

## **INTRODUCING DR. GARNETT AND THE DEVELOPMENT OF POLY-MVA**

Lipoic Acid Mineral Complexes and Poly-MVA were discovered and developed by Dr. Merrill Garnett, a researcher, biochemist and head of the Garnett McKeen Laboratory in Long Island, New York. Dr. Garnett's research lies in the emerging field of Electrogenetics, developing electro-active compounds that target metabolic pathways. Dr. Garnett has received U.S. patents for his work. .

For over forty years, Dr. Garnett has delved into the secrets of molecular biology and the biochemistry of cells. He realized that certain cellular functions were the failure of some cells to regenerate and replace themselves normally. He theorized that this failure of some cells to mature was a problem with the energetics (energy production, transference and regulation) in the cells and their complicated metabolic cellular interactions.

Dr. Garnett's research expands on the concept that all normally developed cells contain a specific inward (or directed) energy flow in and around DNA/RNA, organelles that start in the Mitochondria and the cells' energy cycle. He has researched those pathways which support proper electron or energy flow. Normal development requires a certain amount of energy and Dr. Garnett realized and found that by introducing supportive or symbiotic energy pathways normal cells and proper metabolic function can benefit.

Dr. Garnett began a long and difficult search to find a natural molecular compound that would support healthy pathways for normal development. Within those cell pathways that were missing, or deficient, his targeted cellular energy could be used to stabilize proper metabolic function. More specifically, he searched for a natural organic compound that would act as a metabolic shunt to support the cells' healthy metabolism, or energy pathways.

After testing some 20,000 compounds, Dr. Garnett discovered that alpha lipoic acid bound to the mineral palladium and covalently bound to B-1(thiamine), created an extremely useful and safe cellular nutrient. Thus, in 1991, came about the biochemical formula known as Lipoic Acid Mineral Complexes, from which POLY-MVA was derived. Multiple tests have shown Lipoic Acid Mineral Complexes to be safe and effective. His complete journey can be found in his research and literature and as well as his personal journey detailed in his book First Pulse.

Dr. Garnett's work continues in cooperation with other researchers and organizations to determine the mechanism and impact of the Lipoic Acid Mineral Complexes for other uses and in developing other powerful supplement compounds.

### **POLY-MVA**

Poly-MVA is a uniquely formulated dietary supplement containing a proprietary blend of the mineral palladium bonded to alpha-lipoic acid, Vitamins B1, B2 and B12, formyl-methionine, plus trace amounts of molybdenum, and ruthenium. This formulation is designed to provide energy to enhance the body systems by changing the electrical potential of cells and promoting proper or normal metabolism within the cell. \*

A member of the Lipoic Acid Mineral Complexes (LAMC), Poly-MVA may assist in boosting immune response by replenishing key nutrients and supporting cellular metabolism. What makes Poly-MVA unique is the proprietary manufacturing process by which the mineral palladium is sequestered/bound to lipoic acid. No other company produces a product like Poly-MVA due to the preparation and bonding process through which LAMC is manufactured. The proprietary formulation of LAMC with other vitamins, minerals, and amino acids provides specific nutritional support, helping to enable optimum functioning of essential body systems.

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## **POLY-MVA INGREDIENTS**

**Alpha-Lipoic Acid** (also known as “LA” or “thioctic acid”) in LAMC works to help the body to produce energy by recycling the free radicals rather than just quenching them. LA has also been shown to support the liver in removing harmful substances from the body. Studies indicate that LA assists in protecting cells and supporting the natural detoxification process that removes heavy metals from the bloodstream. Because of its many benefits lipoic acid has shown to be supportive in healthy blood sugar metabolism as shown in many published studies.

As a powerful antioxidant, LA helps to neutralize the free radicals that influence the aging process and the breakdown of normal cellular processes. LA is both water and fat soluble, so it easily passes across the blood-brain barrier and is functional in most parts of the body.

**Vitamin B-1** (thiamin) is a coenzyme that, in combination with lipoic acid, is involved in the decarboxylation of pyruvate and the oxidation of alpha keto-glutamic acid. These functions are essential to energy production, metabolism of carbohydrates and neurotransmitter function. B-1 is water soluble and is not stored in any quantities in the body.

