



Currently, multiple studies are examining the adjunctive effects of Poly MVA. Its most active ingredient is a novel organo-metallic compound called Lipoic Acid Mineral Complex (LAMC), which facilitates charge transfer to provide metabolically-targeted therapy. By enhancing aerobic cel-Iular metabolism, Poly MVA potentiates therapy, attenuates side effects and enhances a patient's quality of life. In 2009 Poly MVA completed a dose-escalation safety study and kinetics profile in preparation for multiple studies. This was an IRB approved study, which was monitored by a DSMB, as well as, being granted an IND from the FDA. This poster will highlight the studies demonstrating Poly MVA's role in integrative therapies.

## BACKGROUND

Lipoic Acid Mineral Complex (LAMC) is the most active ingredient in a dietary supplement called Poly MVA. In the LAMC complex, the transition metal palladium is bound to the anti-oxidant alpha-lipoic acid, creating a potent redox polymer that is fat and water soluble. In addition to LAMC, this proprietary blend is formulated with minerals, vitamins and amino acids such as molybdenum, rhodium, ruthenium, thiamine, riboflavin, cyanocobalamin, acetyl cysteine, and formyl methionine.

Redox polymers are very efficient at accepting and transferring charge (electrons), which is the basis of cellular metabolism. A unique characteristic of cancer cells is that they have a disrupted metabolism. Malignant cells favor an anaerobic metabolism (red oval in figure below) and make physiologic adaptations to a hypoxic environment.



In contrast, LAMC faciltates aerobic metabolism since thiamine and lipoic acid act as cofactors in the conversion of pyruvate at Complex I of the mitochondria, which targets LAMC's energy to the aerobic cascade (figure above). Our research has focused on LAMC as a metabolically-targeted therapy to potentiate radio and chemotherapy, alleviate fatigue, and protect normal cells from radiation damage.

# Lipoic Acid Mineral Complex: A Novel Metabolic Molecule in Integrative Therapies Frank Antonawich, Ph D<sup>1,2</sup>; Albert Sanchez<sup>3</sup> <sup>1</sup>Garnett McKeen Laboratory, N.Y.; <sup>2</sup>St. Joseph's College, N.Y.; <sup>3</sup>AMARC Enterprises, Inc., CA

## Integrative Oncology



- Dr. James Forsythe

From 2004-2006 Dr. James Forsythe studied 225 stage IV cancer patients (multiple origins). Treatment with Poly MVA or Poly MVA + chemotherapy provided a 6 year Overall Survival rate of 32%, while the average 5 year survival rate is 2.1% in all stage IV cancers, as reported in the Clinical Journal of Oncology. Currently, Dr. Forsythe's is now utilizing genetic chemosensitivity testing, immune therapy, insulin-potentiated therapy, along with IV Poly MVA to enhance his results. The patients are discharged on oral Poly MVA and targeted treatments, with follow-up every 3 months. Thus far, 59% of Dr. Forsythe's patients have reached 40 months in the study.

![](_page_0_Picture_14.jpeg)

### - Dr. Paul Anderson

Currently a clinical cancer observation is being conducted investigating the synergistic effectiveness of IV Poly MVA and DCA (dichloroacetate) in a number of refractory oncology cases (lymphoma, leukemia, multiple myeloma and melanoma). The Poly MVA is administered over 20 to 40 minutes at 40 mL IV in 100 mL Normal Saline. While DCA is dosed at levels recommended by Dr. A. Kahn (IV: 50-80 mg/kg IV in 100 mL normal saline run IV over 15 to 45 minutes). The dose schedule is four to five days weekly if tolerated at a rotation of four to five days on and three to two days off. Thus far 6 out of 7 patients are now responding to treatment.

![](_page_0_Picture_17.jpeg)

### Veterinary Integrative Oncology Program – Dr. Greg Ogilvie

The largest integrative cancer investigation of LAMC supplement was an open-label, veterinary oncology program with over 900 dogs enrolled, since its inception in January 2004. Patients received the PdLA supplement (Poly MVA) as part of their chemotherapy, radiation and/or surgical protocol at a dosage of 1mL/5 lbs. P.O. twice daily (equivalent human dose of approximately 8 tsp.). The findings were most effective in the following solid tumors:soft tissue sarcoma, hemangiosarcoma, mast cell, transition cell carcinoma, lung, anal sac carcinoma, renal carcinoma, squamous cell carcinoma, fibrosarcoma, melanoma, menigioma, neuroblastoma, mammary adenocarcinoma.

