. In this study MSM single dose was evaluated at two dosages, a low dose of 2.5g/kg-BW and a high dose of 5.0g/kg-BW. For the sub-chronic studies (90 days) the dosage was 8.1 ± 1.3g/kg-BW for the male mice and 8.8 ± 1.1g/kg-BW for the females. As with the Horvath study no changes of toxicological significance were observed. Therefore it is concluded that minimum fatal dose for OptiMSM® (acute toxicity) is greater than 5g/kg-BW. The Sub-Chronic (90 day) toxicity studies indicate the non-toxic amount to be greater than 8.1 ± 1.3g/kg-BW for male mice and 8.8 ± 1.1g/kg-BW for the females. These results are 2.5X for acute and 4.5X for sub-chronic higher than the Horvath study confirming that OptiMSM® has very low toxicity.

Status: Published, Oyo Yakuri Pharmacometrics 2010; 79 (1/2):23-30

Oral Developmental Toxicity Study of Methylsulfonfylmethane (as OptiMSM) in Rats
Magnuson B, Appleton J, Ryan B, Matulka R

Research Summary:
The objective of the study was to determine the developmental toxicity potential of MSM when administered orally to pregnant rats during the period of major organogenesis and histogenesis. Four groups of female rats were administered various dosages of MSM via gavage. No evidence of maternal toxicity, and no significant differences in litter viability, litter size, or litter body weight were detected. Fetal evaluations failed to show any biologically significant increase in the incidence of anomalies in the MSM treated groups, and no malformations were seen in any of the fetuses. No evidence of fetal mortality, alterations to growth, or structural alterations were observed in the fetuses of dams administered 50–1000 mg/kg/day. Therefore, under the conditions of this study, the no-observed-adverse-effect level (NOAEL) for maternal and developmental toxicity was 1000 mg/kg/day.


Pharmacokinetics and Distribution of Methylsulfonfylmethane (as OptiMSM) following Oral Administration to Rats
Magnuson B, Appleton J, Ames G

Research Summary:
The objective of this study was to evaluate the pharmacokinetic profile and distribution of radiolabeled MSM in rats. The results of this study suggest that OptiMSM is rapidly absorbed, well distributed, and completely excreted from the body.

Status: Published, J. Agrie Food Chem 2007: 55, 1033-1038

Ocular and dermal irritation assays for OptiMSM® brand of methylsulfonfylmethane
Flora Research Laboratories, Grants Pass, OR; August 1999

Research Summary:
Ocular and Dermal Irritancy results are classified as a Minimal Irritant. Actual scores from the Irritex Draisie Equivalent (IDE) and Human Irritancy Equivalent (HIE) were found to be the lowest scores that can be achieved by any compound.

Status: Data on file.

As a service to our customers, copies of research are available upon request

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