Efficacy of methylsulfonylmethane (MSM) in osteoarthritis pain of the knee: a pilot clinical trial

Kim LS, Axelrod LJ, Howard P, Buratovich N, Waters RF

Research summary:
A randomized, double-blind, placebo-controlled clinical trial to evaluate the effects of distilled MSM on mild to moderate osteoarthritis of the knee. Participants were randomized to receive 3,000 mg twice daily of either placebo or OptiMSM® for twelve weeks. Patients were evaluated using the Western Ontario and McMaster University Osteoarthritis Index visual analog scale (WOMAC), as well as for several secondary endpoints, adverse events, and clinical laboratory markers. Compared to placebo, those taking MSM experienced statistically significant reductions in pain and in difficulty performing activities of daily living. Statistically significant reductions in serum homocysteine (a risk factor for cardiovascular disease) and urinary malondialdehyde (a marker of oxidative stress) were also observed. There were no significant adverse events in the study.


The Effect Of Distilled Methylsulfonylmethane (MSM) on Human Chondrocytes in vitro

Oshima Y, Theodosakis J, Amiel D

Research summary:
This investigation, conducted in the laboratory of cartilage biology expert David Amiel, PhD, from the Department of Orthopedics at the University of California, San Diego, assessed the impact of OptiMSM® on inflammation and degradation markers of human knee joint cartilage. Human (cadaver-derived) knee joints, displaying varying degrees of osteoarthritis, were cultured with varying concentrations of OptiMSM. Extracts were then obtained from the cultures and gene expression testing was performed. Positive trends indicated OptiMSM incubation of cartilage cells derived from humans with moderate severity osteoarthritis reduced the activation of genes coding for the manufacture of pro-inflammatory cytokines. This study also found in the same grade of osteoarthritic joint-derived cartilage cells a positive trend in reducing the activation of genes coding for the manufacture of enzymes that promote the breakdown and “digestion” of cartilage–matrix metalloproteases, or MMPs. The authors suggested that these basic research findings lend themselves to explaining, in part, how OptiMSM may support joint health and functionality.

Assessment of methylsulfonylmethane (MSM) on the development of osteoarthritis (OA): An animal study

Amiel D, Healey R and Oshima Y

Research summary:
This study examined the effects of ultra pure methylsulfonylmethane (Opti MSM®) on osteoarthritis of the knee. A prior study showed that while Opti MSM is clinically effective, the mechanism remained enigmatic. In this study, the right knee ACL was transected (ACLT) in mature NZW rabbits (n=10) (2). Five weeks after ACLT an MSM constant delivery system to the joint was created by implanting an Alzet osmotic pump. Controls received no other treatment. Animals were sacrificed 9 wks postop, and OA grading of the femoral surface was performed: Grade-I (G-I): intact surface; Grade-II (G-II): minimal fibrillation; Grade-III (G-III): overt fibrillation; and Grade-IV (G-IV): erosion of articular cartilage surface (2). Results showed 2 G-III and 1 G-IV (avg 3.3) in control. The MSM-treated group showed 1 G-I, 3 G-II, 1 G-III, and 2 G-IV (avg 2.6). Expression of type II collagen and aggrecan showed no difference between control and MSM, yet expression of TNF-a in both cartilage and synovial tissue was decreased by MSM (p<0.01). MSM preserved the articular cartilage surface during OA development and reduced inflammation (i.e. TNF-a) in both cartilage and synovium.

Status: Published, FASEB J. 2008; 22:1094.3.

Ocular and dermal irritation assays for Opti MSM® brand of methylsulfonylmethane

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 Irritation Draize Equivalent (IDE) and Human Irritancy Equivalent (HIE) were found to be the lowest scores that can be achieved by any compound.