Research indicates that B-1 activates membrane ion channels, possibly by phosphorylating them. The flow of electrolytes like sodium and chloride in or out of nerve and muscle cells through membrane ion channels plays a role in nerve impulse conduction and voluntary muscle action.

**Vitamin B-2** (riboflavin) is vital to maintaining a proper metabolism and helps to shore up the immune system by reinforcing antibody reserves, the body's first line of defense. Along with iron, riboflavin is essential for producing the red blood cells that carry oxygen throughout the body. In addition, the body uses riboflavin to keep tissue in good repair. Along with such B vitamins as vitamin B6 and niacin (which riboflavin helps the body convert into active forms), riboflavin supports the nervous system.

**Vitamin B-12** (also known as cobalamin) is in its most common form cyanocobalamin, which is broken down to methyl cobalamin by the body. It is generally found only in meat and dairy products. In combination with folic acid, B-12 is involved in DNA synthesis, production of the myelin sheath that protects nerves and red blood cell production. As a methyl donor involved in homocysteine metabolism, B-12 also plays an important role in immune and nerve support.

**Molybdenum** is an essential trace mineral. It is crucial in regulating pH balance in the body, which in turn directly affects oxygenation of cells and tissues and influences the metabolic rate of the body.

**Methionine** is an essential sulfur based amino acid, an important component of cartilage building blocks such as proteoglycans and glycosaminoglycans. It is incorporated into tissue proteins and enzymes and is a component of active peptides, including methionine enkephalin and various endorphins. One of the main roles of methionine is as a methyl donor, contributing to numerous physiological pathways in the body, including formation of myelin components. In one such pathway, methionine converts to s-adenosylmethionine. In studies, L-methionine has demonstrated the ability to promote healthy cellular metabolism, enzyme activity and glutathione concentration. In the body, it converts to L-cysteine and therefore is potentially beneficial in liver detoxification and in neutralizing toxins.\* It has been shown to support healthy copper and lead serum levels.\* L-methionine is considered important for liver fat metabolism, healthy skin and nails and energy production. Methionine, like choline and betaine, is also a lipotropic compound supporting lipid metabolism and enhancing healthy hepatic function. In combination with antioxidants, methionine may help in proper pancreas function.

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## **POLY-MVA: ONE OF A KIND PRODUCT**

When lipoic acid, a powerful antioxidant with many biological functions, is connected to an electrically charged mineral substrate, and associated with B vitamins, the resulting complex solution has solubility in both water and fat. This means it can travel to all cells throughout the body. This combination was designed to support energy production while protecting the tissues from oxidative stress, as a nutritional supplement, Poly-MVA is unique in its ability to support nutrition, cellular energy and optimum health.

Poly-MVA is a novel supplement which demonstrates an enhanced redox capacity. This means it is extremely efficient at accepting and donating/transferring electrons (ENERGY). Publications and research observations have demonstrated its ability to provide cellular energy to target low energy levels and attenuate metabolic changes of cells. It has a unique mitochondrial action because healthy cells have oxygen pathways. Normally, oxygen radicals are formed when fatty acids donate electrons to oxygen. These oxygen radicals have an unpaired electron charge and are unstable. Special proteins in the mitochondria convert the oxygen radicals into water and usable energy. Poly-MVA can support the process to protect, assist and facilitate these actions while also supporting Krebs Cycle Enzymes.

These nutritional ingredients in Poly-MVA may provide support for the following:

- **Assist the body in producing energy**
- **Support the protection of cells**
- **Assist in promoting healthy cell function**
- **Supports mitochondrial health**
- **Supports Krebs cycle activity**
- **Support from oxidative damage**
- **Unique and powerful antioxidant**
- **Support Liver function**
- **Support nerve and neurotransmitter function**
- **Helps to maintain cells and tissue health**

For more in-depth information on Poly-MVA and related articles and research please contact AMARC Enterprises at 619-447-6500, or search **PolyMVA**.