![](_page_0_Figure_20.jpeg)

**EXAMPLE: Veterinary Osteosarcoma Data** 

PdLA improved median survival 62% (103 days) compared to surgery alone. PdLA added to the chemotherapy regimen (carboplatin + doxorubicin) resulted in a 27% (79 days) longer median survival, with improved objective parameters (i.e. weight, anemia, liver and kidney function).

Virginia IIII Tech

## PAMS Study - Dr. Rick Williams and Dr. Jerome Goldschmidt

An IND has been granted to Virginia Tech College of Osteopathic Medicine to examine the concurrent therapeutic benefit of the PdLA formulation in multiple myeloma (Dr. Rick Williams).

![](_page_0_Picture_26.jpeg)

**DESSTINI-A STUDY – Stony Brook University** 

An additional IND safety and efficacy study is currently being conducted at Stony Brook University Medical Center examining adjunctive support of PdLA in glioblastoma patients.

![](_page_0_Picture_30.jpeg)

#### **Scientific Published Studies:**

With age there is a decrease in the number of mitochondria (the power house of the cell) and their efficiency. Studies examined aged heart and brain and found that Poly MVA administration (human equivalent dose between 1/2 and 2 tsp/day) increased aerobic metabolism (an average increase in Kreb Cycle enzymes of 225%; and 150% increase in electron transport chain enzymatic activity). In addition, there was a statistically significant reduction in oxidative stress to the tissues due to its anti-oxidant activity (lowering lipid peroxidation, increasing glutathione levels, increasing glutathione reductase and catalase activity) (Sudheesh et al., 2009,2010; Ajith et al., 2014).

![](_page_0_Picture_34.jpeg)

An IND study was recently completed in which each patient took 4 teaspoons Poly MVA per day for 6 weeks. The patients were tested at their baseline visit and at the end of 6 weeks using three Multiple Sclerosis Fatigue Scales (Fatigue Severity Scale (FSS); PROMIS Fatigue; Multiple Sclerosis Fatigue Impact Scale (MSFIS)). There was a statistically significant decrease in each scale, leading the Principle Investigators to conclude that the product was "well tolerated and was associated with a clear reduction in fatigue severity and fatigue impact".

![](_page_0_Picture_37.jpeg)

## **HIV- associated Fatigue**

Statistically significant improvement in QOL/Energy/Fatigue: assessed using the Medical Outcomes Study (MOS) HIV QOL survey.

#### **Palliative Care Study**

The following EORTC QLQ C30 parameters demonstrated statistically significant patient improvement: Cognitive Functioning, Emotional Functioning, Social Functioning, Fatigue, Sleep Disturbances and Appetite Loss.

## **Radiation Protection & Enhanced Radiotherapy**

#### **Scientific Published Studies:**

The electrochemical finding that the LAMC supplement Poly MVA demonstrates a robust redox capacity has led to a significant number of publications on its ability to reduce the harmful effects of radiation exposure. Peer reviewed findings have demonstrated its significant ability to: protect and repair DNA, offer chromosomal protection, have anti-oxidant activity, increase spleen colony formation, as well as, attenuate radiationinduced weight loss (El-Marakby el al., 2013 a & b; Selim et al., 2012 a & b; Desouky et al., 2012; Menon and Nair, 2011; Ramachandran et al., 2010; Menon et al., 2009).

![](_page_0_Picture_45.jpeg)

A recent paper submitted to the Journal of Radiation Oncology examined solid tumors using both Dalton's Lymphoma and Ehrlich carcinoma (mammary tumor). Findings indicated that a combination (58%) of Poly MVA and radiation was better than either of them alone (29% and 8%, respectively) in reducing tumor size in rodents. (Veena et al., 2015)

![](_page_0_Picture_47.jpeg)

### - Dr. Lauren Krupp

#### Multiple Sclerosis associated Fatigue – Stony Brook University

## **Dr. Gary Blick: Circle Medical Center**

### **CIPLA Pharmaceuticals**

### Amala Cancer Research