

Oral Methionine for nitrous oxide protection, increased wound healing & protection from potential metal exposure during amalgam removal procedures

Received.....11/30/97 Scientific Review.....1/30/98 IAOMT Board Review.....1/30/98 Reevaluation.....10/01/00, 1/4/06	<h2 style="margin: 0;">Biological Support</h2>	Approval.....10/01/00 Provisional Approval No Opinion No Approval
Explanation of IAOMT position: none		

<p>Name of Scientific Review: Oral Methionine for nitrous oxide protection, increased wound healing & protection from potential metal exposure during amalgam removal procedures</p>
<p>Alternative name(s) of Scientific Review: Sulphydral protection of nitrous oxide blockage of Methionine remethylation for dental patients and dental personnel exposed to nitrous oxide during dental procedures, with provisional addition of protection from toxic metal exposure to patients and dental personnel</p>
<p>This Scientific Review is related to Dentistry</p>
<p>This Scientific Review is a Product: Redoxal HMF</p>
<p>Purpose of the Scientific Review: To prevent deficiency of Methionine from the use of / exposure to nitrous oxide and to provide additional Sulphydral proteins to patients and personnel exposed to toxic metals.</p>
<p>Scientific Review History: The discovery of the effect of nitrous oxide on Methionine levels is recent. Tablets combining dl-Methionine with betaine have been used successfully by many persons for a variety of inflammatory conditions and alleviation of pain. Methionine has a long history of safety and is being evaluated by many researchers for its effect in a variety of disease states as well as being used by clinicians for antioxidant properties, the healing of tissues and its many beneficial applications in common western diseases. It is commonly known that sulphydrals bind to toxic metals and promote excretion.</p>
<p>A brief description of the Scientific Review: Administration of Methionine with betaine will compensate for blockage of the remethylation of Methionine from nitrous oxide and will provide additional Sulphydral proteins for toxic metal binding for patients and dental personnel.</p>
<p>A specific description of this Scientific Review:</p> <p>Suggested Uses: Specific for Redoxal HMF</p> <p>IAOMT - SOC Updated 6/2000</p> <p style="text-align: center;"><u>Doctors Guide to Redoxal HMF™ Suggested Usages</u></p> <p style="text-align: center;">This update is based on clinical evaluation of Redoxal HMF in persons with amalgam</p> <p><u>Conditions:</u> Redoxal HMF has been used for inflammatory conditions; headaches including migraines; asthma; as an aid to detoxification from metals, pesticides, herbicides, drugs, alcohol, chemical exposures, radiation exposure; support for cysteine production for persons on chelating drugs; depression. Refer to our literature for a more complete list of uses.</p> <p><u>Amalgam Removal: Preferred Use:</u> Start Redoxal HMF at least 2 weeks prior to the first amalgam removal and continue for at least 6 months after last amalgam is removed. Dose is 1 capsule 3 times per day or according to weight chart for persons of normal weight. For persons 20% over ideal weight (according to body fat measurement) the suggested daily dose of Redoxal HMF is 2 capsules 3 times a day.</p> <p><u>Nitrous Oxide Gas Use: Day Before Use (Patient):</u> 1 capsule three times per day with meals the day before, the day of and the day after exposure to nitrous. Day of Use (Patient): (No prior ingestion of Redoxal) 2 capsules prior to administration of nitrous and 1 at conclusion of use. For frequent exposure (dental personnel) 1 capsule 3 times a day is suggested.</p>

Wound Healing: Accidental or Surgical

Accidental wounding: (Includes cuts, scrapes, burns, etc) Start Redoxal according to amalgam removal directions and continue for 30 days or until wound is healed.

Surgical wound: Start Redoxal at least 1 week prior to scheduled surgery and continue for 30 days or until surgical site is healed. *Keep in mind that dl-methionine reduces inflammation and enhances the effects of pain medication. Patients taking Redoxal HMF may not require full doses of prescribed pain medication post surgically or after tooth extraction / oral surgery.*

Personnel with continuous exposure to potentially toxic substances:

Suggested Use :

1 capsule 3 times per day for duration of exposure or according to weight chart for duration of exposure. If overweight dose is 2 caps 3 times per day. Continue for at least 6 months after exposure is eliminated.

Redoxal HMF may be taken for extended periods of time.