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# LIPOIC ACID MINERAL COMPLEXES

## A BREAKTHROUGH IN NUTRITION AND OPTIMUM HEALTH

**THE DESIGN OF LIPOIC ACID MINERAL COMPLEXES (LAMC)** began with the concept of protecting and supporting normal cellular processes as an approach to proper metabolism by using a mechanism that would ‘mimic’ of a pathway/cellular process that already exists in normal metabolic cellular function. This is a major departure from the current concept. The ongoing research for topics like immune system support and its responses to maintain calm tissue and cellular homeostasis is showing as an important factor in optimum health. Current science and research continue to develop more integrative and combination-based approaches on taking care of and targeting cell health, especially the mitochondria. Research indicates and various studies validate, that the lack of nutrition and cellular support along with the increase in free radical damage and oxidative stress play a key role in poor health and improper cell function. The focus has changed in the 21<sup>st</sup> century to emphasize an integrative nutritional dietary approach, and a more cellular base approach in the understanding of how our bodies, its systems and especial specialized cellular systems work.

In 1991, Dr. Merrill Garnett developed and patented a Lipoic Acid Mineral Complex as a metallo-vitamin. Other compounds, such as Poly-MVA, were also developed by Dr. Garnett and formulated specifically for use as nutritional supplements. The complexes achieve their effectiveness through the specific changes they contribute to energy metabolism for normal cellular function. These complexes are continuously undergoing research and testing so that they may be used and available for ongoing research.

### LIPOIC ACID MINERAL COMPLEX FUNCTIONS

Lipoic Acid Mineral Complexes are a unique new class of polymer, or orthomolecular molecules, composed of vitamins, minerals and amino acids which have powerful properties. LAMC complexes are nucleotide reductases (enzymes that catalyze a chemical reduction protecting cellular processes). The lipoic acid molecules are irreversibly bound with the mineral palladium and covalently bound to the vitamin B1 (thiamin) through an exclusive patented process that takes full advantage of each of their unique characteristics. The metabolic approach of the cell and the change in its metabolism are directly related to the health and function of our body. LAMC complexes are designed to support and protect our cells. Some of the powerful properties of Lipoic Acid Mineral Complexes are:

- Synergistic with various vitamins & minerals
- Intracellular electron donor
- Stronger than alpha lipoic acid
- Supports reductive cell processes
- Protective against oxidative stress
- Supports ATP & intra-cellular hydration

Lipoic Acid Mineral Complexes are extremely powerful antioxidants that absorb free radicals at an impressive rate compared to single compounds. On the ORAC scale they rated 5.65 trolox/gram, compared to alpha lipoic acid (1.4) and other well-known antioxidants (between 1.0 and 2.4). Research studies demonstrated the need for 10x more lipoic acid to get the same effect as LAMC. Sensitive Volta-metric measurements indicate that like many antioxidants, LAMC complexes not only quench free radicals to protect our cells, but they also support the electron transport chain in the mitochondria. LAMC complexes are such a powerful and unique class of antioxidant complexes that they may also contribute to healthy aging while providing protection from ongoing damaging oxidative stress. \*

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The LAMC complexes can shunt/accepting energy/electrons from itself to cellular mechanism, reducing the charge to the DNA, thereby protecting it from oxidation. Electrochemistry data demonstrates that LAMC complexes are potent redox polymers, and as such can both accept and donate energy (electron charge transfer). Since many cellular functions require the presence of electrons, LAMC can be used as support and potentiate normal cellular function. This lipoic acid polymer protects the cell (absorbing free radicals due to the lipoic acid component) and then donates that energy to the electron transport chain complexes of the mitochondria because of the Thiamin B-1 component. This is the mechanism by which it can support the Krebs cycle activity and stabilize the electron transport chain helping to support and upregulate the metabolic needs of the cell.

Extensive human and animal use of Lipoic Acid Mineral Complexes, for over 20 years across the globe, indicates that we have only scratched the surface in determining how many ways Lipoic Acid Mineral Complexes may be beneficial. They have been shown to be very effective in quenching free radicals, providing protection from oxidative stress, working at the cellular level via the electron transport chain, supporting the mitochondria protecting our cells. Reviews have shown that improved energy and overall health is supported within a few weeks of use along with well-being, clarity and sense of wellbeing.

