

Clear-HM™

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ADVANCED HEAVY METAL DETOXIFICATION SUPPORT

Heavy metal toxicity is a growing problem which has far-reaching consequences, ranging from subtle neurodevelopmental effects in children, to more clinically apparent disease in adults, such as osteoporosis, myocardial infarction, neurodegeneration and hypertension.^{1,2,3,4,5} Indeed, the clinical importance of heavy metal toxicity is likely to be greatly underestimated, as evidenced by a study of over 800 men with supposedly low blood lead levels which documented more than a 5-fold risk for cardiovascular mortality, and over an 8-fold risk for ischemic heart disease mortality when bone lead was measured.⁶ This study clearly highlights the risk of chronic low dose toxicity from heavy metals, as well as the inability of standard screening tests (i.e. blood lead levels) to detect relevant exposure.

We designed Clear-HM to provide functional support for heavy metal detoxification, supplying nutrients needed to assist not only in heavy metal removal, but also to replenish competing minerals often depleted by chelation therapy, and to provide antioxidant protection from the reactive oxygen species which mediate much of the heavy metal damage. We also chose nutrients which would increase intracellular levels of glutathione, a key nutrient for heavy metal detoxification, as well as the elimination of many persistent organic pollutants.

GLUTATHIONE SYNTHESIS

Glutathione depletion, caused by heavy metals and other environmental toxins, plays an important role in the pathophysiology of many human conditions.⁷ At the suggested dose, Clear-HM provides roughly 400 mg alpha-lipoic acid (ALA), and 333 mg N-acetylcysteine (NAC), two nutrients proven to increase endogenous synthesis of glutathione, in addition to directly reducing the toxicity of many environmental substances.^{8,9} Recent data suggests that NAC-induced de novo synthesis of glutathione is more critical to mitigating heavy metal toxicity than is the pre-existing extracellular glutathione.¹⁰ NAC has also been shown to provide antioxidant protection against lead, cadmium, and arsenic exposure, and dose-dependently increase the urinary excretion of methylmercury in animal studies.^{11,12,13} In addition to stimulating glutathione synthesis, lipoic acid has been shown to provide protection against both neuronal and hepatic heavy metal toxicity.⁶ Clear-HM also contains 25 mg vitamin B6 per daily dose, a necessary co-factor for glutathione synthesis.¹⁴

ANTIOXIDANT AND HEPATOPROTECTION

Although heavy metals act through diverse mechanisms, much of their toxicity is caused by an induction in reactive oxygen species, either directly or by poisoning cellular antioxidant enzymes.¹⁵ Clear-HM provides 1000 mg vitamin C, along with NAC and lipoic acid, all crucial to intracellular antioxidant status. Additionally, in one human study vitamin C supplementation was associated with a reduction in lead retention.¹¹

Clear-HM also contains 500 mg organic spirulina, a potent free radical scavenger, with higher antioxidant activity than other commercial algae due to its high content of phenolic compounds. Spirulina has shown benefit for reducing the toxic effects of heavy metals, including cadmium and lead, and in a human study spirulina was even shown to increase glutathione levels.^{16,17,18} It also contains significant amounts of alkaline phosphatase activity, which may assist in the detoxification of organophosphorus pesticides.¹⁹ Lastly, Clear-HM contains 140 mg milk thistle per daily dose, an herb which provides solid hepatoprotection against a number of toxins as well as promotion of glutathione production.²⁰

MINERAL REPLENISHMENT

Minerals such as magnesium and zinc are crucial co-factors for many detoxification enzymes, yet they are often depleted by heavy metal chelators. Additionally, these minerals may compete with the absorption and utilization of heavy metals, reducing their toxicity. For example, selenium and magnesium interfere with the arsenic-induced inhibition of the enzyme delta-aminolevulinic acid dehydratase.²¹ Clear-HM provides approximately 320 mg magnesium, 100 mcg selenium (as selenomethionine), and 4 mg zinc at the suggested daily dose.

QUALITY CONTROL

Bioclinic Naturals has the highest and most rigorous standards for quality, potency, purity and integrity of its products. To ensure that you can be totally confident prescribing Clear-HM to your patients, up to 400 individual quality control tests were performed on the raw materials and final product.

CONCLUSION

Heavy metal toxicity is a common clinical concern which underlies many of today's chronic conditions, and contributes to car-

diovascular disease, diabetes, osteoporosis, neurodegenerative disease, and many other functional deficits. Clear-HM provides advanced heavy metal detoxification support, with nutrients shown to assist in metal removal, to increase endogenous glutathione synthesis, to protect against metal-induced oxidative damage, and to provide minerals which both compete with toxic metals, and are depleted by many chelation treatments.

CLEAR-HM PRODUCT HIGHLIGHTS

✓	Selenomethionine: A biologically active and highly bio-available form of selenium that aids in the reduction in the body burden of mercury ¹
✓	Spirulina: Whole plant certified organic extract that along with zinc help support the elimination of cadmium ²
✓	Milk thistle (standardized to 60% silymarin; 30 to 40:1 extract): Potent hepatoprotectant against thallium toxicity <i>in vivo</i> ³
✓	NAC and alpha-lipoic acid: Promotes the increase of glutathione and together helps mitigate and prevent heavy metal toxicity ^{4,5,6}
✓	Vitamin C (ascorbic acid): Reduced the blood levels of lead in smokers by 81% after 1 week of therapy ⁷
✓	Magnesium and B6: As supplements helped in the reduction of hair lead and cadmium levels in human volunteers ⁸
✓	Zinc: Metallothionein is a cysteine rich protein that helps bind heavy metals. The use of zinc gluconate induces this enzyme and may be helpful in lead elimination ^{9,10,11}
✓	Modified Citrus Pectin: Helps adsorb heavy metals <i>in vitro</i> ¹²

Figure 1

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FIGURE 1 REFERENCES

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