Weight in US Pounds	Total # caps/day	Frequency	Timed spacing schedule
Up to 30	1	Once daily	AM or PM
30 - 60	1	Once daily	AM or PM
61-120	2	1 BID	AM and PM
121-150	2 - 3	1 BID or TID	Breakfast / Lunch /Dinner
151-180	3	1 TID	Breakfast/ Lunch /Dinner
181 - 220	3-4	1 TID or QID	Brkfst /Lunch/Dinner &Bedtime
221-240	4	1 QID	Brkfst /Lunch/Dinner &Bedtime
241-280	5-6	2 TID	Breakfast/ Lunch /Dinner
> 281	6	2 TID	Breakfast/ Lunch /Dinner

d-methionine raises blood levels of methionine for approximately 4 hours. Spacing doses is important to maintain adequate levels of methionine in the blood. Taking Redoxal with food is not mandatory. It can also be taken on an empty stomach if patient so desires.

NOTES:

1. If patient regularly takes non-steroidal anti-inflammatory meds, consider starting their dose at 2 caps three times per day. Non-steroidal medications require cysteine for excretion and these people are often sulfur protein deficient. Chelating agents (DMSA) also bind to cysteine for excretion. (Cysteine is a metabolite of methionine) Persons with confirmed low methionine levels (as determined by blood test) should also start at the higher dose for duration of 2-4 weeks. Persons over 60 generally require up to 2500 mg/day of methionine (according to the literature).

2. Individuals diagnosed as mercury toxic or allergic and considered to be fragile: suggest starting Redoxal HMF 30-60 days prior to first quadrant removal. Initial dose may need to be decreased, starting with 1 capsule per day and gradually increasing to higher doses as detox tolerance increases.

3. Redoxal may be taken with prescription chelating agents (oral) and all chelation therapy programs (IV & IM).

4. Persons who are 10% or more over ideal body weight require an increased dose of Redoxal in order to mobilize and excrete the same amount of Hg as those persons on 3 caps per day who are of normal weight.

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PREVENTHIUM INTERNATIONAL 770-831-8605 Monday – Thursday 10AM – 3Pm EST***

Manufacturer(s): A single capsule or caplet containing both dl-Methionine and betaine together with appropriate vitamins and minerals (manufactured by Preventhium International, Inc., Sugar Hill, GA.) as Redoxal HMF and is available to professionals from McGuff Medical Products in Santa Ana, CA 800-854-7220 or in Canada from San Total Health Pharmacy, Markham, Ontario 888-993-3666. Otherwise, there are many manufacturer's of Methionine.

You may recommend any Methionine tablet of 500 mg dl-Methionine 3 times per day plus 50 - 100 mg betaine 3 times per day and 2 multiple vitamin/mineral tablets, 1 two times per day, containing at least 100% of the Recommended Daily Allowance of vitamins B6, B12, folate, calcium and magnesium.

There is a commercially produced product containing 500 mg dl-Methionine with the stated vitamins and minerals marketed as Mythionine for RELIEF by Tech-Transfer. Patient would need to take separate betaine tablet containing at least 50 mg of betaine.

Vitamin B6, folate and betaine all promote the conversion of homocysteine back to Methionine. The benefit of the Redoxal product is that it contains all of these co-nutrients. Early data on a small group of subjects indicated that the Redoxal HMF product assisted in the lowering of cholesterol and triglycerides in some people without any dietary changes. This data has not been published.

Scientific Literature: It has been shown in humans that nitrous oxide blocks the enzyme Methionine synthase. In 2 patients on high doses of nitrous oxide, the blood levels of Methionine were reduced [1] This reduction of blood level is especially important because even a week long total block of dietary Methionine intake did not result in a lowering of the blood level of Methionine. At high doses of nitrous oxide, the blockage of Methionine remethylation caused a reduction of leukemic cells in one of two patients treated. The implication of this observation is that nitrous oxide is a strong blocking agent of the normal movement of methyl groups. Providing methyl groups directly from Methionine should reduce unwanted side effects caused by the blocking of Methionine synthase from nitrous oxide, especially for dental personnel who may be exposed on a regular basis. Betaine remethylates homocysteine to Methionine in the liver by a separate enzyme, by providing Methionine and betaine together, the body's need for methyl groups is met despite the blockage of remethylation using the vitamin B12-folate pathway.