Benefits of Lipoic Acid Mineral Complexes include:

- **Supports normal cell health**
- **Helps metabolic function**
- **Supports the aging process**
- **Supports healthy cellular function and energy levels**
- **Protects cellular DNA**
- **Use free radicals for energy**
- **Has minerals, vitamin, and antioxidant functions**

### **Metabolic Modulation and Targeted Support**

Low energy caused many times by low oxygen can trigger a series of cell changes due to low metabolism resulting in a different metabolic environment and low cell function. These differences can render the normal cell weak due to metabolic changes. Normal metabolism and low or inefficient metabolism can benefit from the same mechanism that support and target mitochondria.

Poly-MVA exists as a nutritional supplement that is unique to free radical biology, the mineral palladium is a transition mineral that can catalyze chemical reactions, in this case aerobic respiration, thus supporting our cells electron transport chain and its ability to make energy. This enhanced ability to both accept and donate charge has significant cellular implication. By utilizing this novel redox molecule, studies have demonstrated the ability to take advantage of the metabolic changes and help support proper cellular function. In contrast, the supplemental energy may provide a boost to the cells. Furthermore, the LAMC formulation is a potent free radical scavenger.

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## **POLY-MVA FREQUENTLY ASKED QUESTIONS**

### **1. What is Poly-MVA?**

Poly-MVA is a powerful, patented dietary supplement that is the first in a remarkable new category of supplements known as Lipoic Acid Mineral Complexes. Poly-MVA is a unique, patented proprietary blend of palladium, alpha-lipoic acid, vitamins B1, B2 and B12, the amino acids formyl-methionine and trace amounts of molybdenum and ruthenium.

### **2. What makes Poly-MVA unique?**

Poly-MVA is an extraordinary compound that chemically bonds a trace mineral, palladium, to alpha lipoic acid (a powerful antioxidant) associated with B-1, thiamine. The technique of bonding these two materials together is so unique that U.S. patent was issued on the process. The bonding of the mineral palladium with alpha lipoic acid and covalently bound to B-1 may allow unique properties at the cellular level. The additional co-factors along with LAMC complex distinguish Poly-MVA from any other supplement.

### **3. How does the mineral palladium work within the complex and for the body?**

Within Poly-MVA, the proprietary lipoic acid mineral complex acts in a similar way to the cobalt found in Vitamin B-12 (cyanocobalamin). The mineral is bonded or sequestered to the lipoic acid creating the mineral complex. The mineral serves primarily as a transport/storage mechanism for electrons between ALA and B-1. While the lipoic acid mineral complex contained in Poly-MVA provides a significant portion of the unique action of the supplement, other important vitamins, minerals and amino acids are co-factors that assist and support the function of the lipoic acid mineral complex, while also contributing to the support of the body's natural processes.

### **4. Why do people take Poly-MVA?**

People take Poly-MVA for optimum health and nutritional support. It is designed to increase energy, which can help with fatigue, enhance overall health and well-being, and provide unique nutritional support. \* Many people have found Poly-MVA to be a helpful in improving quality of life, energy levels, anti-aging, feeling their best each and every day knowing that it is important to have:

- **Superior antioxidant and free radical protection\***
- **Immediate absorption in a liquid for quicker absorption\***
- **Supporting energy production at the mitochondria and cellular level\***
- **Quality of life\***
- **Good overall health and supportive nutrients.**

Dr. Rudy Falk, M, said, "Poly-MVA has properties that make it beneficial in supporting and optimizing multiple cellular functions and it shows promise in helping to re-energize cells, especially when under stress."\*

Dr. James Forsythe, MD, HMD, states, "After using Poly-MVA in his reviews of over 1700 people over 15 years, the remarkable mitochondrial support it gives them is excellent and the best I have seen!"