Lack of betaine causes an elevation in homocysteine. Elevated homocysteine has been cited multiple times in the literature and media reports as an increased risk factor for stroke and heart attack, independent of cholesterol and other lipids [2].

As an additional benefit of Methionine, consumption of / exposure to heavy metals may be more readily excreted in the feces. It has been shown in lead toxic rats treated with Methionine that lead excretion in feces was significantly higher in the Methionine treated rats [3]. Methionine may provide some additional benefit / protection during amalgam removal due to its indirect contribution to glutathione synthesis and by providing additional sulfhydryls that are known to bind toxic metals [4]. Increased Methionine in the diet of rats improved weight gain when the rats were treated with toxic doses (1.5 ppm) of methyl mercury [5].

Reports in the Literature site dl-methionine's role in the healing of wounds, both accidental and surgical [6],[7].

Nitrous Oxide can cause headaches post use. This may be a direct effect of Methionine lowering from this gas. Supplementation with Methionine pre and post nitrous use may prevent this reaction. Daily supplementation with Methionine may offer some protection from daily nitrous exposures of dental personnel in practices where this gas is used frequently.

Clinical studies in humans are currently in progress to evaluate methionine's effect on mobilization of several toxic metals, including mercury. No data has yet been published from these studies.

Legal Aspects of this Scientific Review: dl-Methionine, betaine, vitamins and minerals are nutritional over the counter components of many supplements. Current U.S. law allows the sale of such nutritional products and for the separate display of information about such nutritional supplements. dl-Methionine has one of the longest and best safety records of any nutritional supplement. For many years soy-protein based infant formula contained dl-Methionine to replace the Methionine lost during the extraction of the soy protein. No adverse effects have been reported for infants that consumed a majority of their calories from such infant formula. The body dose for such infants is equivalent to about 7 grams of dl-Methionine for adults [8]. Most pet foods for dogs and cats contain Methionine. No adverse effects have been reported in animal use. dl-Methionine does increase urinary calcium loss at 6 grams per day. The addition of calcium in the two commercially available products compensates for the calcium loss.

Additional Reading and References:

1. "Methionine: The Missing Antioxidant" by Gerald Hirsch, Ph.D. (\$39.95). List 381 literature references for methionine
2. "Good Health with dl-methionine" by Gerald Hirsch, Ph.D. (\$3.95).

These publications available from:

Preventhium International, Inc. 5885 Cumming Highway Suite 108-291, Sugar Hill, GA 30518 800-755-1327

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[2] "A prospective Study of Plasma homocyst(e)ine and Risk of myocardial Infarction in U.S. Physicians." M.J. Stampfer; R. Malinow; W.C. Willett; L.M. Newcomer; B. Upson; D. Ullmann; P.V. Tishler; C.H. Hennekens; JAMA, August 19, 1992 - Vol. 268, No.7

[3] "Influence of Methionine Supplementation in Chelation of Lead in Rats" Kachru, D.N.; S. Khandelwal; and S.K. Tandon; Biomed. Environ. Sci. 2:265-270, 1989.

[4] "Glutathione Metabolism in Activated Human Neutrophils: Stimulation of Glutathione Synthesis and Consumption of Glutathione by Reactive Oxygen Species." M. Bilzer; B.H. Lauterburg, Department of Clinical Pharmacology, Univ. of Berne, Berne, Switzerland, European Journal of Clinical Investigation (1991) 21, 316-322.

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[6] "The Incorporation of Sulfur Amino Acids into the Proteins of Regenerating Wound Tissue", Williamson and Fromm, Dept. of Biochem., Loyola Univ., Chicago, J. Biol. Chem., 212:705-712, 1955.

[7] "The Effects of Methionine on the Production of Mucopolysaccharides and Collagen in Healing wounds of Protein Depleted Animals", R.N. Udupa; J.F. Woessner; J.E. Dunphy, Surgery, Gynecology and Obstetrics, Vol. 102, No. 6, June 1956 pp.639-645.

[8] "Methionine Fortification of a Soy Protein Formula Fed to Infants", S.J. Fomon; E.E. Ziegler; L.J. Filer, Jr.; S.E. Nelson; B.B. Edwards, American Jour. Of Clin. Nutrition, 32: Dec.1979, pp.2460-2471.