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## **5. Can people take Poly-MVA for daily support or any other reasons?**

Yes, Poly-MVA is an ideal easy to use oral supplement that can be taken straight or mixed with your favorite beverage. It was intended to help support many of the body's systems, strengthen cells, enhance energy production, and improve quality of life by providing high-quality nutrients in a unique form that can be easily used and assimilated by the body. \*

## **6. How long does a bottle last? How much do people normally take?**

How long a bottle lasts depends on how much you use and the bottle size. Depending on individual use, a large bottle of Poly-MVA could last as much as 192 days (over six months). If you are using Poly-MVA to help maintain optimum health and function, a large bottle can last 3 months or more, for those who are using for energy or for maximum nutritional support, an 8oz bottle may last 6 days.\*

### **DAILY SUPPORT TO MAINTAIN OPTIMUM HEALTH:**

The recommended use to maintain optimum health is 1/4 to 2 teaspoons per day depending on body weight.

### **IF USED FOR MAXIMUM SUPPORT:**

Maximum energy production and nutritional support has been seen and researched at 2 teaspoons 4-6 times per day (8-12 teaspoons total, titrating/incrementally increasing dosage over at least a weeks' time) for the first 12 to 16 weeks. Some individuals that feel depleted may choose to stay on the higher amounts for longer periods of time and that is fine if they choose to do so. Everyone responds differently and therefore may find that the optimum benefit is maintained at the higher recommended use level for some time. Others may reduce to the maintenance amount after 8-12 weeks; you can use the titrating process to best determine your optimum amount or feel free to speak with your practitioner.

## **7. How long does it take to feel a difference?**

Dr. Merrill Garnett, whose research led to the discovery and development of Poly-MVA, believes that most individuals will notice a difference in how they feel within the first 4-8 weeks. In some cases, we have seen dramatic responses (energy improvement, feeling better, etc.) in just a matter of days.

## **8. Has Poly-MVA been tested for safe use?**

Yes, the product has continuously shown to be safe in all its uses. Poly-MVA is assimilated in the body like food and as nutrition. During the initial development over 30 years ago, high doses were tested to determine if there were any concerns; even at the highest administered dose no negative effects were observed in those or any of the tests. (LD-50's were performed- This means that fifty times higher than the maximum recommended dose were used). Based on all the research data to date, the ingredients in the product, ongoing research and the safe use in humans and animal for over 30 years, Poly-MVA is very safe. If you have any concerns or questions, please discontinue use and contact the manufacturer or your practitioner.

## **9. Is there anything that may be inhibited or minimized in effectiveness while using Poly-MVA?**

Mitochondrial inhibitors, chelating agents, and certain antioxidants at high levels, well above their recommended daily allowance should be minimized and/or alternated (the recommend waiting at least four-six hours before taking Poly-MVA). Additional alpha lipoic acid should be minimized and/or alternated because it may compete with the lipoic acid complex in the Poly-MVA and is usually NOT necessary while using Poly-MVA.

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**12. Why does it seem that this product is more costly compared to other supplements?**

It is competitive with other dietary supplements in volume/size and benefit. Its unique ingredients are a combination of the mineral palladium and other precious minerals, which are some of the most expensive minerals in the world (palladium is typically more expensive than platinum and has been more than gold). Therefore, the raw materials cost is much higher than a typical supplement. In terms of the cost of the raw materials and manufacturing process vs. the selling price, Poly-MVA is on par like other nutritional supplements.

**13. How long has Poly-MVA been in use?**

Poly-MVA has been manufactured and available in the U.S. since 1992. There are many physicians around the world recommending and using Poly-MVA in their office and clinics as part of an overall program for health and well-being. \*

**14. Do Practitioners use Poly-MVA?**

Yes, and integrating in various ways seeing exciting client successes and responses. This unique supplement, with the intricate and specific action of Lipoic Acid Mineral Complexes, continues to gain acceptance among professionals in many ways, the mitochondria play a key role in all our cells.

**GUIDELINES FOR THE USE OF POLY-MVA**

**The suggestions for use contained herein are not offered or intended for use in treating, preventing or mitigating any disease. Please consult a qualified health care practitioner if you have a health concern.**

If you are pregnant, nursing, or would like to give Poly-MVA to a child, please consult your practitioner.

**Suggested Usages and the Number of Bottles Needed per Month:**

Each 8 oz. bottle of Poly-MVA contains 48 teaspoons (236 cc). Each teaspoon is approximately 5 cc.

The guidelines below are general suggestions because everyone’s body is different. Recommended usage may be due to body mass and one’s ability to absorb the product. For that reason, we have found that some people have achieved their desired results by remaining on the “maximum support” for longer periods of time.

**FOR DAILY NUTRITIONAL SUPPORT OR AS A LONGEVITY TONIC:**

Suggested use is 1/4 to 2 tsp. per day depending on body weight.

**FOR PHYSICAL SUPPORT:**

Initial amount:	Day 1-3:	1 teaspoon	(1 tsp. daily)
	Day 4-6:	2 teaspoons	(1 tsp., 2 times)
	Day 7-10:	4 teaspoons	(1 tsp., 4 times)
	Day 10-30:	8-12 teaspoons	(2-3tsp., 4 times)

Then reduce to 4 tsp. daily, (2 tsp., twice daily) For the maintenance and continued support, take 1-4 tsp. daily.

Continue at 8-12 tsp. per day for a minimum of 3 months. Five bottles per month are needed at 8 teaspoons/ day.

**Smaller weights for more support:**

1-2 tsp. per 40 pounds of body weight per day.

Start the with a small amount and increase to the desired amount slowly over three to seven days.

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## **FOR MAXIMUM BENEFIT: HOW AND WHEN TO TAKE POLY-MVA**

Using Co-enzymeQ-10 or Co-Q-10 has been shown in laboratory research to work synergistically with Poly-MVA\*. The recommendation is 400-600 mg daily of the standard form of CoQ10, or 200-300 mg of the “Q-Gel” form, or 30-45 drops of the LiQsorb which has shown to be more absorbable than all other forms of CoQ10. Taking CoQ10 with food is recommended. The liquid version maybe mixed with the Poly-MVA. To improve taste, Poly-MVA may be mixed with water, tea, coffee, or juice (such as cranberry, grape, prune or vegetable). You may take with food if stomach discomfort is noticed.

Take the daily amount of Poly-MVA in divided doses if possible: for example, 2 teaspoons, 4 times daily – three times before meals and once before bed. If taking 1 tsp. daily or less and unable to take in divided dose, its fine to take it all at once in the morning. If taking LiQsorb CoQ10 we recommend taking them together. When starting out or restarting a titrating schedule may be used.

### **Taking Poly-MVA with other Antioxidants, Chelators, Fiber, and Steroids:**

Antioxidants and detoxification products in their recommended daily dosages may be taken within 30 minutes after taking Poly-MVA. If high-dose antioxidants are being taken, for example 5-25 grams of Vitamin C daily, we recommend separating them by 60-120 minutes from your dose of Poly-MVA. If mega-doses of Vitamin C are being taken (25-150 grams per day) separate by 120-240 minutes and/or consult with your practioner.

If using chelation type products, the suggestion is to leave at least 24 hours between using them and Poly-MVA. Take chelators and Poly-MVA on alternating days or separating by the most amount of time on the same day.

### **Responses that may occur in limited uses:**

1. A cleansing reaction also referred to as a “Herxheimer Response” (“detoxification reaction”) may be noticed by the introduction of any new nutritional support supporting the body’s various systems quickly. We recommend reducing the dosage or usage amount until the situation remedies itself, usually within a few days. If you are sensitive to new foods and dietary changes, then use and titrate slowly.

### **Storage and Shelf Life:**

It is not necessary to refrigerate Poly-MVA, but you may if you wish. Do not expose Poly-MVA to direct sunlight or extreme heat. Store in a cool dry place at normal room temperature and use by expiration date.

## **POLY-MVA FOR PETS:**

Is ideal for nutritional support, overall health and energy support.\*

**Suggested dosage:** 1/8 -1/2 teaspoon for daily support based on body weight.

**Maximum amount:** 2ml per 5 pounds of body weight, twice daily. (1.25ml =1/4 teaspoon)

**Example:** 10lb animal would be 8.0ml per day.

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